

**The Legal Basis for Stock Exchanges:
The Classification and Regulation of Automated Trading Systems**

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ABSTRACT

The growth in automated trading systems has been explosive, and regulatory initiatives and analysis with respect to this new form of financial market structure quickly followed. We analyze the use of the definition of an “exchange” for the purpose of classification and regulation of automated trading systems, and the accompanying statutory distinction between exchanges and brokers who operate such systems. The definition and this distinction have operated for over sixty years in the U.S., and underpin the entire fabric of the regulatory structure governing the American securities markets. We argue that the evolution of the definition, combined with technological advances in trading system technology, has produced inconsistencies in regulatory policy, and that the exchange/broker distinction is no longer viable. Alternative approaches to the regulation of systems are examined. We propose and analyze a strategy composed of the separation of the regulation of market structure from the regulation of other areas of public concern, and the employment of competition policy to regulate market structure. A central implication of such an approach is that there should be no distinction in the regulation of market structure issues between institutions now classified as exchanges and those which are now classified as broker-operated trading systems.

I. Introduction

In 1969, a company called Instinet established a computer-based facility in the USA for trading American equities. The Securities and Exchange Commission (SEC) responded by proposing Rule 15c2-10, a filing requirement for automated trading and information systems.¹ The proposed rule was the first direct regulatory action aimed specifically at automated markets. The rule was not adopted, however, and it was formally withdrawn in 1975. It was re-proposed in a modified form in 1989. Then it was re-withdrawn in 1994. Confusion and controversy have been characteristic of the regulatory concern about automated trading systems since their inception. This confusion persists today, as evidenced by a recent SEC Concept Release, which references the current paper in phrasing a total of 143 multi-part questions pertaining to the regulation of automated trading systems.²

Automation has had four main effects on the development of trading markets. It has made possible the construction of new types of trading systems, which would otherwise have been difficult, if not impossible, to build. It has eliminated the need for the person-to-person contact required by traditional market mechanisms such as trading floors or telephone networks. It has reduced the costs of establishing new trading systems, thereby making it easier for new entrants to enter the market for markets. Finally, it has let orders be routed and market data be transmitted both more quickly, and to a much larger group of participants, than was previously feasible. This in turn has encouraged the development of cross-border trading.

The growth in automated trade execution systems on a world-wide basis has been explosive. In the USA alone, there are over fifty such mechanisms, including completely automated exchanges, exchange facilities with automated components, and trading systems not currently regulated as exchanges.³ In the international arena, many more have been established.⁴ Regulatory initiatives and analysis have responded to these technological advances.

A range of areas of regulatory interest have been identified, all of which are "tightly interwoven with the others".⁵ There has been concern about system construction;⁶ about investor protection; about the nature of the computerized algorithms which govern the trade matching mechanism and which contribute to the pricing and trade allocation properties of the price discovery process;⁷ about market structure and competition between systems; about problems of jurisdiction; and finally, about how to classify automated systems. These issues are not just of theoretical concern. They continue to be the subject of regulatory attention not

only by the SEC in the USA, but also in Australia by the Australian Securities Commission (ASC),⁸ in Canada by the Ontario Securities Commission (OSC),⁹ in France by the Commission des Opérations des Bourse (COB),¹⁰ in the UK by the Securities and Investments Board (SIB),¹¹ and in the European Union (EU).¹²

This paper has three key goals: to describe the current approach for regulating automated trading systems, to outline the problems inherent in this approach, and to assess the merits of various alternative strategies. Although attention is focused on the American experience in the securities markets, and in particular on the SEC's regulation of automated trading systems, the analysis and conclusions are more widely relevant.

The primary emphasis of this paper is on the appropriate definition of an "exchange" for the purposes of regulation. The statutory distinction between exchanges and brokers has operated for over sixty years in the USA, and underpins the entire fabric of the regulatory structure governing the American securities markets. This distinction, however, is argued to be no longer viable, and various alternatives to it are analysed.¹³ Although we focus on the SEC's regulation of automated trading systems, issues and examples from other jurisdictions are also discussed. Similar questions arising in the derivatives markets are for the most part ignored.¹⁴

The plan of the paper is as follows. An initial examination of the concepts of "trading system" and "proprietary" is provided in section II. Some statutory and regulatory background to the regulation of automated trading systems is presented in section III. An analysis of the current meaning of "exchange" is contained in section IV. The viability of maintaining the distinction between exchanges and brokers in the regulation of trading systems is questioned in section V. Various solutions to the problem of how automated trading systems should be regulated are discussed in section VI. Some international issues are examined in section VII. A conclusion is presented in the last section.

II. Definitions

Although the concept of a "proprietary trading system" (PTS) has become central to the question of how to classify and regulate automated trading systems and exchanges, there is much confusion about what this term denotes. Its meaning is addressed in two parts in this section. A definition and analysis of the phrase "trading system" is first provided, and then four usages of the term "proprietary" are described.

A. Trading System

At the most general level, a market may be thought of as a forum for executing a trade. In an equity market, the standard trade cycle is composed of many different activities, including consideration of pre- and post-trade information, order routing, order execution, matching, clearing, settlement and custody. A trading system is defined here to be a mechanism which delivers three of these functions - trade execution, order routing, and data dissemination. Order execution is the process whereby orders can be transformed into trades. Order routing is the act of delivering orders from their originators, primarily investors and broker-dealers, to the execution mechanism. A data dissemination mechanism transmits pre- and post-trade data, about quotes and trades respectively, to market participants.

An automated trading system can comprise the entirety of an exchange's trading operations, such as the National Securities Trading System (NSTS) of the Cincinnati Stock Exchange (CSE) or the single-price auction operated by the Arizona Stock Exchange (AZX).¹⁵ A system may be one of several facilities of an exchange, operating in tandem with a traditional trading floor or telephone network, or after regular exchange hours. Examples include the Retail Automated Exchange System (RAES) of the Chicago Board Options Exchange, the Securities Communication Order Routing Execution system (SCOREX) of the Pacific Stock Exchange, and the after-hours crossing networks of the New York Stock Exchange (NYSE). Finally, an automated market may be set up by an entity not regulated as an exchange, such as Instinet and POSIT.

The market structure of a trading system consists of the set of rules governing its trade execution mechanism and the amount of price and quote data it releases. A wide diversity of market structures is possible.¹⁶ In order to illustrate this variety, three different generic types are briefly described, namely those of a continuous limit order book, a single price auction, and a trading system with passive pricing. A description of Instinet, one of the most successful automated securities trading systems, then is provided.

Three Generic Market Structures

In an automated continuous limit order book system, bids and offers may be submitted to the market continuously over time, and transactions may occur at any time the market is open. Depending on the design of the system, transactions may occur in several ways. Typically, they result when two limit orders cross, namely when the price of the best bid is equal to or greater than that of the best offer. Some systems allow the use of market orders, which can lead to an immediate trade execution if a counterparty is available in the system. All continuous limit order books have a price discovery component: price is determined

endogenously within the system, based on the order flow and the precise rules governing trade priority and execution. Some systems have explicit provision for market-making operations in the form of a two-sided quotation facility.

In a single-price auction system, bids and offers may be submitted over a period of time, but all trades are executed together at one price at a single point of time. The transaction price is normally calculated by maximizing the total volume traded over the range of possible transaction prices, given the bids and offers resting in the system. Bids and offers eligible for a match at the system-calculated price are processed into trades, subject to a set of priority rules. Once again, there are variations in the possible system structure, often depending on order types and order information display. All such systems are price discovery mechanisms, producing equilibrium prices at fixed points in time. There is commonly no provision for two-sided quotations, although some markets allow for an order type designed to help equate supply and demand in the case of an order imbalance, a feature that is in the spirit of market making.

Some automated trading systems determine the prices at which trades are executed by explicit reference to the pricing and sales activity in other markets. Such trading systems, which have no independent price discovery mechanism and whose prices are taken directly from a "primary" market, are referred to as "passive" or "derivative" pricing systems. Some systems allow for the possibility of price improvement, by assessing market conditions in the underlying market, and then pricing their trades at a price better than the best quote on the underlying market available at the time of order entry. Prices may vary through the trading session, if the system operates at the same time as its associated primary market, or may be fixed at a single level, such as the closing price for an after-hours trading session. Trade execution may be based on different secondary priorities than those present on the primary market.

Instinet

The Instinet trading system is a screen-based computer network owned by Reuters, for trading US, UK and other countries' leading equities.¹⁷ Two types of information are displayed on the Instinet screen: that coming from publicly available sources external to the firm, and the prices and quotes generated by the system itself. The raw quote data received from external sources are consolidated to form the "Quote Montage", which is effectively an order book in which all the bids and offers from the different external sources are ranked according to price priority. Each security traded on Instinet also has its own internal order book, which

consists of a listing of all live orders, and also some orders which have expired, some which have already been executed, and some previous indications of interest. These different types of orders and indications of interest are ranked first by price and then by time. For the most part, the price associated with each order is revealed on the screen, as is information about the order's size, where this is specified by the user. Neither the identity of the user, nor the time the order was input, nor the period for which the order is good, however, are revealed on the screen. It is also possible to submit an order to the system, while requiring that no details of the order are published at all. Information about the contents of the internal order book for each stock is not released to the public.

To trade on the system, a participant either responds to an order already placed on the internal order book, or initiates and places an order onto the book. The simplest orders which may be entered into the system are limit orders. Several other types of orders also allowed, such as minimum-fill and non-negotiable orders, and orders whose execution price are pegged at the last sale price or the middle of the bid/offer spread. "All-or-none" orders are not allowed, so partial executions can occur. If there is a bid or offer in the Instinet book, and a participant enters a contra-side order at the same price or better, and there are no impeding conditions attached to either order, the orders are automatically and immediately matched and transacted by the Instinet system. In-coming orders can be matched against more than one existing order, and can also be matched against those not shown on the screen. As well as transacting directly against orders on the Instinet book, participants can also negotiate with each other directly and anonymously. When negotiating, there is no requirement for customers to respond to any specific order, and thus no need to observe price priority.

B. Proprietary

There has been much controversy about what the term "proprietary" signifies when applied to trading systems. The aim here is not to provide an authoritative definition for the term, but rather to describe the central characteristics of a trading system to which the term has been used to refer. Four main usages may be identified.

The term has been used to denote a system operated by an individual intermediary, as opposed to a system operated by an exchange, defined as an association or grouping of many market intermediaries.¹⁸ It has been used to refer to trading systems which are not operated by a regulated exchange, or a self-regulatory organization (SRO).¹⁹ Under such a definition, PTSs do not undertake the duties borne by regulated exchanges or SROs. The third usage of the term has been used to designate systems which are run "for-profit". Under such a usage,

PTSs are again contrasted with exchanges, which are viewed as being run on a "not-for-profit" basis. Finally, the term has been used to describe the goals of the owners of a trading system as being self-interested. Again PTSs are sometimes compared with exchange-operated trading systems, which are said to have as their goal the advancement of the public interest.

A further source of confusion is that the term frequently has been used to describe, without distinction, the interests of three different types of market agents: a trading system's owners, its operators, and the participants who have direct access to deal on the system. This confusion is linked to a growing perplexity about another common term, namely the "members" of an exchange. Traditionally the members of an exchange have been the owners of, and the participants on, the exchange's trading systems, and have also either undertaken themselves, or appointed, the management of the system. As such they were said to have a "proprietary" interest in the exchange. It is, however, frequently no longer true that the owners and managers of, and participants on, a trading system are all the same institutions. Each group may thus have different types of "proprietary" interest.

The fact that the traditional concept of an exchange is breaking down is at the core of the problem of defining what a "proprietary trading system" (PTS) is. The term PTS has essentially been defined by opposing it to that of an exchange. As the concept of an exchange has become opaque, it is unsurprising that usage of the phrase "proprietary trading system" has also become confused. The term is only employed in the rest of the paper to refer to contexts where it has been used by other institutions.

III. Statutory and Regulatory Background

The statutory approach governing the regulation of trading systems in the USA may be termed "institutional" in nature. Various types of market participants are defined; the circumstances when an institution covered by one of the definitions must register with the SEC, or when it may seek exemption from such registration, are specified; and the duties that must be undertaken by an institution requiring registration in a particular category are laid out.²⁰ There are four main categories into which an automated trading system may be classified: a "securities exchange", a "broker", a "dealer" and a "national securities association".²¹ The natures of the first three of these categories are examined in this section. The SEC's "no-action" procedure is then outlined, and finally the development of the SEC's proposed Rule 15c2-10 is described. The nature of a "national securities association" is not described in detail, as institutions seeking such registration are required to undertake duties which are similar to those placed on registered exchanges.²²

A. Exchanges

An "exchange" is defined to be:

any organization, association, or group of persons, whether incorporated or unincorporated, which constitutes, maintains, or provides a market place or facilities for bringing together purchasers and sellers of securities or for otherwise performing with respect to securities the functions commonly performed by a stock exchange as that term is generally understood, and includes the market place and the market facilities maintained by such exchange.²³

In order to implement this definition, the SEC has provided a key interpretation of it as follows:

What distinguishes an exchange from brokers, dealers and other statutorily defined entities is its fundamental characteristic of centralizing trading and providing purchasers and sellers, by its design, (whether through trading rules, operational procedures or business incentives), buy and sell quotations on a regular or continuous basis so that those purchasers and sellers have a reasonable expectation that they can regularly execute their orders at those price quotations. The means employed may be varied, ranging from a physical floor or trading system (where orders can be centralized and executed) to other means of intermediation (such as a formal market making system or systemic procedures such as a consolidated limit order book or regular single price auction).²⁴

All exchanges are classified as SROs, and registration as an exchange brings with it a host of duties.²⁵ In particular, a registered exchange must enforce compliance by its members with federal laws and with its own rules. It must allow broker-dealers to become members, and it must assure them fair representation in the selection of its directors and in the administration of its affairs. One or more of its directors must be representative of issuers and investors. Its rules must be designed to prevent fraudulent and manipulative acts and practices, to promote just and equitable principles of trade, to foster cooperation and coordination with persons engaged in regulating, clearing, settling, processing information with respect to, and facilitating transactions in securities. Copies of all rule changes, including development plans for automated systems, must be filed for public comment and regulatory approval. An exchange must also show that it has formal capacity, security, and contingency plans.²⁶

Registered exchanges are required to participate in the National Market System (NMS). Most importantly, this mandates that all registered exchanges publicly disseminate data about the quotes submitted to, and trades executed on, their trading systems.²⁷ In order to effect such dissemination, exchanges must join the Consolidated Quotation System (CQS) and

the Consolidated Tape Association (CTA).²⁸ All registered exchanges are obliged to participate in the Intermarket Trading System (ITS), a facility which allows orders to be routed between participating exchanges, in a manner dependent on the quotes obtaining on the participating exchanges.²⁹

An exchange is not allowed to seek exemption from any regulatory burden on behalf of any automated trading systems that it operates. This follows from the classification of an automated trading system associated with an exchange as a "facility" of the exchange. Such a "facility" is defined to include the exchange's:

premises, tangible or intangible property whether on the premises or not, any right to the use of such premises or property or any service thereof for the purpose of effecting or reporting a transaction on an exchange (including, among other things, any system of communication to or from the exchange, by ticker or otherwise, maintained by or with the consent of the exchange), and any right of the exchange to the use of any property or service.³⁰

Exemption from exchange registration may be granted, if:

by reason of the limited volume of transactions effected on [the] exchange, it is not practicable and not necessary or appropriate in the public interest or for the protection of investors to require ... registration.³¹

The statute does not allow exchanges to be exempt from parts of the Act: it is an all-or-nothing provision. When granting an exemption, the SEC may impose certain conditions on an institution. The SEC exempted seven exchanges from 1935 to 1936, but since then the only other exemption granted has been to the AZX in 1991.³² The AZX is an automated trading system which allows institutional and broker/dealer participants to trade US stocks directly with each other in a single price auction.³³ The SEC imposed relatively few requirements on the AZX as conditions for the exemption, the main ones being that the various corporate components of the AZX and the shares traded on the system remain adequately registered, that sufficient trading data be made available to the SEC, that appropriate surveillance by the AZX of its employees and participants be undertaken, and that adequate capacity, security and contingency plans be maintained on a continuous basis.

B. Brokers and Dealers

A "broker" is defined to be:

any person engaged in the business of effecting transactions in securities for the account of others, but does not include a bank.³⁴

A "dealer" is defined to be:

any person engaged in the business of buying and selling securities for his own account, through a broker or otherwise, but does not include a bank, or any person insofar as he buys or sells securities for his own account, either individually or in some fiduciary capacity, but not as a part of a regular business.³⁵

All brokers and dealers must become members of an SRO, by whom they are supervised. The duties of registered brokers and dealers are different from, and more limited than, those of exchanges, whether or not they operate a trading system. The chief aim of the SEC's regulation of broker-dealers is to protect their customers. Broker-dealers are not required to enforce the securities laws and have no members. A trading system operating as a broker-dealer is typically not obliged to undertake real-time market surveillance, or show that it has adequate capacity, security, and contingency plans. The broker-dealer regulatory framework makes no stipulations concerning system access criteria, terms of trade execution, or the dissemination of prices and quotes, and brokers-dealers are not required to further the statutory goals of the NMS.³⁶

C. "No-Action" Procedure

In order to provide legal comfort for an institution concerned about its regulatory status, the SEC has developed a procedure whereby such an institution may request a "no-action" position from the SEC staff. The company requiring the relief submits a letter to the SEC describing its nature and manner of operations, and outlining why it believes it need not register under one or more of the Act's statutory classifications. SEC staff may then decide not to recommend enforcement action against the company if it operates without registering under the relevant portion of the Act. The SEC staff frequently impose conditions on the company before confirming the no-action position, including, for example, that it provide quarterly operational data and notice of any material changes to its system to the SEC.³⁷ There is no public notice and comment period in the no-action process, and no-action letters are not subject to judicial review. One of the institutions which has been granted a no-action letter is Instinet, which is registered as a broker, and was allowed not to register as a securities exchange.³⁸

D. Rule 15c2-10

The SEC has twice proposed the introduction of Rule 15c2-10, the intent of which was effectively to create a new non-statutory classification for the regulation of "proprietary trading systems", somewhere between the statutory ones of an exchange and a broker-dealer. The rule, first proposed in 1969 following the establishment of Instinet, was not adopted after its

introduction. The SEC determined that Instinet did not share certain characteristics of a registered exchange, and therefore that it did not fit into the statutory scheme established for exchanges and their regulation, even though it did perform the function of an exchange with respect to trading activity. The proposed rule was, however, withdrawn following the 1975 amendments to the Securities Exchange Act (SEA).³⁹ If an SRO operated a trading system, it was to be regulated as a facility of an exchange or national securities association; if not, it was to be regulated as a broker-dealer.

Various factors lead the SEC to re-propose the introduction of a modified form of Rule 15c2-10 in 1989. These included the SEC's experience in overseeing PTSs and some practice in applying the "exchange" definition to automated PTSs; objections to the no-action approach from the registered exchanges, primarily concerning unfair competitive advantages which PTSs were supposedly obtaining; the growth in the number of, and the types of securities traded on, automated PTSs; and advances in systems innovation and complexity arising as a result of technological developments. On re-proposing the rule, the SEC re-emphasized its belief that proprietary trading systems did not fit into the statutory classification of an exchange, and that subjecting such trading systems to exchange registration would deter innovation in trading system structure.

The proposed Rule did not contain a definition of the term "proprietary", but did define a trading system to be:

any system providing for the dissemination outside the sponsor and its affiliates of indications of interest, quotations, or orders to purchase or sell securities, and providing procedures for executing or settling transactions in such securities.⁴⁰

The sponsors of such trading systems were to be required to provide full information about the operation of their systems to the SEC, to maintain a full audit trail of trades for five years, and to enforce compliance by their participants with the securities laws. Amongst the issues the SEC was concerned about were the capacity of, and access to, such systems. Three exceptions to the Rule were proposed. In particular, it was not to apply to systems that were operated by broker-dealers solely for their own use or for the use of their own retail customers; to certain systems operated by brokers' brokers for non-equity (primarily government and municipal) securities; and to trading and information facilities operated by registered exchanges.

Subsequent to the request for comments on the revised rule, renewed concern about the regulation of PTSs surfaced.⁴¹ Amongst the issues under debate were the allocation of

regulatory costs between exchanges and competing systems, access to the trading facilities and price and quote data provided by PTSs, the integrity of PTSs, inter-jurisdictional issues, and the possibility of increased fragmentation and disintermediation. As part of a major assessment of the regulatory regime governing the US securities markets in its "Market 2000" study, the SEC then asked for public comment on the merits of the "exchange" definition and on the viability of maintaining the exchange/broker distinction.⁴² Following the release of this study, the SEC then withdrew the proposed rule in February, 1994.⁴³ In its place, it imposed some recordkeeping and reporting requirements for trading systems designated Broker-Dealer Trading Systems (BDTSs).⁴⁴ Three reasons were given for the withdrawal of the proposed Rule 15c2-10: five years had lapsed since its (second) publication; subsequent developments suggested that it might not be "appropriate" any more; and the new requirement that certain information about trading systems be reported to the Commission obviated part of the need for the rule.

IV. The Meaning of Exchange

An assessment of what the concept of an exchange signifies in America is complex for at least five reasons. First, the statutory definition is both broad and ambiguous. This was highlighted in a recent judgment, concerning whether the "Delta" government options trading system was an exchange or not, when the Court confirmed that the wording of the definition was not "crystal clear".⁴⁵

Second, constraints on the types of trading systems which may be designated exchanges arise not only from the statutory definition, but also from the duties that are imposed on institutions which satisfy the definition and register with the SEC. If a trading system were to fall within the statutory definition but not be able or willing to fulfill the duties that would be placed on it as a result of being registered as an exchange, the SEC would not allow the institution to register as an exchange.

Third, the ambiguity in the definition has meant that in order to decide whether a particular trading system should be registered as an exchange, the SEC has sought to determine whether exchange registration would further the purposes of the SEA. There are, however, substantial difficulties in doing so. The Act mandates the pursuit of many goals, some of which clash. Also, a determination of the most appropriate way to interpret the definitions laid out in the Act in order to help realise the statutory goals, is controversial.

Fourth, the SEC's policy concerning the registration of automated trading systems has responded to developments in the markets, and has evolved on a case by case basis. No formal

specification of either necessary or sufficient conditions for deciding what is or what is not an exchange has ever been developed. Rather a basket of requirements has emerged over time, the importance of each of which is somewhat imprecise. The SEC has indeed stated that no sponsor of a trading system:

can avoid exchange registration simply by omitting particular characteristics of traditional exchange markets such as affirmative market making obligations or a limit order book. Instead, exchange registration will depend on an analysis of all the facts and circumstances relating to a particular system or marketplace.⁴⁶

Finally, the legislative history of the SEA indicates that the SEC should have considerable leeway in interpreting what organizations should be classified as exchanges. In 1934 Congress noted that:

so delicate a mechanism as the modern stock exchange cannot be regulated efficiently under a rigid statutory program. Unless considerable latitude is allowed for administrative discretion, it is impossible to avoid, on the one hand, unworkable "strait-jacket" regulation and, on the other, loopholes which may be penetrated by slight variations in the method of doing business.⁴⁷

A recent series of judicial decisions have confirmed the SEC's flexibility by inviting it to re-interpret the definition over time,⁴⁸ and by deferring to its interpretation of what the term should mean.⁴⁹

Notwithstanding these difficulties, this section attempts to identify the criteria by which the SEC has determined whether a trading system satisfies the statutory definition of an "exchange". Where exact specification of the criteria proves difficult, the various options which the SEC might be using are discussed. Four sets of criteria used by the SEC are analysed, concerning respectively: centralization; two-sided quotes, liquidity and volume; trade execution and price discovery; and finally, access, management, and ownership.

A. Centralization

The first of the two elements of the SEC's key "exchange" interpretation relates to "centralization". The SEC's use of the concept of "centralization" is, however, not clear. Answers to any combination of the following five questions might be material in determining whether a trading system is centralized or not:

Do all orders compete against each other on a particular trading system? The SEC's decisions concerning Delta and the AZX support this version of what "centralization" means. The Delta system was not required to register as an exchange, partially because it was possible on Delta for participants to trade directly with each other without exposing their

orders to competition from the orders of other participants. Conversely, the fact that all orders on the AZX were funnelled through one order execution mechanism, was an indication that the AZX was deemed an exchange. Use of the criterion that all orders should compete against each other on a particular trading system to determine that the system is an exchange, may imply that dealer markets are not exchanges. Typically in such markets, although the bids and offers of all the dealers do compete against each other, the orders submitted by investors to these dealers do not. Thus, a sell order from one investor may go to one dealer and be executed while that from another investor, with a lower offer price attached to it, may go simultaneously to another dealer and not be executed.

Does price priority obtain on the system? Price priority holds when the order in which the bids and offers in a market are executed is dependent on the prices at which they are set. Higher bids and lower offers are therefore executed before lower bids and higher offers respectively. Although most trading systems employ price priority in their order execution algorithm, there are systems, such as Instinet, which do not. To date, all trading systems regulated as exchanges in the USA do exhibit price priority.

Are participants required to deal on the system if they deal in the assets traded on the system? Only a trading system with a monopoly in the trading of a particular set of assets can fulfil this requirement of centralization. No exchange in the USA has a legal monopoly for the trading in any stock.

Does most of the trading undertaken in the assets traded on the system take place on the system? The fact that the major part of the trading in the stocks dealt on the regional exchanges is executed on the NYSE, means that this criterion cannot be what "centralization" means.

Need a trading system have a physical location or floor to allow transactions to be negotiated? Both in its key interpretation, and in several of its decisions, the SEC has maintained that the lack of a trading floor does not obstruct the classification of a trading system as an exchange. This is evident in its statement that a trading system may employ "varied means" to deliver centralization, and in its recognition of the CSE and the AZX as exchanges. One court has, however, suggested that the lack of a trading floor was an indication that a trading system was not what was generally understood to be a stock exchange.⁵⁰ The SEC has also not required a trading system to have negotiation facilities for it to be classified as an exchange: the AZX does not allow traders to negotiate with each other. One court has again, however, determined that an exchange is in part defined as a place to negotiate transactions.⁵¹

B. Two-Sided Quotes, Liquidity and Volume

The second part of the SEC's "exchange" interpretation was that in order to be classified as an exchange, a trading system must, by its design, provide two-sided quotes on a regular or continuous basis so that buyers and sellers had a reasonable expectation that they could regularly execute their orders at those quotes. There are several significant implications of this requirement.

Despite stating that the "means employed [to deliver two-sided quotes] may be varied", the SEC has closely identified the provision of two-sided quotes with the mandated participation in a market of some form of financial intermediary, be it a specialist, a market maker, or a dealer.⁵² The SEC expressly noted, for example, that one reason why the Delta system should not be classified as an exchange was that there was:

no formal requirement or expectation that System participants will undertake to maintain a fair and orderly market in the options they trade, by providing both the bid and offer side of a given market irrespective of their actual buying or selling interest.

In the case of the AZX, in contrast, the Commission relaxed the requirements both that two-sided quotes be provided, and that some form of financial intermediation be present.

The SEC's use of the phrase "by its design" implies that if a trading system attempts to mandate two-sided quotes so that buyers and sellers have a reasonable expectation that they can regularly execute their orders at those quotes but fails, it should be classified as an exchange; conversely, if a trading system succeeds in having such two-sided quotes, but does not do so *by design*, then it need not be classified as an exchange. The SEC has, however, indicated in several contexts that it believes the second scenario is impossible, arguing that in order for a trading system to deliver continuous two-sided quotes, the system would have to do so by design.⁵³

A further component of the interpretation is that two-sided quotes be provided "on a regular or continuous basis". The SEC found that Delta, a system which exhibited a low percentage of two-sided quotes relative to the overall number of buy and sell quotes, and on which prices and quotes were only displayed episodically, should not be classified as an exchange.⁵⁴ The Commission did, however, also relax the requirement that two-sided quotes be provided on a continuous basis in the case of the AZX, which operates a batch auction only a few times a day.

Although not mentioned in its key interpretation, the SEC has closely linked the "two-sided quotes" provision with the production of liquidity in a market, stating that:

"Liquidity" goes to the participant's expectation that it can readily, if not immediately, execute its order due to the presence of regular or continuous two-sided quotations (bids and asks).⁵⁵

Other characteristics of a market have also been associated with liquidity by the SEC, including "immediacy", "depth", and "continuity".⁵⁶ "Immediacy" implies that there will always be a price in the market at which an order can be executed immediately; "depth" is a measure of the volumes which may be executed at quoted prices; and "continuity" is taken to mean that a series of consecutive separate transactions will involve minimum deviations in price. No formal tests of whether trading systems deliver immediacy, depth or continuity have, however, been applied by the SEC. Furthermore, the markets on several of the registered exchanges, and also the AZX, do not exhibit these characteristics.

The SEC has expressly avoided equating liquidity with trading volume, stating that the two are not equivalent. It has claimed, for example, that,

it is not difficult to envision a trading system that provides a centralized, liquid marketplace to its participants for the particular securities traded on the system, but, due either to limitations on the class of individuals that may participate or to the subset of securities that may be traded on the system, has a limited overall volume of trading and a de minimis impact on the securities market as a whole.⁵⁷

As noted in the dissenting opinion in the Delta case, the presence of the "limited volume" exemption in the statute, implies that volume cannot be a determinant of exchange classification. If it were, it would not be possible to apply the limited volume exemption, given that low volume trading systems would by definition not be classified as exchanges.⁵⁸

The statute provides no standard as to what level of volume on a trading system would justify an exemption from exchange registration. A guideline used in the AZX ruling was the volume executed on the smallest of the registered national exchanges at the time.⁵⁹ Other yardsticks have also been proposed by the SEC, including: the dollar volume or number of transactions executed through a trading system expressed as a percentage of all trading done in the market of which that particular system is a part; the number and characteristics of participants or subscribers permitted to trade in the system; and the characteristics of the instruments traded, or transactions allowed, on the system.⁶⁰

C. Trade Execution and Price Discovery

A system which does not provide trade execution does not satisfy the statutory definition of an exchange. Execution facilities, automated or otherwise, are not, however,

sufficient to require that a trading system register as an exchange. A range of execution systems have been regulated as broker-dealers under the no-action approach.⁶¹

To date almost all passive pricing trade execution mechanisms have been classified as broker-dealers rather than exchanges.⁶² Although the concept of a PTS no longer has any formal bearing on how the SEC regulates trading systems, a lack of price discovery was put forward as a factor distinguishing PTSs from exchanges.⁶³

The fact that a trading system does engage in price discovery is, however, not determinative that the system should be classified as an exchange. Many of the trading systems regulated as broker-dealers do engage in price discovery. On the other hand, the SEC did state that the AZX should be an exchange, in part because its automated procedures set an equilibrium price for securities, and therefore that its facilities were "designed to create a liquid market where buyers and sellers have a reasonable expectation that they can regularly execute orders".⁶⁴

D. Access, Ownership and Management

The issue of whether the SEA prohibits a registered exchange from granting direct trading access to participants who are not broker-dealers is controversial.⁶⁵ The statutory "exchange" definition contains no such requirement. The history of the Act and the standard reading of its provisions imply, however, that a registered exchange is not permitted to grant market participants other than brokers or dealers, such as investors, direct access to its trading systems. This was confirmed in the Delta judgment, where the court stated that:

the statute requires that an exchange be controlled by its participants, who must in turn be registered brokers or individuals associated with such brokers.⁶⁶

Formally, the Act requires that:

a national securities exchange shall deny membership to (A) any person, other than a natural person, which is not a registered broker or dealer or (B) any natural person who is not, or is not associated with, a registered broker or dealer.⁶⁷

A member is defined as:

(i) any natural person permitted to effect transactions on the floor of the exchange without the services of another person acting as broker, (ii) any registered broker or dealer with which such a natural person is associated, (iii) any registered broker or dealer permitted to designate as a representative such a natural person, and (iv) any other registered broker or dealer which agrees to be regulated by such exchange and with respect to which the exchange

undertakes to enforce compliance with the provisions of this title [i.e. the Act], the rules and regulations thereunder, and its own rules. For purposes of sections ... of this title, the term "member" when used with respect to a national securities exchange also means, to the extent of the rules of the exchange specified by the Commission, any person required by the Commission to comply with such rules pursuant to section 6(f) of this title.⁶⁸

Section 6(f)(1) of Act states, however, that:

The Commission ... may require - (1) any person not a member or a designated representative of a member of a national securities exchange effecting transactions on such exchange without the services of another person acting as a broker, ... to comply with such rules of such exchange as the Commission may specify.⁶⁹

This implies that the possibility that exchanges might sanction direct institutional participation was accepted by Congress when formulating the Act. To date, all registered exchanges have only allowed broker-dealers to be members. While it is true that the AZX does grant direct access to institutional participants and was deemed by the SEC to satisfy the "exchange" definition, the AZX has not yet had to register as such with the SEC as a result of its limited volume exemption.

The Act contains no statement concerning the implications of differential access between institutional and retail market participants to a trading system. In the Delta ruling, however, the SEC suggested that because Delta did not give access to retail traders, it was not performing a function commonly performed by exchanges.⁷⁰

The Act mandates that a registered exchange provide for the fair representation of its members in its directors and administration.⁷¹ To date all registered exchanges have granted such representation. The AZX has not, however, granted such representation to the traders who participate on its system. The statute has no requirement that a registered exchange be owned either by its members or by any other types of market participant. All the registered exchanges are owned by their members; the AZX, in contrast, is not owned by the market participants who trade on it.

E. Summary

Despite the difficulties inherent in attempting to ascertain how the SEC determines whether a trading system should be classified as an exchange, it is nevertheless possible to identify the main criteria which the SEC has employed. In particular, to be classified an exchange, a trading system must normally: i) provide trade execution facilities; ii) engage in price discovery; iii) centralize trading, which seems to imply that all orders on the trading system should compete with each other; and iv) ensure, by design, the entry of buy and sell

quotations on a regular basis, such that both buyers and sellers have a reasonable expectation that they can regularly execute their orders at those quotes. In most circumstances, this seems to imply the participation of some form of financial intermediation, although a single price auction market without such intermediation has been classified an exchange.

The SEA also contains many criteria which a trading system, once classified as an exchange, must satisfy in order to be registered as an exchange. Four of the most important of these are that the trading system: v) have members who are only broker-dealers; vi) provide fair representation in its management to these members; vii) publicly disseminate price and quote information; and viii) ensure that its members comply with the securities laws, and act as a competent SRO.

V. The Non-Viability of the Exchange/Broker Distinction

The statutory distinction between exchanges and brokers has operated for over sixty years in the USA, and underpins the entire fabric of the regulatory structure governing the American securities markets. The aim of this section is nevertheless to suggest that the distinction is no longer viable in the face of the development of automated trading systems. Two linked tests of viability are used: the first is whether the distinction is leading to unacceptable deficiencies in the SEC's regulatory approach, and the second is whether it is furthering the goals of regulating the securities markets. Five flaws arising from the existence of the exchange/broker distinction are identified. They are discussed respectively under the headings of ambiguity, re-classification, competition, self-regulation and governance, and incoherence.

A. Ambiguity

All statutory language is ambiguous, and it is precisely to resolve such ambiguity that regulatory and judicial institutions are mandated to exist. Nevertheless, the confluence of developments in technology together with the opacity of both the statutory definition of an "exchange" and of the SEC's key "exchange" interpretation, mean that the definition is no longer useful for determining whether a particular institution should be classified as an exchange or not. Indeed, as the Court of Appeals has noted, "Developments in automation and communications are bound to produce more...hard-to-classify entities."⁷²

Many elements of the "exchange" definition are confusing. The SEC itself has noted that an expansive reading of the statute would capture most PTSs, brokers, block trading desks and even quotation vendors.⁷³ This may be seen by considering the phrase "facilities for bringing together purchasers and sellers of securities", which could apply to institutions

traditionally categorised either as exchanges or as brokers. The argument that an expansive reading of the definition would be inappropriate given the existence of other relevant statutory categories, such as brokers and dealers, does not help clarify how the definition should be interpreted. It merely highlights that the interpretative puzzle requires a resolution of the definitions of these categories, which are also very broad, as well as that of an "exchange".

Several problems arise as a result of the phrase "a market place or facilities ... for otherwise performing with respect to securities the functions commonly performed by a stock exchange as that term is generally understood". The self-referential inclusion of the term "stock exchange" makes the definition circular, and thus potentially meaningless. Identification of the functions which have been "commonly performed by a stock exchange" is also not an easy process. Many functions have traditionally been undertaken by exchanges, and it is not self-evident which should be the criteria to determine whether an institution is an exchange or not. Furthermore, a prime consequence of the advance of cheap automation has been that many of the functions traditionally undertaken by exchanges are being disaggregated, and performed by new and separate institutions.⁷⁴ A historical analysis of what are the "commonly performed" functions is therefore unlikely to be useful in assessing whether present automated trading systems should be classified as exchanges, precisely because many of them have non-traditional institutional structures. A historical analysis may also imply that institutions which were once classified as exchanges should no longer be so categorized, as they shed some of their traditional activities.

Use of the phrase "as is generally understood" adds to the confusion. If the phrase is placed in a historical context, it may be interpreted as referring only to auction markets. They were the standard type of exchange operating when the statute was created, and a separate statutory category was specifically created for an association of dealers.⁷⁵ In contrast, however, it is obvious but important to note that there is now no generally accepted understanding about what the various aspects of the definition mean. It is also debatable whether the "as is generally understood" phrase should be interpreted as modifying solely the "commonly performed functions" language, or should also modify the "bringing together" language.⁷⁶

The judgment that the SEC's exchange "interpretation" should triumph in the Delta case did not clarify the ambiguities in the statutory definition. The essence of the ruling was that as the definition was ambiguous, the SEC's interpretation should prevail, given that it was the agency specifically created by government for the purpose of regulating the securities markets and adjudicating such ambiguities. The merits of the SEC's interpretation *per se*, as

opposed to the SEC's power to make and enforce the interpretation, were therefore adjudged of secondary importance.

B. Re-Classification

There are two ways in which the issue of re-classifying automated trading systems may expose flaws in the current regulatory regime. The first may arise if the AZX, currently the only exempted exchange, captures an amount of business equal to that obtained by the smallest of the registered exchanges. Whatever the likelihood of such an event, the SEC has said that if this did occur, it would revisit the issue of whether the AZX should be required to register as an exchange. If AZX were obliged to register as an exchange, it would become subject to the full panoply of exchange regulation, and in particular would be required to admit only brokers as members, and to provide them fair representation on its board. The intention of the AZX, however, is precisely to avoid the need for financial intermediation. The requirements that it grant only brokers access to its trading system and that it ensure that they are represented on its board, when its goal is their elimination, would therefore be perverse.

It may be possible for the SEC to interpret the Act in a creative manner such that the AZX would not be required to implement the "access" and "fair representation" obligations. For example, when the SEA defines the membership of an exchange, it does so with reference to the trading floor of an exchange. In particular, a "member" of an exchange is specified as "any natural person permitted to effect transactions on the floor of the exchange without the services of another person acting as broker".⁷⁷ Although far outside the standard interpretation of the Act, it might therefore be feasible for the SEC to register the AZX as an exchange, while at the same time not requiring that it have any members, because it does not have a trading floor. Given that the AZX would have no members, it would not need to offer such members fair representation on its board.

While this approach would have the merit of allowing the AZX to function without undue interference, it would have the cost of undermining the standard interpretation of the SEA. It would reduce the value of the "exchange" definition as a filter for assessing how different types of automated trading systems should be regulated. It might also lead market participants to question other aspects of the SEC's traditional interpretation of the Act. If such a principal statutory component as the set of membership criteria is not sacrosanct, what else could be open to re-interpretation by the SEC?

The second manner in which re-classification might pose problems concerns the possibility that a system classified as a broker might need to be re-classified as an exchange in order to further the goals of the SEA. The Commission has noted on several occasions the possibility that this might occur.⁷⁸ The problem is that, given the current regulatory position, the SEC is unlikely to have any useful criteria by which to determine whether and when a broker-dealer operated trading system should be re-classified as an exchange.

Consider the situation in which a system that does not mandate the provision of two-sided quotes and is not centralized, as per the SEC's key interpretation, starts capturing a significant amount of trading volume. The SEC would not then be able to use the statutory definition or its key interpretation to insist on classification of the system as an exchange. It would also not be able to employ the amount of trading executed on the system as a criterion for determining that the system should be re-classified, because of the existence of the low volume exemption.

This issue is not one merely of hypothetical concern. The Chief Executive Officer of the National Association of Securities Dealers (NASD) has reported that Instinet has captured 13% of the volume of the number of Nasdaq (NASD Automated Quotation system) shares traded.⁷⁹ Although Instinet has made some marginal modifications to the rules for dealing on its system since its inception, these could not be regarded as constituting sufficient change to warrant re-interpretation by the SEC that its rules now ensured the creation of two-sided quotes or centralization by design, whereas before they did not. Theoretically, therefore, even if Instinet were to capture all the trading away from Nasdaq, the SEC would still have no statutory basis to re-classify it as an exchange.

C. Competition

The SEC has argued that the "level of regulation [of a trading system] should be tailored to the functions being performed by an entity and the corollary need for regulation",⁸⁰ and its Division of Market Regulation has stated that "the regulatory responsibilities of the primary markets versus their competitors should be examined to determine if the responsibilities are commensurate with the functions the various markets perform".⁸¹ The Division also claimed that "in many respects PTSs do not perform the same functions as SROs and do not need a commensurate level of regulation".⁸² The statutory distinction between exchanges and brokers has nevertheless meant that some automated trading systems which are functionally similar have had different regulatory obligations imposed on them as a result of obtaining differing statutory classifications. These disparities give a competitive advantage to systems regulated

as brokers over those regulated as exchanges, independent of any operational or functional aspects of the systems themselves. An example of such a regulatory disparity is apparent in a comparison of SelectNet and Instinet.

SelectNet is an automated trading system operated by the NASD, on which brokers and dealers can input bids and offers in specified securities and then disseminate these quotes to pre-specified counter-parties.⁸³ An order may be broadcast to one selected market maker, to all market makers registered in the stock, or to all subscribers to the system. Electronic negotiation between counter-parties is also possible. SelectNet is functionally similar to Instinet bar two key differences: only NASD members, and not investing institutions, are allowed to trade on SelectNet, and traders are identified on SelectNet, unlike on Instinet, where they are anonymous. Prior to the publication of the SEC's "Market 2000" report, data about the prices and quotes on SelectNet were available only to the members of the NASD.

The fact that SelectNet is a facility of the NASD means that it is subject to the dictates of the NMS. In this context, the Division of Market Regulation has noted its concern over "the limited availability of information regarding SelectNet orders".⁸⁴ Given that market makers frequently use SelectNet to broadcast information about bids and offers between the best bid and offer prices quoted on the CQS, and given that they can restrict who can receive such information, the Division argued that the best trading interest in Nasdaq stocks might not be visible to the whole of the market. It therefore recommended that the NASD examine how it could improve access to the SelectNet information, perhaps by ensuring that there was no discrimination as to who could receive it.

In making this recommendation the Division did recognize that there might be disadvantages to full quote dissemination, noting that the "public display of some SelectNet trading interest may not be consistent with the nature of that interest", and that "the mandatory systemwide display of all SelectNet orders could discourage the use of SelectNet for larger orders". The Division accepted that if an investor knew that information about any large order it gave to a broker would immediately be disseminated around the market, it might not be willing to submit such orders. This was viewed, however, as "a factor for the NASD to consider in determining how best to increase disclosure of SelectNet orders".

In contrast to the concern shown over SelectNet, however, the SEC has been much less worried about the fact that trading interest shown on Instinet is not visible to the whole of the market, but solely to subscribers to Instinet facilities. The SEC has proposed a rule which would require all market makers' quotes submitted to an "electronic communications network" to be published on the CQS.⁸⁵ If implemented, this would still, however, imply that all

orders shown on Instinet that were not submitted by market makers would not need to be published.

A further competitive disadvantage that exchanges are burdened with in comparison with non-exchange-regulated trading systems, is that they are subject to a lengthy rule filing process, requiring public comment on any rule changes they proposed, while broker-regulated trading systems are not. Some exchanges have claimed that this process hampers their efforts to provide prompt, flexible and innovative order-entry and trading services to their members and the investing public. They point out that broker-regulated trading systems may add new services or procedures to their systems instantaneously without SEC approval. The exchanges believe that either such systems should be subject to the same review process as they are, or that they should be relieved from the review requirement for their system changes. The NYSE further recommends that only rule filings that present genuine investor protection concerns should be subject to the review process.⁸⁶ The Division of Market Regulation has responded to these concerns by noting that "in many respects PTSs do not perform the same functions as SROs and do not need a commensurate level of regulation". The nature of these functional differences have not, however, been specified.

D. Self-Regulation and Governance

Self-regulation plays a central role in the regulatory structure for the securities markets. The nature of, and justification for, this role is briefly described in this section, and then a problem concerning the governance of automated trading systems which arises as a result of the duties imposed on SROs, is discussed. The description of self-regulation presented here provides a background to the analysis presented below on the merits of various alternative strategies for regulating automated trading systems.

Nature and Justification

The question of whether market participants should be required to regulate their own markets has long been debated.⁸⁷ Since self-regulation was first employed, both Congress and the SEC have recognised that there are tensions inherent in it. SROs are, simultaneously, "quasi-governmental bodies implementing the federal securities laws as well as their own rules", "membership organizations" that "represent the economic interests of their members", and also "marketplaces concerned with preserving and enhancing their competitive positions".⁸⁸ The most important conflict which has been thought to arise from the multi-functional roles of SROs, is that as membership organizations they may regulate the markets they operate to their own advantage, and thereby prejudice the delivery of the public interest.⁸⁹

Sometimes this may lead to anti-competitive situations.⁹⁰ The suggestion that this conflict of interest should be addressed by divorcing the regulation of a market from its commercial operations, has, however, been considered and rejected several times, both by Congress and the SEC.

Three other difficulties in the operation of SROs have also been viewed as significant. The first is that all markets are composed of heterogeneous groups of traders, and that self-regulation may not be good at resolving conflicts between them. As noted by the Justice Department:

Self-regulatory organizations would not appear to be the most appropriate bodies to engage in regulation which affects vital economic interests of (i) their own members vis-à-vis non-members with whom they deal, or (ii) a majority of their members vis-à-vis a minority. Self-regulation can be a useful supplement to government regulation in disciplining members for fraud and dishonest commercial activities since in such cases the interests of almost all of the members are likely to be coincident with the public interest. That coincidence of interest, however, is not likely to exist with respect to situations involving economic conflicts between members or with non-members.⁹¹

The second problem is that an SRO may be required to supervise traders who have no interest in the commercial markets which the SRO itself operates. Conflicts of interest, this time between participants on the SRO-sponsored market and non-participants, are again not easily resolved by a self-regulatory process. The most important instance of this is at the NASD. There are many broker-dealers, who are required to register with the NASD, but who do not trade on Nasdaq, the market operated by the NASD. A further difficulty with self-regulation is that if there are several SROs, their independent market surveillance and enforcement activities may duplicate each other, and thereby force market participants to incur unnecessary costs.

There are a range of arguments in favour of self-regulation. The presence of market practitioners as "self-regulators" may enhance the knowledge and experience of the regulatory authorities. Rules imposed by industry peers may carry more legitimacy than those imposed by an external regulator. Market participants may have a more direct and stronger interest in maintaining the integrity of the markets on which they trade, than that of any bureaucrat. It may be difficult for governments to pay the same wages, or attract the same calibre of people, as private regulators are able to do. The alternatives to self-regulation, for example those of direct regulatory intervention, or of a further institutional layer of regulation between the SEC and the SROs, may not be cost-effective. Only self-regulation may be able to monitor effectively

many types of conduct and activity which lie beyond the reach of the law.⁹² Finally, as stated by a Senate Subcommittee:

One of the advantages of self-regulation is the flexibility and informality of its decision-making procedures.

In this context, the Subcommittee noted that:

Further, self-regulatory agencies differ as to their membership, regulatory responsibilities and economic power. It would therefore be difficult to prescribe a single "proper" decision-making procedure appropriate to the circumstances of every self-regulatory agency, and it is doubtful that any such formal procedure would better serve the goal of effective securities regulation [than] the present practice of encouraging each agency to develop procedures which best serve its needs and those of public investors. ... The Subcommittee encourages the self-regulatory agencies to continue their healthy experimentation with regard to decision-making processes, keeping in mind at all times that they are quasi-public agencies, not private clubs, and that their goal is the prevention of inequitable and unfair practices and the advancement of the public interest.⁹³

Despite accepting this freedom to experiment, both the SEC and Congress have argued that the conflicts of interest that inevitably exist in an SRO require that there be due regulatory oversight of SRO practices, and in particular of their governance structures. Two central principles have guided Congress' and the SEC's supervision of SRO governance. The first is that there should be meaningful public representation on SRO Boards and other governance bodies.⁹⁴ Such representation is thought to provide a counter-weight to the inevitable promotion of members' viewpoints on commercial and regulatory matters. The second is that SROs should provide their members with "fair representation" in their governance. Members may thereby ensure "that modifications or improvements in the way in which SROs function may be initiated from within".⁹⁵ A balanced representation of members' interests in the governance of an SRO is also believed to act as an effective barrier against the possibility that one segment of its membership may dominate the decisions the SRO takes.

The Problem with Automated Trading Systems

The difficulty that some automated trading systems pose for self-regulation is that they are not membership owned or operated institutions. The separation between the people who own and operate the market on the one hand, and the people who trade on and use the market on the other hand, means that the notion of self-regulation is no longer easily applicable. There is no single identifiable group of people who have the greater knowledge, experience,

and interest in maintaining the integrity of the markets that self-regulation is meant to promote. To require market users to regulate the activities of market managers, or vice versa, may bring the two groups into conflict in ways that would damage the public interest.

An important instance of this may arise as a result of the fair representation requirements imposed on exchanges. To impose constraints on the manner in which a trading system should be governed may undermine the very factor which leads to its efficiency and innovativeness. An exchange whose members are financial intermediaries, for example, is frequently loath to grant investors direct access to its trading systems. To do so might allow the financial intermediaries to be disintermediated, and thereby imperil the livelihood of the members whose very welfare the exchange exists to serve. A non-member-owned system, on the other hand, does not have to satisfy the needs of these financial intermediaries, and this may therefore allow it to deliver trading mechanisms that are preferable to investors than those that can be delivered by a membership exchange.

While the statutory membership and governance requirements, and the SEC's stress on the presence of some form of financial intermediation in its "exchange" interpretation, may lead to efficient market structures, there is no *a priori* reason that they should do so. The imposition of a specified form of governance and membership structure is likely to obstruct market developments. The SEC's approach to governance is risk-averse and standardized, characteristics which are unlikely to produce novel and successful market structures in a time of rapidly changing technology.⁹⁶

E. Incoherence

The SEC has recognized that there is a tension between developing a regulatory structure for automated trading systems, and encouraging the development of such systems.⁹⁷ It has also stressed that the determination of whether an automated trading system is an exchange is a judgmental, as opposed to a formulaic, process.⁹⁸ Neither of these observations, however, obviates the need for a consistent approach to the classification and regulation of automated trading systems. An inconsistent approach is likely to lead to at least three undesirable consequences: regulatory decisions may be reversed as a result of judicial review; their consequences are likely to be unknown, and potentially harmful; and arbitrariness in the regulatory process, and the concomitant uncertainty, is likely to discourage market participants from developing new systems. Yet the combination of the SEC's "exchange" interpretation and its various rulings contain a variety of apparent internal conflicts, lending an air of incoherence to the debate.

Consider first the logical status of the various elements of the SEC's "exchange" interpretation. Although only one fundamental "characteristic" of an exchange is specified, it is defined as being composed of two criteria, concerning respectively centralization and the provision of two-sided quotes. Use of the word "and" in the phrase the "fundamental characteristic of centralizing trading and providing purchasers and sellers ..." implies that both criteria must be satisfied for an institution to be classified an exchange.⁹⁹ In its decision that the AZX was an exchange, the SEC did not, however, require that both criteria be satisfied, given that the AZX did not provide two-sided quotes by design.

If the two criteria are together not necessary, the mere existence of the interpretation implies at a minimum that each criterion must by itself be sufficient, for a trading system to be classified an exchange. The SEC has not implemented this implication in the decisions it has taken. If it is accepted that the centralization criterion requires that all orders on a trading system compete against each other, the SEC's decision concerning Instinet is open to question. All quotes on the Instinet system are disclosed on the Instinet screen, but Instinet is not classified as an exchange.

Use of the phrase "by its design" in the "two-sided quotes" criterion is problematical. As noted above, the SEC has confirmed that it is concerned to regulate a trading system on the basis of the functions it undertakes. If so, it is irrelevant whether a system provides "purchasers and sellers buy and sell quotations ... on a regular or continuous basis so that those purchasers and sellers have a reasonable expectation that they can regularly execute their orders at those price quotations" *by design* or not. What matters is whether purchasers' and sellers' expectations are actually fulfilled or not.¹⁰⁰

The SEC's stress on liquidity as a determinant of exchange classification also conflicts with the presence of the statutory low volume exemption.¹⁰¹ Recognizing this problem, the SEC has claimed that it is quite possible to envisage a market which is liquid in the sense that two-sided quotes are provided by design, but which has a low trading volume. It is true that liquidity is a slippery concept, which may be assessed by reference to several, sometimes competing, yardsticks, including bid-ask spreads, immediacy, depth, continuity, and resiliency. Typically, however, improvements in all these measures, for example reductions in bid-ask spreads or increases in depth, show a strong correlation with increases in the volume traded on a market. Furthermore, the direction of causality between liquidity and volume is unclear. A liquid market, namely one with narrow bid-ask spreads and great depth is likely to attract a large amount of trading because of the low costs of dealing on the market. Conversely, a high volume market is likely to be one with low bid-ask spreads and great depth,

because there are many orders competing with each other to determine the best prices. The SEC's attempt to separate liquidity from volume considerations is therefore unsustainable.

Further inconsistencies arise as a result of the SEC's approach to the imposition of regulatory costs. The Division of Market Regulation has accepted that the primary markets provide benefits to the whole of the market as a result of their self-regulatory obligations, including the maintenance of the integrity of the markets at large, the assurance of fair and orderly markets, and the provision of price discovery.¹⁰² In addition, the Division has argued that the costs associated with these externalities are to a large extent offset by the revenues obtained by the primary markets - including membership fees, consolidated tape revenues, and listing fees - which are not available to other market centres. This view implies that if an institution classified as an exchange were to face reduced revenues as a result of competition by other non-exchange automated trading systems, the regulatory costs and burdens placed on the institution should be re-allocated to the other more successful trading systems.¹⁰³ Whatever the merits of such a regulatory approach, however, it is inconsistent with current statutory requirements, which do not allocate regulatory burdens and costs to different trading systems according to the amount of revenues they receive. On the contrary, the current statute imposes the major regulatory duties on trading systems institutions classified as exchanges.

The ambiguity of the exchange definition has exposed another flaw in the regulatory structure. The Division of Market Regulation has maintained that a broad reading of the definition would have the distorted effect of punishing efficiency. It has been argued that the more efficient and automated a broker-dealer's operations, the more likely it would be to bring together purchasers and sellers, and therefore, perversely, the more it would be likely to fall within the exchange category and be required to assume the corresponding regulatory burdens.¹⁰⁴ The implication is that a narrow reading of the statute should therefore be employed, so as not to punish any successful automation implemented by brokers. If appropriate for brokers, however, this argument is equally applicable to exchanges: the more automated an exchange becomes, the less the need for regulatory burdens to be placed on it. The problem is that this approach contradicts the statutory basis for regulating trading systems, which mandates an all-or-nothing imposition of regulatory burdens on institutions registered as exchanges.

VI. Alternative Regulatory Strategies

Given the difficulties with the exchange/broker distinction, an evaluation of the alternative approaches for classifying and regulating automated trading systems is important. Three are examined in this section. These are, respectively, "functional regulation," a modified "limited volume" approach, and a joint strategy composed of the separation of the regulation of market structure from that of other areas of concern, and the employment of competition policy to regulate market structure. The first two have been discussed previously in the literature, and we devote most of our attention to the third.¹⁰⁵

A. Functional Regulation

Almost all of the organizations which have examined the question of how to regulate automated trading systems have suggested that "functional" regulation may be the most appropriate method to employ.¹⁰⁶ The functional approach is to impose a level of regulation on a trading system that is dependent on the functions it undertakes. It is self-evident that some form of functional regulation must be employed in order to identify those activities that a regulator deems are of public concern. At a minimum in this context, for example, a regulator needs to those identify institutions which operate in the securities market, and of these it may need to select those which provide mechanisms for the execution of trades. Both these characteristics are of course functional attributes of the institutions in question.

The prime reason used to support functional regulation is that it is believed that what a trading system does, rather than what it is called, should determine how the system should be regulated. It is argued that functional regulation is able to deliver this objective, in contrast to institutional regulation. There are, however, reasons why the anticipated advantages of functional over institutional regulation may not materialize.

The distinction between functional and institutional regulation is blurred. Under an institutional approach, the definitions of the relevant institutions are typically written in terms of the functions they undertake. The American statutory definition of an exchange, for example, identifies exchanges by what they do. At least conceptually, therefore, it would be possible to create a different category of institution for each relevant set of functions undertaken by a trading system. The regulatory outcomes under both institutional and functional regimes would then be indistinguishable.

A second possible benefit of functional regulation is that it might be able to delineate precisely the distinction between brokers and exchanges, something that institutional regulation has failed to do. The ambiguities inherent in the institutional definitions of exchanges and brokers will not, however, be avoided by using a functional approach with

respect to trading systems. This is evident in the uncertainties which have arisen in the SEC's analysis of both the statutory exchange definition and the two criteria it developed in its exchange interpretation. Both the definition and the SEC's interpretation turn on the functions that exchanges are believed to undertake. Further, the belief that broker-operated trading systems and exchanges are functionally different is not tenable. Although the development of automated broker-operated trading systems has brought new awareness of the existence of competition between brokers and exchanges with respect to the provision of trading services, such competition has always been present. When brokers competed with exchanges in the past, however, such activity was merely called internalization of order flow.

Another promise of a functional approach is that it may provide a solution to the difficulties which have arisen in reaching agreement on the best way of regulating market structure.¹⁰⁷ It is sometimes implied that, because the determination of the functions which a trading system undertakes is essentially a technical activity, it may be possible to adopt a similarly neutral approach to the determination of the regulation relevant to each function. Agreement that a functional approach should be employed is nevertheless not sufficient to determine what regulation should be implemented. At a minimum, this requires a specification of the objectives that regulation of selected functions should aim to deliver and an implementation strategy. Neither are technical or neutral issues, and both present inherent difficulties.¹⁰⁸

B. Limited Volume

A second strategy for the classification and regulation of trading systems is to appropriate the "limited volume" approach specified in the SEA, and define a trading system to be an exchange as soon as it attracts a pre-specified minimum volume of trading. An expected advantage of this approach is that once the definition of what "limited volume" consists of has been specified, it is unambiguous which institutions will fall within the exemption and which not.¹⁰⁹ Furthermore, such an approach explicitly recognises the fact that the existence of a large amount of volume on a trading system is an important factor increasing public pressure for appropriate regulation to be put in place concerning the trading on the system.

The employment of such a definition would have several implications. It would tend to encourage start-up trading systems, but to penalise the success of a trading system. If a trading system attracted relatively large amounts of business, it would then be required to undertake more regulatory responsibilities, and this might constrain its future growth. This might lead to a proliferation of small exchanges. There would also be an incentive to hide the

amount of trading conducted on particular trading systems so as to avoid the need to register as an exchange. Finally, and most obviously, it would foster the development of small-volume trading systems which were more lightly regulated than the major centres. This could be seen as an unfair competitive advantage to such small systems, and also socially undesirable because investors would not be so well protected on them as elsewhere. Given the ingenuity of market participants, the anticipated clarity of a modified limited volume definition may also be frustrated.

C. Separation and Competition

The third regulatory strategy is composed of two prongs: the separation of the regulation of market structure from the regulation of other areas of public concern, and the employment of competition policy to regulate market structure. The nature of the approach and justifications for it, are discussed first of all. Various problems with, and implications of, the approach are then analysed. These include the desirability and possibility of separating market structure from other regulatory concerns, the allocation of regulatory concerns not related to market structure, the difficulty of assessing when a trading system is acting anti-competitively, the effects of simultaneous competition and cooperation between trading systems, and finally the divide between institutional and retail traders. Even with this level of detail, we note that other unanticipatable difficulties with the proposed approach are likely, as a result of unforeseeable developments in technology, and the regulatory dialectic and process of change associated with regulatory avoidance.¹¹⁰

Nature and Justification

The first prong of the strategy proposed here is that the regulation of market structure should be separated from the regulation of other areas of public concern. The most significant of these are market conduct, in particular the activities of financial intermediaries and other market participants, and market integrity, which relates to the performance of a market itself and issues such as price manipulation. The second prong is that competition policy should be employed to regulate market structure. The reason for proposing this joint strategy is to accommodate three beliefs which are thought central in determining the most appropriate way of regulating and classifying automated trading systems. They are: first, that it is not possible to take a stance on the optimal way of regulating trading systems without taking a position on the optimal way of regulating market structure; second, that competition is the single most important factor in effecting a market structure that will best deliver the desired

regulatory goals; and third, that the regulation of competition between trading systems cannot be well executed via a self-regulatory process.

The first belief is taken to be self-evident. The second, in contrast, is both controversial, and beyond the scope of this article to defend.¹¹¹ The SEC has repeatedly maintained that it is for market participants themselves to determine market structure.¹¹² There are, however, many statutory requirements on exchanges that are significant constraints on the manner in which such choices may be made. As noted previously, many of these constraints are not imposed on broker-regulated trading systems. One critical element of market structure in which competition, rather than regulation, is most likely to bring a socially optimal outcome, is that of transparency.

The transparency of a trading system refers to the extent to which data about the quotes and trades on the system are publicly disseminated. Although the proposition that mandated transparency is undesirable is not examined here in depth, some central themes which support such a view are worth noting.¹¹³ The most important is that private incentives are normally sufficient for the establishment of appropriate levels of transparency, except where competition is impaired.¹¹⁴ The second theme is that, regardless of the quality of arguments put forward to support transparency, nobody, including the regulators of financial markets, knows what the effects of mandating transparency actually are. The risk of creating regulation which does not deliver the intended consequences or which establishes the wrong incentives is not insignificant.¹¹⁵ Finally, regulators may face inappropriate incentives to further the public interest.¹¹⁶

The justification for the third belief, namely that the regulation of competition between trading systems cannot be well monitored via a self-regulatory process, is that the conflict between the interests of the owners and operators of one trading system and those of other trading systems is deemed too direct for self-regulation to be effective.¹¹⁷ It is certainly possible that an increased amount of trading on one system may lead to increased trading volume on other competing systems. More commonly, however, trading systems are believed to be substitutes rather than complements, implying that if one trading system does not compete as aggressively as possible, orders will flow away from it to its competitors. The operators of a trading system therefore typically have an incentive to act anti-competitively, if such an option is available, in order to attract order-flow. There also are no factors to act as a counter-balance to this incentive, unlike with the current activities of SROs in their supervision of market conduct and market integrity. If an SRO does not adequately police its market, investors may direct their orders away from it. This would damage the interests of

the intermediaries in the market, and thus provides an incentive for appropriate surveillance. In contrast, self-regulation is deemed insufficient to enforce fair competition between trading systems.

A central implication of the proposed approach is that there should be no distinction in the regulation of any market structure questions between institutions which are now classified as exchanges and those which are now classified as brokers. If this approach were implemented, ambiguities in the "exchange" definition with regard to market structure would no longer matter, as the definition would no longer be applicable. Similarly, problems concerning market structure arising as a result of the re-classification of trading systems, of the coherence of the SEC's approach to classifying trading systems, of any competitive advantages that arise as a result of regulatory diversity, and most importantly of the regulatory rigidities placed on exchanges, would also no longer be relevant.

Desirability and Possibility of Separation

It is frequently thought that the separation in the proposed regulatory strategy is undesirable, because the costs of implementing it outweigh the benefits. Such a view often arises because of a confusion over exactly what the separation implies. At issue here is whether the operator of a market should be free of regulatory constraints in determining the market's structure. This type of separation is quite distinct from another type of regulatory separation in which the regulation of market conduct is separated from market supervision.

Various considerations are important when assessing the merits of this second type of separation. As noted by the SEC, the responsibilities for market supervision and for regulating market conduct may overlap, and this could lead to jurisdictional conflicts between the two types of regulators if a separation were ever implemented.¹¹⁸ Examples of this include the monitoring of whether dealers honor their quotes, and of the enforcement of late trade reporting rules. Any synergy that exists when a single institution oversees both a market and the broker-dealers operating on the market, may also be lost if the two functions are separated. Whatever the merits of these arguments, however, they say nothing about whether the operator of a market should be free of regulatory constraints in determining the market's structure.

Similarly, it is frequently argued that separating market structure from other regulatory concerns might undermine the self-regulatory role that SROs currently fulfill. If such a separation were effected, it is certainly possible that the other regulatory functions might not be properly performed by third party providers, namely participants other than the

owners or operators of the market. There might also be co-ordination problems in contracting-out regulatory functions, and other advantages of self-regulation may be undermined.¹¹⁹ Allowing the operator of a market to determine the structure of the market does not, however, necessarily imply that the regulation of the market could not be undertaken by a self-regulatory process, with similar governance constraints as those currently in operation. On the contrary, the governance of the market could be determined by commercial imperatives, while the governance of the SRO could still be determined in the same manner as at present. In particular there could be fair representation of market participants, sufficient representation of the public, and appropriate participation by the operator of the market in the governance of the SRO. The two governance structures would simply not be the same, and it would not be within the reach of the SRO to examine market structure issues.

Regulatory concern that the preferences of market participants not represented on the governance structures of trading systems would be inadequately considered is unnecessary. If a trading system did not take sufficient account of the desires of a group of its users, be they investors or issuers for example, they could respectively either re-direct their order flow away from the trading system or re-list on another trading system, assuming that the one in question did not hold any monopolistic power in the market.

A second perceived problem with the proposed separation is that market structure may be thought to be so inextricably linked with other regulatory concerns that no real separation is possible. As stated by a Senate Subcommittee:

in the securities business, at least, every ethical question has economic aspects and every economic question has ethical aspects.¹²⁰

Two instances of this belief are notable. A central plank of the SEC's justification for transparency is that the publication of prices and quotes helps investors monitor the execution of their orders in order to assess whether they are obtaining best execution. Regulation of the dissemination of price and quote information, one of the three central elements of market structure, is therefore thought necessary for the protection of investors. Similarly, particular types of order execution algorithms may be viewed as unfair, particularly if they adversely discriminate against retail traders. Once again the supervision of a central element of market structure, this time that of the order execution mechanism, is thought essential to deliver a desired regulatory goal, namely fairness.

There are, however, two strong counter-arguments to the view that because no real separation between market structure and other regulatory concerns is possible, more

intrusive regulation of market structure is required than merely that of competition policy. The first is that competition between trading systems will mean that any system on which investor protection appears compromised, or which offers what is believed to be an unfair order execution algorithm, as a result of its market structure, is likely to lose business. Competition will therefore provide an appropriate incentive for a trading system itself to create a market structure which delivers a suitable balance of liquidity and other regulatory goals. The second counter-argument is that the enhancement of liquidity, a key effect of competition between trading systems, is the best method for protecting investors and the best antidote to any perceived unfairness in markets. Any regulation which adversely affects its provision is therefore likely to be undesirable.

The Allocation of Non-Market Structure Regulatory Concerns

The proposed joint strategy does not specify how the regulatory responsibilities currently placed on SROs, other than for issues related to market structure, should be allocated. Three problems may be identified with the current allocation of these responsibilities. The first arises because it is believed that the costs of exchange regulation do not decrease linearly with volume, and there are large fixed costs of compliance especially for new systems that handle institutional order flow.¹²¹ If the provision of self-regulatory activities is tied with the provision of market facilities, the presence of economies of scale in the regulation of trading systems may act as a deterrent to the establishment of new markets. This need not be a problem in the USA, however, as long as trading systems are allowed to register with the NASD. The NASD is effectively the "residual" regulator, namely the regulator of all market participants who do not trade through the registered exchanges. A new trading system will thereby be able to take advantage of any economies of scale that exist in regulating a market, by operating its system under the regulatory umbrella of the NASD. While most new trading systems have been allowed by the SEC to follow this regulatory strategy, the case of the AZX, which was required to be classified as an exchange, shows that it has not been available to all such systems.

A second problem is that regulatory activities may cross-subsidise the provision of trading systems or vice versa, and this can distort competition between trading systems.¹²² A remedy for this is to allow any regulatory activities which are profitable to be open to competition, as indeed is presently the case with the listing of securities. Consider also the situation where an SRO's regulatory activities are loss-making, thus subsidised by the revenues the SRO receives from the markets it provides, and where the SRO is simultaneously required to oversee a trading system not owned by the SRO. Unless the trading

system is obliged to pay the SRO transaction-related fees, the SRO will be subsidising the operations of one of its competitors, through its regulatory activities.

A third problem is that if an automated trading system is required to join an SRO which operates its own market, the SRO oversight of the trading system may be unsatisfactory, because the automated trading system is subject to surveillance by a competitor. The operators of trading systems may, nevertheless, still prefer being regulated by a competitor with adequate safeguards of confidentiality, than being regulators themselves. This choice has, for example, been expressly made by Instinet.

Two ways of allocating the regulatory responsibilities other than those relating to market-structure might be considered. The first is to maintain an institutional definition of an SRO, and to assign appropriate regulatory duties to any institutions satisfying the definition. Trading systems which did not satisfy the definition would be required to join one of the statutorily defined SROs. Depending on the nature of the definition, the various classificatory difficulties identified above with the exchange definition may still, however, continue to arise. A second more radical approach is to require that all trading systems be supervised by an appropriate non-market-structure regulatory body, but to allow a trading system the freedom to choose which organisation should act as its regulator. This might include the freedom to choose whether it should be its own SRO. At the same time, SRO's would not be allowed to restrict themselves with respect to which trading systems they supervised. This approach would place competitive pressure on competing regulators to provide cheap and efficient regulatory services to the competing markets they serve. There would need to be SEC oversight of any institution choosing to be a regulator of trading markets in order to ensure minimum regulatory quality, in much the same manner as the SEC oversight of existing SROs. Given the economies of scale associated with regulation, both approaches are likely in practice to lead to much the same result.

It is obvious but necessary to point out that the costs and benefits of employing competition as a regulatory policy to supervise market conduct and market integrity are not examined here. Past experience, however, is taken to be sufficient evidence that the private incentives facing market participants in a particular jurisdiction are not enough to ensure that unacceptable lapses in market conduct and in market integrity do not occur. Regulatory intervention in these areas is therefore believed warranted.

Anti-Competitive Activity

The determination of whether the activities of a trading system are anti-competitive is not easy. Although it depends, of course, on the precise specification of the legal system that is applicable, two central questions normally must be answered. Does the entity in question have a dominant position within the relevant market? If so, is it acting in a manner to abuse this position?

The definition of the relevant market and the determination of whether a trading system has a dominant position in the specified market may be controversial. A market may be defined in terms of a single asset being traded, in terms of a group of assets, or in terms of a set of geographical boundaries. There are also different ways of assessing the potential dominance of a trading system. The yardstick may be the proportion of the number of trades in a single security, or set of securities, executed on the system, or the percentage of the dollar volume of trading in the relevant assets on the system.

A difficulty that frequently arises in any assessment of the conduct of trading systems is that there may be a conflict between promoting competition between trading systems and promoting competition between traders. It is not always clear which type of competition yields the most benefits. It is critical to stress in this context, however, that not all restrictive rules specified by trading systems are "abusive". On the contrary, many of them are in the public interest. All exchanges specify a series of rules to govern the behaviour of the market participants trading on their systems, and the fact that they circumscribe the actions of their members is central to the notion of what exchanges are. As stated by the London Stock Exchange:

The Exchange recognises that all of its rules and regulations impose restraints on the activities of its members, either by restricting them from undertaking certain types of activity or by compelling them to undertake others. This is the essence, however, of what the Exchange is established to do. Not to accept this, is to deny the very rationale for the Exchange's existence.¹²³

Two controversial examples may illustrate the point. The NYSE's rule 390 essentially forbids an NYSE member from trading as principal off-exchange except when executing an in-house agency cross.¹²⁴ Somewhat similarly, the London Stock Exchange's (LSE) rule 4.18 stipulated that members of the exchange were not allowed to quote better prices away from the exchange, than those they input on the exchange's automated quotation system (SEAQ).¹²⁵ While both of these rules were restrictive, the relaxation of either one of them by the relevant exchange would effectively have sanctioned the possibility that the exchange was not providing as liquid a market as it could. On the LSE, for example, a loosening of the rule would

have meant that its members might quote better prices off the exchange than on it. Yet the provision of liquidity is the primary aim of all exchanges and trading systems.

Furthermore, while both the rules did restrict the actions of the respective exchanges' members, they placed no constraints on non-members who were free to trade on any trading systems they wished. Should a member not have wanted to follow the relevant rule, therefore, it could always have stopped being a member of its exchange. To complain that either exchange was dominant in its respective market, though true, is not sufficient to determine that each exchange was abusing its position. If a financial intermediary were to quote a better price on a trading system that competes with the LSE or the NYSE, investors could easily direct their order flow to the alternative system, given that the switching costs are relatively low.

Simultaneous Competition and Cooperation

Much regulation, excluding that of market structure, requires cooperation between different regulatory agencies. When attempting to ascertain whether any market manipulation or insider trading has occurred, for example, it is essential to have information about all the trades which have taken place in the relevant assets, independent of where they were executed. In order to facilitate such information-sharing at the domestic level, regulatory commissions have encouraged the various SROs and markets under their purview to establish institutions, or declarations of intent, to share the relevant information. In the USA, for example, the SEC has promoted a range of inter-market regulatory coordinating groups, including the Intermarket Surveillance Group, the Intermarket Financial Surveillance Group, and the Intermarket Communications Group. In the UK, the SIB has required that the London Stock Exchange and Tradepoint, both of which are regulated as "Recognised Investment Exchanges", sign a memorandum of understanding (MOU) with each other, which obliges them to share regulatory information on a confidential basis, when needed. At the international level, bilateral MOUs have also been signed between various regulatory commissions themselves, and in the EU a multilateral agreement has been created in the Investment Services Directive to require the "competent authorities" in Member States to share relevant information when necessary.¹²⁶

The possibility of the exchange of information amongst securities market regulators, as envisaged in the various declarations which have been signed, does not, however, guarantee the full and immediate exchange of such information.¹²⁷ The effectiveness of these agreements will depend on the extent to which the regulators party to them are willing to work

together. If the aims of the regulators are congruent, then both institutions are likely to comply with the agreement. The fight against fraud, for example, is likely to be a key goal of most regulators. If the exchange of information impinges on other objectives of the regulators, about which they may have differing views, the effectiveness of the relevant declarations could, however, be in doubt.

The most likely area in which this will be a problem is where there is competition between trading systems or between different national markets. A regulatory agency in one jurisdiction, for example, could believe that by handing over certain information to a regulatory agency in another jurisdiction, it might harm the prospects of the financial centre which it supervised. It may then not hand over the information on a full or timely basis. Similarly, if an SRO both regulates and manages a market, it may be hesitant about handing over confidential information which it believes may harm its market's prospects. The separation of the regulation of competition between trading systems from the regulation of other goals may help reduce such conflicts of interest.

The Institutional/Retail Divide

Three central questions have arisen as a result of the development of automated trading systems which cater solely to institutional traders. The first is whether such systems should be allowed; the second is whether institutional traders ought to receive the same levels of regulation as retail traders; and the third is, if they do not, should there be an associated reduction in the regulatory costs institutional traders are required to pay. The proposed separation of the regulation of market structure from other areas has an unequivocal answer to the first question, namely yes: the establishment of trading systems which cater solely to institutions should be sanctioned. The approach taken here has nothing to say directly, however, about the other two questions. The merits of reduced institutional regulation need to be determined in addition to the question of whether the proposed regulatory separation is appropriate or not.

There are arguments both in favor and against reducing the regulation of institutional markets. In favor, it may be claimed first, that institutional traders understand the value of regulation. They will assess for themselves the trade-off between any regulatory costs that are imposed and the regulatory environment that is delivered. Second, it is unfair to require institutional traders to subsidise the regulation of retail traders. Finally, unless minimum regulatory requirements are implemented globally, institutional order flow is likely to flow away from highly-regulated high cost-trading arenas. Arguments against reducing the

regulation of institutional markets include the SEC's position that it is "difficult to provide completely different tiers of regulation and maintain fair and orderly markets";¹²⁸ that all participants may also benefit from well-regulated markets, and therefore it is unfair to allow institutional traders to contract out of such benefits; that institutional traders need as much protection as retail investors; and finally that it is right that institutional traders should subsidise the regulation of retail traders.

VII. International Issues

Despite the fact that it is now technologically relatively easy to construct cross-border automated securities trading systems, only a few have been developed. Of these, only a small number have actually been successful.¹²⁹ One reason why so few cross-border systems have been built is that many of the regulatory problems associated with their operation have not been adequately addressed. These questions are, however, not easy to answer. They are often complex, controversial, politically charged, and not given the highest priority for attention by domestic regulators and legislators. Furthermore, apart from the various institutions of the EU, there is no institutional framework for enforcing any agreed international policy - IOSCO, in particular, is not designed to be an enforcement agency.

Amongst the international issues that need to be resolved are: How should regulatory costs, responsibilities and powers be allocated internationally? What are the appropriate criteria for recognition by one jurisdiction of another jurisdiction's regulation of a trading system? and What powers should a host country be able to enforce in relation to the operation of a system in its jurisdiction?¹³⁰

Various approaches, not all of which are exclusive, have been suggested to address the issue of the international allocation of regulatory responsibilities. These include national treatment, namely identical treatment of all institutions in a particular jurisdiction, whether they are domestic or foreign; international harmonisation; mutual recognition; identical international standards; a lead-regulator approach; and the formation of a supranational regulatory authority. These approaches, and the complementary issue of the costs and benefits of regulatory arbitrage, are not examined here.¹³¹

Outside the EU, the general basis by which international regulatory responsibilities and powers are allocated is unclear. There have, however, been a number of cross-border trading systems for which dedicated inter-jurisdictional regulatory agreements have been established.¹³² In the absence of any relevant law or international agreements, several criteria have been suggested for determining which country should have jurisdiction over a

specific trade on an automated trading system.¹³³ These include: Where does the issuer of the security reside? Where is the security listed? Where is the physical location of the trading system? Where is the country of origin of the company operating the system? and Where do the participants in the trade reside? It is doubtful whether any of these criteria could be enforced.

To date the Investment Services Directive (ISD) of the EU is the only supranational law which determines how cross-border trading systems should be regulated within a specified set of jurisdictions. The ISD provides two regulatory routes by which an automated trading system operating in one EU Member State may offer its services freely throughout the EU with a so-called European "passport".

The first route is relevant for "investment firms", such as brokers or dealers, which may offer trading system technology. The Directive is based on three linked legal strategies: the harmonisation between EU Member States of the minimum standards for the prudential supervision of financial institutions; the mutual recognition by each Member State of the competence of the supervisory bodies for the governance of these minimum standards in each other Member State; and finally the assignment of the control and supervision of financial institutions to the home country of the trading system in question, in those areas which have been harmonised between Member States. Essentially, if an investment firm is appropriately authorised in its home Member State, the Directive allows it to offer its services in all other Member States without the need for further authorisation. The Directive also stipulates that authorised investment firms must be allowed to become members of, or be given access to, all "regulated" markets, as defined below, in any host Member State. National restrictions on the number of members of such "regulated" markets must also be eliminated.

A range of conditions must be satisfied by an investment firm both for its initial authorisation, and for its ongoing operations. These include that the firm have an adequate initial level of capital, that its directors be sufficiently experienced, that it have appropriate measures for administrative and accounting procedures, for safeguarding clients' securities and funds, for recordkeeping, that it minimise conflicts of interest, and that its employees act fairly and honestly.

The second regulatory route by which an automated trading system is allowed to offer its services throughout the EU under the ISD is applicable to so-called "regulated" markets. The Directive states that a home Member State must allow the regulated markets of other host Member States to provide "appropriate facilities" within its territories, in order to enable its investment firms to become members of, or have access to, the host Member States'

regulated markets.¹³⁴ A trading system classified as a regulated market, that operates without the need for a physical presence should therefore be allowed to place its automated facilities in other host countries of the EU, without the need for any regulatory recognition other than that required by its home Member State.

In order to be classified a "regulated" market, an institution must satisfy the following criteria.¹³⁵ It must be recognised as such by its home Member State. It must function regularly. It must have regulatory approval for the method of its operations, for the manner in which access to it is granted, and for the listing or eligibility conditions for the securities traded on its system. Finally, it must satisfy the reporting and transparency provisions laid out in the Directive. The reporting provisions specify how information about trades must be reported to the appropriate regulatory authorities. The transparency provisions stipulate the minimum data, with respect to prices, quotes, and volumes on the market, that must be disseminated publicly.

The ISD provides a useful illustration of two important difficulties in agreeing appropriate international legislation for the regulation of automated securities trading systems. The Treaty governing the EU establishes the fundamental European freedoms of movement and of establishment, and also requires that competition in the EU not be inhibited in an inappropriate manner.¹³⁶ The key intention of the EU's Single Market legislative program, of which the ISD is an important part, is also to further the pro-competitive goal of economic liberalism. The development of the ISD highlights a frequent problem with such legislation, however, namely that its establishment may paradoxically entrench protectionist tendencies.¹³⁷

Throughout the process by which the ISD was being negotiated, a range of attempts were made to create a law which restricted competition between the trading markets of the EU, all in the name of enhancing fairness and investor protection.¹³⁸ A non-competitive outcome could therefore easily have occurred. Even now that what appears to be a pro-competitive Directive has been agreed, various elements of the Directive may still allow national authorities to establish national law in a manner which suits their national markets, but not any competing markets from other Member States.

An important example, in the context of automated securities trading systems, arises from an ambiguity in the ISD about how the "remote access" provision in the Directive should be interpreted. It is unclear whether it is the "regulated" market itself, or the competent authority in the host Member State in which the "regulated" market wishes to operate, which has the right to decide what constitutes "appropriate" facilities. If it is the competent authority

in the host Member State, an automated trading system classified as a regulated market may want to provide facilities which it deemed appropriate, but which the relevant competent authority did not. There is thus a risk to an automated trading system of not being classified as a "regulated" market. Regulators in some European countries may seek to halt the success of trading systems not based in their jurisdiction. The benefits sanctioned by the "remote access" provision may thus be unavailable to automated trading systems, if they are not "regulated" markets. A French regulator has stated, for example, that the delivery of a European passport to non-"regulated" electronic markets was "clearly inconsistent with the objectives of the ISD".¹³⁹

A second problem with the ISD is that it maintains a conceptual difference analogous to that between "brokers" and "exchanges", in the dichotomy it draws between "investment firms" and "regulated markets". Those automated trading systems which are able to gain approval as investment firms will therefore be required to undertake significantly fewer regulatory duties than those classified as regulated markets, while still being able to take advantage of the European "passport". Problems similar to those which have arisen as a result of the exchange/broker distinction, are therefore also likely to arise as a result of the "investment firm"/"regulated market" dichotomy. Harmonization between the securities laws of different jurisdictions, by itself, is thus not sufficient to resolve the questions associated with the regulation of automated trading systems.

VIII. Conclusion

The statutory distinction between exchanges and brokers has operated for over sixty years in the USA, and underpins the entire fabric of the regulatory structure governing the American securities markets. There are, however, several reasons why it is no longer viable. First, the confluence of developments in technology together with the opacity of both the statutory definition of an "exchange" and of a key SEC interpretation of the definition, have meant that the definition is so ambiguous that it is no longer useful. Second, the current regulatory regime is likely to lead to several problems concerning the re-classification of various automated trading systems currently in operation. Third, the exchange/broker distinction implies that functionally similar automated trading systems have had different regulatory obligations imposed on them as a result of obtaining differing statutory classifications. These disparities have given a competitive advantage to systems regulated as brokers over those regulated as exchanges. Finally, the combination of the SEC's "exchange"

interpretation and its various rulings now appear to contain a variety of apparent internal inconsistencies.

We also note that, because some automated trading systems are not membership owned or operated institutions, the notion of self-regulation, a key element of the current regulatory structure for exchanges, is being undermined. Furthermore, the statutory governance requirements imposed on exchanges, as a result of their mandated self-regulatory activities, are likely to obstruct market developments.

Three approaches for regulating automated trading systems are examined. The first, that of "functional regulation," is to impose a level of regulation on a trading system that is dependent on the functions it undertakes. The distinction between functional and institutional regulation, the approach currently employed, is blurred, however. Functional regulation also cannot delineate precisely the distinction between brokers and exchanges, given that they do actually compete with each other to provide trading services. Finally, functional regulation contains no assessment of the risks or costs arising from the operation of different trading systems, and is therefore not sufficient by itself to provide a basis for an appropriate regulatory strategy.

The second regulatory approach discussed is to define a trading system to be an exchange as soon as it attracts a pre-specified minimum volume of trading. This strategy would tend to encourage start-up trading systems, but penalises successful trading systems, possibly leading to a proliferation of small exchanges. It would provide an incentive to hide the amount of trading conducted on a trading system so as to avoid the need to register as an exchange, and it would foster the development of small-volume trading systems which were more lightly regulated than the major centres.

We propose and analyze a third regulatory strategy, composed of two prongs: the separation of the regulation of market structure from the regulation of other areas of public concern, and the employment of competition policy to regulate market structure. A central implication of this approach is that there should be no distinction in the regulation of any market structure questions between institutions which are now classified as exchanges and those which are now classified as brokers. This would solve many of the problems currently arising from the exchange/broker distinction.

Various difficulties with, and implications of, the suggested regulatory strategy are scrutinized. The claims that the proposed separation is undesirable because the costs of implementing it outweigh the benefits, and that market structure is so inextricably linked with other regulatory concerns that no real separation is possible, are both disputed.

Competition between trading systems is argued to be the best mechanism for delivering the desired market structure regulatory goals. The separation of the regulation of competition between trading systems from the regulation of other goals may also help reduce conflicts of interest between regulators, when cooperation is required.

Many of the regulatory problems associated with the operation of cross-border automated securities trading systems have not been adequately addressed. Two problems with legislation aimed at supervising international trading systems, as evidenced in the Investment Services Directive, are highlighted. The first is that, however well-intentioned, the establishment of such legislation may paradoxically entrench protectionist tendencies. The second is that harmonization between the securities laws of different jurisdictions, by itself, is not sufficient to resolve the questions associated with the regulation of automated trading systems. In the ISD, for example, analogous problems to those which have arisen as a result of the exchange/broker distinction are likely to arise as a result of the "investment firm"/"regulated market" dichotomy.

Footnotes

¹ See SEC, Proposal to Adopt Rule 15c2-10 under the Securities and Exchange Act 1934, Release No. 8661 (8/4/1969).

² SEC, Regulation of Exchanges, Release No. 34-38672 (5/23/97). See also Jan De Bel, Automated Trading Systems and the Concept of an "Exchange" in an International Context - Proprietary Systems: A Regulatory Headache!, 14 Univ. of Penn. Jour. of Int. Bus. Law 169-221 (Spring/Summer 1993); Ruben Lee, What is an Exchange?, Capital Markets Forum, International Bar Association, Discussion Paper No. 1 (4/1992); Therese H. Maynard, What is an "Exchange?" - Proprietary Electronic Securities Trading Systems and the Statutory Definition of an Exchange, 49 Wash. & Lee Law Rev. 833-912 (Summer 1992); and David M. Schizer, Benign Restraint: The SEC's Regulation of Execution Systems, 101 Yale Law Jour. 1551-1575 (5/1992).

³ For a listing of trading systems not regulated as exchanges in the USA, see Appendix IV, SEC, Division of Market Regulation, Market 2000 - An Examination of Current Equity Market Developments (1/1994). Informal reports suggest that there may be several hundred such systems.

⁴ See Allan D. Grody, Hugues Levecq & Bruce William Weber, Global Electronic Markets: A Preliminary Report of Findings, Stern School of Business, New York University (5/31/1994), and Allan D. Grody & Hugues Levecq, Past, Present and Future: The Evolution and Development of Electronic Financial Markets, Working Paper STERN IS-95-21, New York University (11/1993).

⁵ p. 2, SEC, Division of Market Regulation, Automated Securities Trading: A Discussion of Selected Critical Issues, IOSCO Conference, Washington (9/26/1991).

⁶ See SEC, Automated Systems of Self-Regulatory Organizations, Releases No. 27445 (11/16/1989) and No. 29185 (5/15/1991). Additional concerns are noted in General Accounting Office, Automation Can Enhance Detection of Trade Abuses, But Introduces New Risks, GAO/IMTEC-89-68 (9/7/1989).

⁷ See Michael B. Sundel & Lystra G. Blake, Good Concept, Bad Executions: The Regulation and Self-Regulation of Automated Trading Systems in United States Futures Markets, 85 Northwestern Univ. Law Rev. 748-789 (1991); Andrea Corcoran & John Lawton, The Effect of Variations Among Automated Trading Systems on Regulatory Oversight, 13 Jour. of Fut. Markets 213-222 (1993); Ian Domowitz, Automating the Price Discovery Process: Some International Comparisons and Regulatory Implications, 6 Jour. of Fin. Serv. Res. 305-326 (1993); and Commodity Futures Trading Commission (CFTC), Self-Regulatory Organization Automated Systems (4/30/1990).

⁸ See ASC, Policy Statements 100: Stock Markets (9/18/1995), & Guidelines for Stock Market Applications (9/20/1995).

⁹ See OSC, Capital Markets Branch, Electronic Trading Systems in Ontario (5/27/1994), Dealer Electronic Services, 18 OSC Bulletin 1347-1350 (3/24/1995); Electronic Trading Systems: OSC Forum Proceedings (6/29/1995); Registration of Instinet Corporation (Instinet)

as an International Dealer - Registration Staff Notice, OSC Bulletin (9/22/1995). Securities laws operate at a provincial rather than a federal level in Canada.

¹⁰ See COB, François Champarnaud & Frédéric Perier, Identification of a Market: The COB Discussions, *Marchés* 2001, Entretiens de la COB, 3rd Round Table (11/17/1994).

¹¹ See Securities and Investments Board, Regulation of the United Kingdom Equity Markets (6/1995).

¹² See Council Directive 93/22/EEC of 10 May 1993 on Investment Services in the Securities Field, Council of Ministers of the European Communities, *Off. 36 Jour. of the EC* 27-46 (6/11/1993).

¹³ Other types of market participants and regulatory categories, such as Inter-Dealer Brokers, are ignored.

¹⁴ For a discussion, see Ian Domowitz, When is a Marketplace a Market? Automated Trade Execution in the Futures Markets, Ch. 11 in Daniel R. Siegel ed., *Innovation and Technology in the Markets - A Reordering of the World's Capital Market Systems*, McGraw-Hill (1990).

¹⁵ The Arizona Stock Exchange used to trade under the name Wunsch Auction Systems Inc..

¹⁶ For a listing of automated markets and their classification into various categories of operation, see Ian Domowitz, A Taxonomy of Automated Trade Execution Systems, *12 Jour. of Int. Money & Fin.* 607-631 (1993).

¹⁷ The sources for this description are: Daniel Brooks, Letter to Richard Ketchum, Director, Division of Market Regulation, SEC re: Statutory Classification of Instinet (4/23/1986); Richard Ketchum, Director, Division of Market Regulation, SEC, Letter to Daniel Brooks re: Request for no-action position regarding Instinet's non-registration with the SEC as an exchange, an association, or a clearing agency (8/8/1986); Reuters Australia's Submission to the NCSC (3/3/1988); INSTINET: The World At Your Fingertips (1990); Appendix B, Instinet Submission to the OSC (1/15/1990); Schedule "A" - Operational Plan of Instinet Canada Limited and Related Materials (8/1/90), in Toronto Stock Exchange Submission to the OSC 1/15/1990; INSTINET: Quick Reference Guide (5/1990); OSC Decision (3/27/1990); INSTINET: Changing the Way the World Trades (1991); Instinet Letter to SEC (2/7/1992); and discussions with Instinet in London and New York.

¹⁸ See p. 1, IOSCO, Screen-Based Trading Systems for Derivative Products (6/1990).

¹⁹ See para. 6, p. 1, IOSCO, Report on Issues in the Regulation of Cross-Border Proprietary Screen-Based Trading Systems (10/1994).

²⁰ This section draws on pp. 5-11, Lee (4/1992).

²¹ One other potentially important statutory category relevant to the regulation of automated trading systems is that of an "exclusive securities information processor". Such an institution acts as the sole distributor for the price and quote information emanating from a registered exchange or SRO. See Sections 3(a)(22)(B) and 11A(b)(1)-(6) of the Securities Exchange Act (1934), and Ch. 5, Ruben Lee, *The Ownership of Price and Quote Information: Law, Regulation, Economics and Business*, Oxford Finance Group (2/1995). This category is ignored here.

²² See Section 15A(b)(1)-(8), SEA (1934). There is currently only one registered national association, the National Association of Securities Dealers (NASD).

²³ Section 3(a)(1), SEA (1934).

²⁴ p. 19, SEC, SRO's; Delta Government Options Corporation; Order Granting Temporary Registration as a Clearing Agency, Release No. 34-27611 (1/12/1990), and similar language on p. III-12, SEC (1/1994), where this "characteristic" is described as the "function" of an exchange.

²⁵ Section 6, SEA (1934). For a discussion, see Brandon Becker, Alden Adkins, Gordon Fuller, and Janet Angstadt, SEC Division of Market Regulation, The SEC's Oversight of Proprietary Trading Systems, Conference at Owen Graduate School of Management, Vanderbilt Univ. (4/11/1991).

²⁶ See SEC Releases No. 34-27445 (16/11/1989) and No. 34-29185 (5/15/1991).

²⁷ See C.F.R. § 240.11Aa3-1 and C.F.R. § 240.11Ac1-1.

²⁸ See CQS, Plan Submitted to Securities and Exchange Commission for the Purpose of Implementing Rule 11Ac1-1 Under the Securities and Exchange Act of 1934 (3/1/1992) and Consolidated Tape Association, Restatement of Restated Plan Submitted to Securities and Exchange Commission Pursuant to Rule 17a-15 under Securities and Exchange Act of 1934 (3/1/1992).

²⁹ See Appendix II, SEC (1/1994).

³⁰ Section 3(a)(2), SEA (1934).

³¹ Section 5, SEA (1934).

³² See SEC, SRO's; Wunsch Auction Systems, Inc.; Order Granting Limited Volume Exemption from Registration as an Exchange under Section 5 of the SEA, Release No. 34-28899 (2/20/1991).

³³ See AZX, Fact Sheet (2/1/1992) & Bulletin of Corporate Events and Developments (2/14/1992).

³⁴ Section 3(a)(4), SEA (1934).

³⁵ Section 3(a)(5), SEA (1934).

³⁶ For a discussion of the problems involved in these areas, see Ian Domowitz, Automating the Price Discovery Process: Some International Comparisons and Regulatory Implications, 6 *Jour. of Fin. Serv. Res.* 305-326 (1993).

³⁷ As of 1/1994, the SEC had issued 25 no-action letters for non-registration as an exchange.

³⁸ See Brooks (4/23/1986) and Ketchum (8/8/1986).

³⁹ See SEC, Notice of Adoption of Rule 11Ab2-1 and Related Form SIP, and Rules 11Ab2-2, 11Ab2-3, 11Ab5-1; Request for Comments on the need to Register Non-Exclusive Securities Information Processors; Notice of Withdrawal of Proposed Rule 15c2-10, Release No. 11673 (9/23/1975); and pp. 107-108, SEC, Hearing before the Securities and Exchange Commission (1/5/1989).

⁴⁰ See SEC, Proprietary Trading Systems, Release No. 34-26708 (4/18/1989).

⁴¹ See SEC, Division of Market Regulation, Automated Securities Trading: A Discussion of Selected Critical Issues, IOSCO Conference, Washington (9/26/1991).

⁴² See pp. 32-38, SEC, U.S. Equity Market Structure Study, Release No. 34-30920 (7/14/1992).

⁴³ See SEC (1/1994) and SEC, Proprietary Trading Systems, Release No. 34-33621 (2/14/1994).

⁴⁴ Rule 17a-23. See SEC, Recordkeeping and Reporting Requirements for Trading Systems operated by Brokers and Dealers, Release No. 34-33605 (9/2/94). The definition of a BDTS was made intentionally broad so as to capture information about many new automated trading systems.

⁴⁵ See *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1273 (7th Circ. 1991). For a description of the Delta trading system and the case, see Lee (4/1992).

⁴⁶ See footnote 100, p. 50, SEC Release No. 27611 (1/12/1990).

⁴⁷ See Senate Report No. 792, 73d Congress, 2d Session 5 (4/17/1934).

⁴⁸ See *Board of Trade of the City of Chicago v. SEC* 883 F.2d 525 @ 525 (7th Circ. 1989).

⁴⁹ See *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 (7th Circ. 1991).

⁵⁰ In *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1272 (7th Circ. 1991).

⁵¹ See *LTV v. UMIC Government Securities, Inc.* 523 F.Supp. 819 @ 835-6 (1981).

⁵² See pp. 28-34, SEC Release No. 27611 (1/19/1990). The next quote is on p. 35 of this release.

⁵³ This was, for example, stated by the Director, Division of Trading Markets, on p. 97, Hearing before the SEC (1/5/1989).

⁵⁴ See pp. 34-36, including footnote 76, SEC Release No. 27611 (1/19/1990).

⁵⁵ footnote 18, p. 16, Answering Brief of the Securities and Exchange Commission, Respondent, US Court of Appeals, 7th Circuit, Case No. 90-1246 (4/27/1990). See also SEC Release No. 34-26708 (4/18/1989), and footnote 36, p. 15, SEC Release No. 28899 (2/20/1991).

⁵⁶ p. 16, Answering Brief of the Securities and Exchange Commission, Respondent, to US Court of Appeals, 7th Circuit, Case No. 90-1246 (4/27/1990).

⁵⁷ pp. 30-31, Answering Brief of the Securities and Exchange Commission, Respondent, to US Court of Appeals, 7th Circuit, Case No. 90-1246 (4/27/1990). Underlines in original.

⁵⁸ See *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1275-6 (7th Circ. 1991).

⁵⁹ This was the CSE which had an average of 717 trades per day and an average daily share volume of 1,238,241.

⁶⁰ See SEC Release No. 34-26708 (4/18/1989).

⁶¹ See for example, the letters from Larry Bergmann, SEC, to D. Tuchman re. Cantor Fitzgerald G.P. (10/1/1993), from Brandon Becker, SEC, to Lloyd Feller re. The Lattice Network (9/9/1993), and from Larry Bergmann, SEC, to Larry Fondren re. CrossCom Trading Network (11/24/1992).

⁶² An example of an exception is the NYSE “off-hours trading” sessions; see SEC Releases Nos. 34-28639 and 34-28640 (11/21/1990) and 34-29237 (5/31/1991).

⁶³ See SEC Release No. 26708 (4/18/1989).

⁶⁴ See footnote 36, p. 15, SEC Release No. 28899 (2/20/1991). The AZX decision can also, however be viewed as a means of avoiding a regulatory problem by SEC. See p. 25, Lee (4/1992).

⁶⁵ See, for example, footnote 31, SEC Release No. 26708 (4/18/1989), and pp. 2670-2691, Louis Loss & Joel Seligman, *Securities Regulation*, Third Edition Little Brown & Co. (1990).

⁶⁶ See *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1272 (7th Circ. 1991).

⁶⁷ Section 6(c)(1) SEA (1934).

⁶⁸ Section 3(a)(3)(A) SEA (1934).

⁶⁹ Section 6(f)(1) SEA (1934).

⁷⁰ p. 36, SEC Release No. 27611 (1/12/1990).

⁷¹ Section 6(b)(3) SEA (1934).

⁷² 883 F. 2d 525 (7th Circuit, 1989).

⁷³ See p. III-12, SEC (1/1994).

⁷⁴ See Ruben Lee, *Public Virtues, Private Vices? or Vice Versa? Competition and Regulation of Trading Systems*, *London Stock Exchange Quarterly* 11-14 (Summer 1993).

⁷⁵ This is argued by Therese M. Maynard, *supra* note 2.

⁷⁶ The correct parsing of the language was touched on in *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1272 (7th Circ. 1991).

⁷⁷ Underlining added. Section 3(a)(3)(A) SEA (1934).

⁷⁸ See, for example, pp. 49-50, SEC Release No. 27611 (1/12/1990), and p. 3, SEC Release No. 34-33605 (2/9/1994).

⁷⁹ See *Financial Times*, *Questions over youth's behaviour*, p. 13 (8/23/1995). Informal reports suggest that this figure has at times been between 20-30%.

⁸⁰ See footnote 10, p. 8, SEC Release No. 34-33605 (2/9/1994).

⁸¹ p. III-11, SEC (1/1994).

⁸² p. VI-9, SEC (1/1994).

⁸³ For a description of SelectNet, see NASD, *Proposed Rule Changes* (9/26/1990), (11/14/1990), (10/2/1991), *Introducing the SelectNet Service* (1990), and *SelectNet (OCT): User Guide* (11/1990); and SEC Releases No. 34-28636 (11/30/1990) & No. 34-29900 (11/4/1991).

⁸⁴ Quotes in this and the next paragraph come from pages IV-7 & 8, SEC (1/1994).

⁸⁵ The price associated with each quote would have to be published on the CQS. Only the minimum size, however, rather than the actual size quoted on the electronic communications

network, would need to be put on the CQS. See pp. 24-25, SEC, Order Execution Obligations, Release No. 34-36310 (9/29/1995).

⁸⁶ p. VI-9, SEC (1/1994).

⁸⁷ See pp. 2692-2705, Loss & Seligman (1989); pp. II-5 to II-21, NASD, Report of the NASD Select Committee on Structure and Governance to the NASD Board of Governors (9/15/1995); and Study VI, SEC (1/1994), and the references therein.

⁸⁸ See p. VI-3, SEC (1/1994).

⁸⁹ See Sam Scott Miller, *Self-Regulation of the Securities Markets: A Critical Examination*, 42 Wash. and Lee Law Rev. 853-887 (Summer 1985).

⁹⁰ See Junius W. Peake & Morris Mendelson, *Who Should Guard the Hen House? Regulating Market Centers*, XVI Annual IOSCO conference (9/11/1991).

⁹¹ This is quoted on p. 159, Senate Committee on Banking, Housing and Urban Affairs, *Securities Industry Study, Report of the Subcommittee on Securities*, S. Doc. No. 93-13, 93d Congress, 1st Sess. 2-3 (4/6/1973), and also p. II-14, NASD (9/15/1995).

⁹² See, for example, the discussion on p. 82, William O. Douglas, *Democracy and Finance* (1940).

⁹³ p. 155-6, Senate Committee on Banking, Housing and Urban Affairs, *Securities Industry Study, Report of the Subcommittee on Securities*, S. Doc. No. 93-13, 93d Congress, 1st Sess. 2-3 (4/6/1973).

⁹⁴ The only statutory requirement regarding representation of the public, is that one or more of an exchange's directors be representative of issuers and investors. See Ruben Lee, "The Governance of Exchanges," manuscript, Oxford Financial Group (5/1996).

⁹⁵ Quoted from p. VI-7, SEC (1/1994).

⁹⁶ This argument is taken from Corinne M. Bronfman, Kenneth Lehn & Robert A. Schwartz, pp. 50-53, *US Securities Markets Regulation: Regulatory Structure*, Ch. 3 in Benn Steil ed., *International Financial Market Regulation*, Wiley (1994).

⁹⁷ See, for example, Commissioner Grundfest's statement that "we're trying to structure rules that foster innovation, which is a little bit of an oxymoron right there" p. 83, Hearing before the SEC (1/5/1989).

⁹⁸ The SEC noted that:

In developing its interpretation, the Commission was cognizant of the understanding of Congress when it delegated authority to the Commission to regulate exchanges that the concept of an exchange does not "present a static situation susceptible to fixed standards". Thus, there are no mathematical formulas that will definitively resolve all ambiguities with respect to what Congress referred to as a "highly dynamic, ever-changing picture, subject to untold and unknown possibilities and combinations".

p. 13-4, SEC, *Answering Brief of the Securities and Exchange Commission, Respondent*, US Court of Appeals, 7th Circuit, Case No. 90-1246 (4/27/1990).

⁹⁹ Underlining added.

¹⁰⁰ As remarked in the dissenting opinion in the "Delta" judgment, the stock market crashes of 1987 and 1989 confirmed also that even in what are thought to be the most liquid markets, where two-sided quotes are provided by design, there are times when the ability to execute transactions disappears. *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1275 (7th Circ. 1991).

¹⁰¹ Again as noted in the dissenting opinion in the Delta judgment, *Board of Trade of the City of Chicago v. SEC* 923 F.2d 1270 @ 1275 (7th Circ. 1991).

¹⁰² p. III-3, SEC (1/1994).

¹⁰³ Ignoring the possibility that the exchange might lose such an amount of trading volume that it could seek a low volume exemption from registration.

¹⁰⁴ p. III-12, SEC (1/1994).

¹⁰⁵ For example, see Robert C. Merton, Operation and Regulation in Financial Intermediation: A Functional Perspective, Working Paper No. 93-020, Division of Research, Harvard Business School (1992), and Ruben Lee, What Is An Exchange?, discussion paper, Capital Markets Forum, International Bar Association (1992).

¹⁰⁶ See, for example, International Capital Markets Group, The Regulation of Electronic Securities Markets: Generally Accepted Principles and Regulatory Actions and Policies (8/1994); International Councils of Securities Associations, Regulation of Electronic Cross-Border Trading Systems (5/26/1993); and IOSCO (6/1990) and (10/1994).

¹⁰⁷ In an international context, such controversies are evident in IOSCO, Technical Committee, Working Party on the Regulation of Secondary Markets, Transparency on Secondary Markets: A Synthesis of the IOSCO Debate (12/1992).

¹⁰⁸ This is evident, for example, in discussions concerning functional regulation organized along the lines of trade execution and price discovery. See Ian Domowitz, An Exchange Is A Many Splendored Thing, together with the Comments of Ananth Madhavan and Chris Hynes, in *The Industrial Organization and Regulation of the Securities Industry*, Andrew Lo (editor), University of Chicago Press (1996).

¹⁰⁹ For a discussion of various measures of trading volume that might be employed, see SEC, SRO's; Wunsch Auction Systems, Inc.; Application for Limited Volume Exemption from Registration as an Exchange under Section 5 of the SEC Act; ... Request for Comments, Release No. 34-28577 (10/24/90).

¹¹⁰ See Edward J. Kane, Technology and the Regulation of Financial Markets, Ch. 14 in Saunders & White ed., *Technology and the Regulation of Financial Markets - Securities, Futures, and Banking*, DC Heath & Co. (1986).

¹¹¹ For a general discussion of the merits of competition in market structure, see ch. 9, Robert A. Schwartz, assisted by Laura M. Cohen, *Reshaping the Equity Markets: A Guide for the 1990s*, Harper and Row (1991).

¹¹² The Commission confirmed, for example, that its mandate is “to facilitate the development of the national market system by allowing competitive forces to shape market structure within a fair regulatory field,” Statement by the SEC upon Release of the Market 2000 Report (1/27/1994).

¹¹³ An extended discussion of this topic is contained in chs. 4-6, Ruben Lee, *The Ownership of Price and Quote Information: Law, Regulation, Economics and Business*, Oxford Finance Group (1995).

¹¹⁴ See J. Harold Hulherin, Jeffrey M. Netter, and James Overdahl, *Prices are Property: The Organization of Financial Exchanges from a Transaction Cost Perspective*, 34 *Journal of Law and Economics* (Part 2), pp. 591-644 (1991).

¹¹⁵ For potentially negative consequences in an international setting, see Benn Steil, *Whither International Regulation? To Better Our Markets or Beggar Our Neighbors*, XIX Annual Conference of IOSCO, Tokyo (October, 1994). Theoretical arguments demonstrating ambiguous effects with respect to mandated transparency include Ailsa Roell, *Regulating Information Disclosure Among Stock Exchange Market Makers*, Discussion Paper No. 51, London School of Economics Financial Markets Group (1988) and Ananth Madhavan, *Consolidation, Fragmentation, and the Disclosure of Trading Information*, 8 *Review of Financial Studies*, 579-604 (1995).

¹¹⁶ See James M. Buchanan and Gordon Tullock, *The Calculus of Consent, Logical Foundations of Constitutional Democracy*, University of Michigan Press (1962); Samuel Peltzman, *Towards a More General Theory of Regulation*, 19 *Journal of Law and Economics*, 211-240 (1976); George Stigler, *The Theory of Economic Regulation*, 3 *Bell Journal of Economics and Management Science*, 3-21 (Spring 1971); and Charles Wolf, Jr., *A Theory of Nonmarket Failure: Framework for Implementation Analysis*, 22 *Journal of Law and Economics*, 107-140 (1979).

¹¹⁷ The limitations of self-regulation as an efficient means to limit monopoly power in the commodities markets is studied by Craig Pirrong, *The Self-Regulation of Commodity*

Exchanges: The Case of Market Manipulation, 34 *Journal of Law and Economics*, 141-206 (1995).

¹¹⁸ For this and the next argument, see p. VI-5, SEC, Division of Market Regulation (1/1994). This is an argument against the separation recently undertaken by the NASD of its regulation of its members from the regulation of its market.

¹¹⁹ See paras. 34-36, p. 9-10, IOSCO (10/1994).

¹²⁰ p. 160, Senate Committee on Banking, Housing and Urban Affairs, Securities Industry Study, Report of the Subcommittee on Securities, S. Doc. No. 93-13, 93d Congress, 1st Sess. 2-3 (4/6/1973).

¹²¹ See p. 19, SEC Release No. 28899 (2/20/1991).

¹²² This and the next problem are discussed in footnote 4, p. 4, SEC, Division of Market Regulation (9/26/1991).

¹²³ para. 44, p. 11, London Stock Exchange, SIB Discussion Paper: Regulation of the UK Equity Markets - Response of the London Stock Exchange (6/2/1994).

¹²⁴ For a discussion of the history of NYSE rule 390, see pp. 2592-2599, Loss & Seligman (1990), and pp. VI-11 to VI-13, SEC (1/1994).

¹²⁵ In fact, the LSE rule 4.18 has been retracted. See *Financial Times*, Stock exchange set to drop restrictive share trading rule, p. 20 (9/23/1995).

¹²⁶ See, for example, SEC and ASC, Memorandum of Understanding concerning Consultation and Cooperation in the Administration and Enforcement of Securities Laws (10/20/1993).

¹²⁷ See Ruben Lee, Enforcement Issues in Securities Markets, XVIIIth Annual Conference of IOSCO, Mexico (10/28/1993).

¹²⁸ p. VI-3, SEC, Division of Market Regulation (1/1994).

¹²⁹ See, for example, Charles C. Cox, Internationalization of the Capital Markets: The Experience of the Securities and Exchange Commission, 11 *Maryland Jour. of Int. Labor and Trade* 201-220 (1987); Charles C. Cox & Douglas C. Michael, The Market for Markets: Development of International Securities and Commodities Trading, 36 *The Catholic Univ. Law Rev.* (Summer 1987); Bradley Scott Ritter & William R. Dauber, The Present and Future Role of the Electronic Trading Linkage in the Developing International Securities Markets, 22 *George Wash. Jour. of Int. Law and Eco.* 639-670 (6/22/1989); and John T. Wall, Formal Links among Exchanges, Ch. 23, pp. 253-262, Lucas and Schwartz ed. (1989).

¹³⁰ See IOSCO (10/1994).

¹³¹ They have been analyzed at length elsewhere. See, for example, John Donohue & David E. Van Zandt, Four Models of Deregulation in International Capital Markets, Conference on Communications Technology and National Sovereignty in the Global Economy, Northwestern University (4/16/1995); International Capital Markets Group (ICMG) International Regulatory Issues - Parts 1, 2, and 3, (4/24/1989), (12/20/1989), and (3/1991); Roberta S. Karmel, National Treatment, Harmonization, and Mutual Recognition - The Search for Principles for the Regulation of Global Equity Markets, Capital Markets Forum, International Bar

Association, Discussion Paper No. 3 (6/1993); and SEC, Internationalization of the Securities Markets, Report of the Staff of the U.S. Securities and Exchange Commission to the Senate Committee on Banking, Housing and Urban Affairs and the House Committee on Energy and Commerce (7/27/1987). The issue of whether competition between different jurisdictions is beneficial also has received much attention. There has been such competition both between different states of the USA, and between different Member States of the EU. See, for example, Richard M. Buxbaum, Gérard Hertig, Alain Hirsch, & Klaus J. Hopt ed., *European Business Law: Legal and Economic Analyses on Integration and Harmonization*, Walter de Gruyter (1991); and Frank H. Easterbrook, *Federalism and European Business Law*, 14 *Jour. of Int. Law and Eco.* 125-132 (6/1994).

¹³² GLOBEX is such a system for the trading of futures contracts. See Commodity Futures Trading Commission, *Chicago Mercantile Exchange's Proposed Globex Trading System*, Green Memo (1/25/1989).

¹³³ See Robert P. Austin, *International Automated Securities Trading Systems - Regulatory Problems*, Odense University (7/23/1990).

¹³⁴ Article 15(4), ISD (11/6/1993).

¹³⁵ Article 1(13), ISD (11/6/1993).

¹³⁶ See, respectively, Articles 52-58, 59-66, and 85-86, *Treaty of Rome (as amended)* 3/25/1957.

¹³⁷ See Ruben Lee, *Supervising EC Capital Markets: Do We Need a European SEC*, manuscript (5/1993) and Benn Steil, *Competition, Integration and Regulation in EC Capital Markets*, Royal Institute of International Affairs, *International Economics Programme* (9/1993).

¹³⁸ This included, for example, attempting to require that all trades be "concentrated" on "regulated" markets, and then defining a regulated market specifically to exclude particular types of national markets. The most important such market was SEAQ International, the London Stock Exchange's trading system which at the time was very successful in attracting order flow from the continental European stock exchanges.

¹³⁹ See Frédéric Perier, *The Investment Services Directive and the European Capital Market in Securities*, European Capital Markets Institute conference (3/2-3/1994).