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***THE ELECTRONIC COMMUNICATION
NETWORKS AND THE INTERNET: A
NEW CONCEPT OF BUSINESS IN THE
CAPITAL MARKET***

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Abstract

Based on previous events, five years from now the business of trading shares will look radically different. Many old stock exchanges will be gone. Hardly a month goes by without any changes in the existing trading systems, or one exchange proposing to marry another.

The origin of the “capital market revolution” lies many years ago. In the beginning, dealing was an activity well defined in small-localized markets, but with the birth of telecommunications, exchanges migrated to larger centers. With the development of the Internet and the explosion in computer technology during the late 90s, the world’s financial markets were placed in a higher level. The roles and realities that have characterized the capital markets for over a century are being changed: from whom investors are, to how they trade, to what an exchange is.

The introduction of this new technology in the last decades has served to democratize stock markets in the sense that everyone can buy or sell stocks directly themselves. Prior to 1975, the U.S. exchanges had succeeded in limiting the access to transacting stocks exclusively to their own members – the specialists, market makers and broker-dealers. This was especially true because there were fixed minimum commission rates¹ for all trades.

Nowadays, for NYSE and NASDAQ Stock Markets, the most visible threat from technology has been the introduction of electronic communication networks, or ECNs – a type of alternative trading system (ATS) to the exchanges.

Additionally, online trading has expanded the base of a powerful force in today's markets: the retail investor. Institutional trading has increased the demand for greater liquidity, anonymity, and even new trading venues. Market participants are demanding more: twenty-four hour trading, immediate execution of orders, and lower costs. Electronic trading networks are competing head-to-head with trading floors. NASDAQ and the NYSE seem determined to get rid of their traditional membership structure, and rethink their strategies to compete with electronic networks and foreign markets.

The evolution and transformation of securities markets and of information technology is becoming an important issue for another reason: it makes exchanges comparable and more integrated. The borders of the market that investors face are blurring. In this way there is an increasing competition among the stock exchanges worldwide and among exchanges and automated trading systems.

The market microstructure framework raises fundamental public policy questions. Among them is whether or not the market power of intermediaries represents market failure. It is clear that the centrality of intermediation activity stands in contrast with market clearing assumed in traditional economics.

In this paper I will attempt to summarize the last and most important innovations in the trading activity, focusing especially in the U.S. and in Europe, and its effect on the Brazilian capital market structure.

¹ In April 1975, the Securities and Exchange Commission abolished the fixed commission system – Consolidated Tapes – SEC Acts.

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Part A. Definitions, functions and characteristics of the trading activity

A.I. Market microstructure

There was an era when exchanges were natural monopolies, but the structure of securities markets all over the world has changed dramatically in recent years. The evolution of new financial instruments, the falling monopoly of banks as a source of direct funding to borrowers and of direct investment for investors, and the dissemination of financial culture among common people, have caused the increasing importance of securities markets in the financial system.

Competition among stock exchanges, both national and international, is a recent phenomenon. Some time ago it was difficult to think of exchanges as firms that produce and sell goods to customers and compete among themselves. Traditionally, exchanges were seen either as public entities or as formally private bodies, deeply regulated by public rules². In both cases, they were often legal monopolists, given the special and similar nature of their activity as a public good.

The intermediation theory of the firm shows that firms are formed when they increase net gains from trade relative to direct exchange. Intermediaries have advantages over direct exchange in a wide number of activities: reducing transaction costs, pooling and diversifying risks, lowering costs of matching and searching, alleviating adverse selection, and supporting commitment through delegation.

² These standards were introduced after the crash of 1929, with the U.S. Securities Exchange Act – SEA of 1934.

A.II. What is an exchange?

The nature and existence of stock exchanges used not to be controversial. They were easily identified and characterized. What is and what is not an exchange is now unclear. New technology has led to the birth of a new type of institution. The question turns then on what an exchange does.

An exchange sells trading services that can be structured in three different parts: the object traded³, the means of trading⁴ and price dissemination.

Besides, despite the general acceptance that well-developed secondary trading markets are extremely important to the development of an economy, in reducing liquidity risk and providing price discovery, the role of organized stock exchanges in an economy is also not clear.

There are at least three views of stock exchanges: the exchange as *a market*, the exchange as *a firm*, and the exchange as *a broker-dealer*.

Normally an exchange is thought to be an organized market of securities. This *market* view of the exchange is shared by the U.S. Securities Exchange Act (SEA) of 1934, which defines an exchange as

“ ... any organization, association, or group of persons ... 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

³ These objects are issued by some entities (usually corporations) that generally pay a fee to have them listed.

⁴ Trading facilities, computers, a computerized floor and settlement, for example.

performed by a stock exchange as that term is generally understood, and includes the market place and the market facilities maintained by such exchange.”

In a more practical way, an exchange is a trading system that must:

- (a) Provide trade execution facilities;
- (b) Provide price information in the form of buy and sell quotations (two-sided quotes) on a regular or continuous basis;
- (c) Engage in price discovery through its trading procedures, rules, or mechanisms;
- (d) Have either a formal market-maker structure or a consolidated limit order book, or be a single price auction⁵;
- (e) Centralize trading for the purpose of trade execution;
- (f) Have members and
- (g) Exhibit the likelihood, through system rules and/or design, of creating liquidity in the sense that both buyers and sellers have a reasonable expectation that they can regularly execute their orders at those quotes.

Over time, the environment in which exchanges operate has become increasingly competitive. This is true for every aspect of the services offered by exchanges. The growing ability of the OTC (over-the-counter) markets, ATSS, and broker-dealer firms to fulfill customers' buy and sell orders completely in-house all compete with the liquidity services once offered exclusively by exchanges.

In order to implement this evolution, the SEC has provided an interpretation of it as follows⁶:

“What distinguishes an exchange from brokers, dealers and other entities is its fundamental characteristic of centralizing trading and providing purchasers and sellers buy and sell quotations on a regular or continuous basis. 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 brokerage, such as a formal market making system or systemic procedures such as a consolidated limit order book or regular single price auction.”

The *firm* view of exchanges concentrates on the production side. We can stress the definition of a financial exchange not as a market, as usually is done, but as a firm that creates a market in financial instruments and has the property of the price information produced. In addition, a security market can also be seen as a firm that produces a composite good, the exchanging of securities, which may be formed of different elements: price formation, counterpart research, insurance for a good clearing, and the standardization of the good exchanged. In short, the production cycle is divided into three parts: listing, trading, and settlement. This is why the efficient functioning of an exchange can be viewed partly as a public good, even when it is privately managed.

The last view is the exchange as a *broker-dealer*, recognizing that the exchange is a kind of intermediary among intermediaries. Entities that perform very similar activities are sometimes regulated in fully different ways. In this sense, the exchange can be seen as a broker-dealer that, like many banks or security houses, receives trading orders and supplies the way of executing them.

⁵ In Brazil only this last procedure is effectively used by the exchanges.

Finally, for regulating the new alternative trading systems (ATSS), the U.S. SEC proposed and analyzed a regulatory strategy composed of two aspects: 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 that are classified as exchanges and those which are classified as brokers. This solved many of the problems arising from the exchange/broker distinction.

A.III. Brokers and dealers

The legal definition of a *broker* is any person engaged in the business of effecting transactions in securities for the account of others. A *dealer* is any person engaged in the business of buying or selling securities for his own account, through a broker or otherwise (except when such purchases are not as a part of a regular business).

In other words, a dealer is one engaged in buying and selling securities at a regular place of business. By contrast, a broker effects no transactions, but merely brings buyer and seller together.

The economic functions of brokers and dealers are distinct. Dealers, in buying and selling securities, provide an arbitrage function. They profit by finding trading opportunities in mispriced securities and then buy and sell these securities as principals. Like exchanges, dealers provide a liquidity function, by acting as market makers, that is,

⁶ This interpretation was introduced after the Delta and AZX (Arizona Stock Exchange) cases, in 1990.

making a two-way market in a particular security. A dealer achieves this by gaining valuable information about the supply and demand curves for the stock it is trading and by profiting on the spread between the bid and the offered prices of the security.

By contrast, brokers provide a distribution function. They act as agents for customers. Sometimes brokers adapt the supply of securities in the marketplace to the investment needs of their clients. Other brokers act for more sophisticated customers who are able to identify for themselves the securities they want to purchase and sell. These brokers provide a pure execution function.

Despite the legal and analytical distinction between brokers and dealers, it is common for individuals to serve simultaneously as brokers who advise clients about transactions in securities and as dealers who take positions in the same securities that they are recommending as broker. This dual relationship presents a clear conflict of interest. Regulation attempts to deal with this conflict by prohibiting broker-dealers from trading ahead of a customer's order⁷, free riding, and withholding and maintaining accounts for employees of other broker-dealers without notifying them.

But these regulations do not solve all of the problems. This conflict of interest causes some customers to curb from dealing with firms that act as both brokers and dealers because they do not want to disclose their trades to the dealers at the firms at which they place their orders.

The sources for these cases are, respectively, in SEC Release no. 34-27611 (Jan/1991) and SEC Release no. 34-28577 (Aug/1990).

⁷ The illegal action is known as *front running*.

Indeed, this promise of confidentiality is the reason why clients sometimes choose to deal with ATSs rather than with traditional firms that serve as both brokers and as dealers. In dealing with ATSs, customers sacrifice immediate execution of orders, as well as a certain amount of flexibility, in order to obtain trading anonymity. In turn, this anonymity permits customers to protect their property rights in information.

A.IV. Self-Regulatory Organizations – SROs

Within the U.S. all exchanges are classified as *Self-Regulatory Organizations (SROs)* and must be registered and enforce compliance by its members with federal laws and with their own rules. They must allow broker-dealers to become members, and must assure them fair representation in the selection of their directors and in the administration of their affairs.

Their 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 the rules, and facilitating transactions in securities. An exchange must also show that it has formal capacity, security, and contingency plans.

The self-regulatory responsibilities of exchanges fall into three basic categories:

- (a) Trade practices and insider trading;
- (b) Manipulation, and
- (c) Broker solvency.

Exchange regulation of trading practices, which are all important factors affecting usage of such brokers/dealers and exchanges, encompasses detection and discourages insider trading in securities markets. For example, NYSE monitors trading activity in listed stocks and attempts to detect patterns of unusual trading that could reflect illegal insider trading. Regulation of trade practices also involves oversight of floor trading.

Although the term manipulation is quite elastic in its definition and application, certain kinds of manipulation such as “corners” and “squeezes” are well defined and well understood.

Exchanges also have responsibility to oversee the financial conditions of member firms. A poorly capitalized brokerage firm can fail, thereby threatening its customers with the loss of some or all of the funds held in their accounts. Exchanges audit brokerage firms to ensure that they are adequately capitalized and have good controls. They also monitor whether a brokerage firm has segregated customer funds and whether the firm is using customer money to support its own trading activities.

Three 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. The second problem is that a SRO may be required to supervise traders who have no interest in the commercial markets that the SRO itself operates. 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.

On the other hand, there is a range of arguments in favor of self-regulation. The presence of market participants as self-regulators may enhance the knowledge and experience of the regulatory authorities. Market participants may have a direct and stronger interest in maintaining the integrity of the markets in which they trade.

A.V. Demutualization (convert to for-profit form with non-member ownership)

The three archetypal organizational structures that have most commonly been adopted by exchanges are the non-profit, the consumer cooperative, and the for-profit forms. Although historically most exchanges have been non-profit firms, there have been some cooperative exchanges, and, recently, there has been a trend for exchanges to incorporate themselves as for-profit entities.

And why are exchanges typically organized as non-profit? Why have some new computerized exchanges adopted the for-profit form? Why have some members at several major exchanges proposed to change from non-profit to for-profit form?

Specifically, when members are homogeneous, a for-profit organization dominates a non-profit organization because a for-profit exchange can exercise market power more effectively than a cartel of members. Besides, the model implies that the predominance of the non-profit form is a rational response to differences in costs between exchange members, and to member specialization in the provision of different trading services. Moreover, the theory says that exchanges with heterogeneous members

will implement elaborate governance procedures. Finally, heterogeneities influence the incentive of exchange members to adopt inefficient rules.

The model analyzed above imply that:

- (a) Exchange members will choose the non-profit form if heterogeneity is sufficiently great;
- (b) Exchanges with homogeneous members choose the for-profit form;
- (c) An exchange is more likely to be organized as non-profit firms when it can enforce collusive pricing by its members, meaning that non-profit organization and collusion are complements that should be observed together, and
- (d) The relative numbers of different types of members, the severity of inter-exchange competition, and economies of scale determine the level of heterogeneity sufficient to lead to adoption of the non-profit form.

Even with Regulation ATS in place (see Part B.V), a number of significant market structure issues still need to be resolved. One of them regards to for-profit exchanges. The NYSE and NASDAQ are considering demutualizing and going public sometime in the next few years.

One of the most difficult issues raised by for-profit exchanges is whether they can adequately carry out their self-regulatory responsibilities. The question is focused on the incentives to dedicate sufficient resources to the regulatory function that a for-profit exchange must have, and about the probability of a potential conflict of interest in a for-

profit exchange regulating its owners. Another potential conflict would occur in regulating market participants who also may be a for-profit exchange's competitors.

Some regulators, including the SEC, have reacted to these large changes (or threats of large changes) with alarm. In particular, regulators have expressed concerns that for-profit exchanges will self-regulate their markets too little. They argue that shareholders in for-profit exchanges will try to increase profits by reducing expenditures on self-regulation. For example, SEC chairman Arthur Levitt believes that there are "potential conflicts of interest that may arise if the SRO is enmeshed within a for-profit corporation".

To a large extent, this trend to demutualize has been driven by the dynamic changes brought about by the technological revolution. For instance, the competitive pressures placed on the exchanges by the new market entrants, such as the electronic communication networks (ECNs), and global competitors, have caused the traditional exchanges to rethink their governance structures, as well as their capital structures, in order to be able to respond more quickly to the rapidly changing market place.

Part B. The traditional trading activity

B.I. Competition among exchanges

The history of regional stock exchanges in the U.S. demonstrates that information costs and regulatory barriers significantly affected the competition for order flow. In the 19th century, U.S. securities financing, ownership, and trading all tended to occur on a localized basis, indicated by the fact there were more than a hundred regional exchanges.

Indeed, the creation of most regional exchanges was associated with the initial public offering (IPO) financing of the growing industries of a given region. At least until 1929, the regional exchanges retained much of their local flavor. After that regionals shifted from their traditional role of trading local securities and began to serve as auxiliary markets for New York.

Through the 1940s, the technological and regulatory changes in the U.S. securities markets had a major impact on regional exchanges, primarily because those changes enabled the OTC market to effectively compete in roles where regionals had historically concentrated. In response, the regional exchanges moved into increased competition on NYSE-listed stocks with each other and with NYSE itself. As a consequence the number of regional exchanges registered with the SEC fell from 18 in 1940 to eight today⁸.

In Europe, the London Stock Exchange (LSE), deeply reformed in 1986, decided unilaterally to trade on its international segment the most important European stocks. It gained such a significant market share in other European securities listed on national exchanges that the others had to quickly update their markets.

In Brazil, in 1999 the consolidation of the stock market finally ended after decades of regional disputes, and the São Paulo Stock Exchange (BOVESPA) is sole in this function.

⁸ American Stock Exchange LLC ("AMEX"), the Boston Stock Exchange, Inc. ("BSE"), the Chicago Stock Exchange, Inc. ("CHX"), the Cincinnati Stock Exchange, Inc. ("CSE"), the International Securities Exchange, LLC ("ISE"), the New York Stock Exchange, Inc. ("NYSE"), the Pacific Exchange, Inc. ("PCX"), and the Philadelphia Stock Exchange, Inc. ("PHLX").

Two outside forces have come together to create this entire situation. The first is electronic. The growing power of the computer and the spread of the Internet have made share dealing easier and cheaper if sufficient scale economies can be achieved. One result has been increased pressure on intermediaries, whether stockbrokers or exchanges, to cut their costs. Another has been the arrival of competition for organized stock exchanges in the shape of entirely new electronic markets.

The second force is a growing desire on the part of investors, companies and investment banks to move beyond national borders for trading shares and raising capital, and to do it more cheaply. This is expressed most strongly in Europe, where the arrival of the Euro has made the notion of running separate national stock exchanges seem pointless.

Competition, in fact, takes place on many grounds, such as the provision of immediacy, price discovery, low price volatility, liquidity, transparency and transaction costs. The more competition there is, the more likely it is that exchanges themselves will adopt rules that benefit and protect customers. There is also derived competition, by intermediaries acting as brokers that try to exploit the Internet to offer customers the chance of trading directly on exchanges for very low fees.

From this perspective BOVESPA launched, in March 1999, a home-access to its system, through the Internet. Since then many brokers adopted their systems to obtain a market share of a market that is still not defined.

B.II. New York Stock Exchange – NYSE

NYSE can be expressed as the most traditional stock exchange in the world. From its traditional trading floor, crowded with noisy people, to the restrictive rules and practices that have protected it from competition, now it is facing new competitors.

The essential point is that trading at NYSE takes place by open bids and offers by Exchange members, acting as agents for institutions or individual investors. Buy and sell orders meet directly on the trading floor, and prices are determined by the interplay of supply and demand. Each listed stock is assigned to a single post where the specialist manages the auction process. NYSE members bring all orders for NYSE-listed stocks to the Exchange floor either electronically or by a floor broker. As a result, the flows of buy and sell orders for each stock is directed to a single location. In contrast, in the over-the-counter market, a dealer who buys and sells out of inventory determines the price.

Buyers and sellers on NYSE are connected to their counterparts trading NYSE-listed shares on regional exchanges by the Intermarket Trading System (ITS). This probably results in better pricing than the ones that are traded outside the ITS, in the fast-growing “third market”⁹, made up of firms such as Knight Primark or Madoff, which are not members of NYSE. Such “third market” firms sometimes even pay brokers to send them their customers’ orders, and this practice makes the “third market” even less competitive in relation to the best possible price.

As well as being offered the best prices, other investors want to know if they will be able to trade at those prices, that is, instant execution. But there is typically a delay of

⁹ Authors commonly use the term “third market” to refer to any off-exchange trading mechanism.

several seconds between an order being sent electronically to NYSE and its execution. ECNs such as Island and Instinet claim to have no delay at all. Retail stockbrokers and discount brokers, such as Merrill Lynch and Charles Schwab, say that most of their customers would rather have instant execution than the small possibility that they might get a better price on NYSE.

Investors also want to know how many shares a price is good for and how deep and liquid the market is. This is a big worry for institutional investors, who spend much time and money trying to minimize the risk that prices will move against them when they do a large trade (price deterioration).

Big investors have a different complaint: because all orders on NYSE go to a single specialist, other investors can take advantage of a big transaction before the order is completely filled. This increases price deterioration for large traders. They want strict time priority, meaning first come, first serve. NYSE says it plans to introduce strict time priority soon. Institutions are seeking alternatives such as crossing trades among themselves – a big reason for the growing popularity of crossing networks and the “third market”.

The fact that a specialist on the NYSE floor has sole access to the exchange’s limitorder book gives him/her highly valuable information about the supply and demand for a share. This knowledge is probably the main source of the specialist’s profits.

As part of realizing its destiny as a data company, NYSE says it will fragment this monopoly on information by opening up the limit-order book to the public. If it does

this, which would not be easy, it would make the market far more transparent. But in doing so, it risks sacrificing those who are said to have made NYSE what it is today: the specialists.

Specialists do two main things. They aggregate buy and sell orders for a particular stock, and they intervene in the market, buying or selling to reduce price volatility. In other words, they provide liquidity. A computer or a series of linked computers could easily do the first of these functions. Whether the second can also be replicated cheaply may decide the specialists' fate. Liquidity is, after all, NYSE's main competitive advantage.

NYSE may, in short, be the most liquid exchange simply because it is the biggest. On the other hand, some financial institutions are so big that it would take only one or two (Vanguard or Fidelity, say) to switch to an alternative venue to do serious damage to the exchange's liquidity. And if liquidity reduces volatility, it may also attract new traders.

Yet it is not clear that this liquidity does prescind or not to the existence of specialists. People like to trade where they know other traders are. Once an exchange has a certain amount of liquidity, it is likely to attract more trading volume, even if there are more efficient, but less liquid, alternatives. This is why many economists, including Alan Greenspan, the Fed chairman, argue that stock exchanges tend towards natural monopoly.

It is said that NYSE has been very slow to forge alliances or joint ventures with overseas markets, risking remaining an essentially national operation in a rapidly globalizing marketplace.

The reason for most of these failings is that NYSE has refused to adapt as markets have evolved. And the main reason for that is that it is under conflicting pressures from its customers and its members.

If there is life yet in the floor, the specialist system and the NYSE's data – and these are all big ifs – what about its other big failing, that is the lack of a global strategy? The biggest news in exchanges has been not about floors versus screens, but about international partnerships and mergers. But until its recent announcement of a vague linkage with other foreign exchanges, NYSE seemed to have been left out of a powerful wave of international consolidation.

B.III. National Association of Securities Dealers Automated Quotation System – NASDAQ

B.III.1 Origins

Created by the NASD in 1971, NASDAQ was initially intended to enhance the efficiency of the OTC (over-the-counter) markets for stocks. In essence, NASDAQ was built as a telecommunication network that would link thousands of geographically dispersed market participants, who contacted one another by their own means of trade, usually by telephone.

However, as trading volume began to surge in 1982, many of the larger market makers built internal automated systems. These electronic systems were primarily used to execute retail orders that had been routed to them from order entry firms. As trade volume on these computerized systems grew, the telephone became less effective.

NASDAQ has been designed as a dealer market. Currently, more than 500 market making firms provide capital support for NASDAQ-listed stocks. They are all required to do three things:

- (a) To disclose their buy and sell interests by displaying two-sided quotes in all stocks in which they choose to make a market;
- (b) To display both quotes and orders in NASDAQ in compliance with the SEC's Order Handling Rules and
- (c) To honor their quoted prices for stated volumes and report trading in a timely manner.

Since the inception of NASDAQ, its market makers have made a living by buying and selling stocks with their own capital, taking in the difference between the price at which a particular stock was bought and the price at which the same stock was consequently sold to a buyer, the bid-ask spread. This spread is the main source of income for market makers. In order to attract order flow, a market maker will display the best bids and asks in their books on the NASDAQ quote montage.

B.III.2 Background for regulation

The publicity surrounding some academic studies¹⁰ showing that NASDAQ market makers avoided odd-eighths quotes launched SEC and Department of Justice (DOJ) investigations in 1994. The U.S. DOJ obtained a US\$ 1 billion antitrust settlement for public investors against the securities firms involved. The SEC investigations resulted in NASDAQ's agreement to adopt a series of Order Handling Rules changes on January 1997. The most significant of these changes was to include ECNs' quotes in the NASDAQ national best bid and offer (NBBO) quote montage.

The fact that traders were allowed to price limit orders on an ECN as precise as 1/256 of a US dollar, and that these prices were rounded to 1/8 for inclusion in the NBBO, may have contributed in part to a movement in Congress to adopt decimalization¹¹.

The SEC's Order Handling Rules and a variety of other rule changes were made on NASDAQ and implemented over the course of 1997. Basically, the intent of these rules was to create a market that was both fairer and more orderly and to dictate how market makers had to handle investors' orders. The effect of these rule changes was to give rise to a spectacular increase in the volume of NASDAQ shares traded on electronic communication networks (ECNs).

The rule also led to a massive jump in the number of ECNs in existence. A few years ago there was only one viable ECN. Today, there are no fewer than nine, although some of them do not have all characteristics of a viable one. This growth has come at the expense of NASDAQ market makers, who have seen their spreads narrow, and who

¹⁰ Christie and Schultz – 1994.

¹¹ SEC Release no. 34-42914 (Jun/2000), mandated April 9, 2001 deadline.

have seen ever increasing portions of their order flow handled through ECNs, rather than manually.

In addition to creating a more level playing field for individual investors, NASDAQ's new Order Handling Rules have improved prices and narrowed spreads, and further enhanced the market's liquidity and depth. The rules have produced an average spread reduction of more than 40% (as seen below).



Figure 1 - Spread reduction after NASDAQ order handling rules

Promoting fair and efficient markets is a necessary condition to achieving investor protection. From this point of view, in 1998 the SEC finally decided to encourage the use of technology in order to link the markets and promote innovation and competition in the National Market System (NMS)¹² for securities, and promulgated Regulation ATS.

¹² In 1975, U.S. Congress made major amendments to the Securities and Exchange Act of 1934 by adding section 11A, to foster the creation of a National Market System (NMS). The legislation empowered the SEC to pursue some objectives in its implementation of the national market system legislation. These objectives were to assure, basically, economically efficient execution of securities transactions and fair competition among brokers and dealers, and among exchange markets and between exchange markets and markets other than exchange markets.

B.IV. Database comparing NYSE and NASDAQ market activity

	<i>December 1999</i>	<i>December 2000</i>
NASDAQ		
<i>Share Volume (000)</i>	31,627,478	44,948,715
<i>Dollar Volume (000)</i>	\$1,465,797,793	\$1,422,082,570
<i>Market Value (Month End) (000)</i>	\$5,204,620,335	\$3,597,085,872
<i>Number of Companies (Month End)</i>	4,829	4,734
<i>Average Price Per Share Traded</i>	\$46.35	\$31.64
	<i>December 1999</i>	<i>December 2000</i>
NYSE		
<i>Share Volume (000)</i>	19,669,704	24,175,307
<i>Dollar Volume (000)</i>	\$794,547,000	\$909,271,300
<i>Market Value (Month End) (000)</i>	\$12,296,000,000	\$12,372,300,000
<i>Number of Companies (Month End)</i>	3,025	2,862
<i>Average Price Per Share Traded</i>	\$40.39	\$37.61

Figure 2 - Comparing annual statistics of NASDAQ & NYSE
Source: NASD

<i>Year</i>	<i>NASDAQ Offerings</i>	<i>Dollar Value of NASDAQ Offerings (Millions)</i>	<i>NYSE Offerings</i>	<i>Dollar Value of NYSE Offerings (Millions)</i>
<i>1991</i>	320	\$7,730.16	49	\$8,351.15
<i>1992</i>	442	\$13,585.91	80	\$15,661.62
<i>1993</i>	520	\$16,069.65	97	\$22,308.17
<i>1994</i>	444	\$13,186.80	82	\$18,163.61
<i>1995</i>	476	\$16,733.92	72	\$14,752.75
<i>1996</i>	680	\$24,498.15	88	\$11,947.60
<i>1997</i>	494	\$19,367.03	87	\$18,202.38
<i>1998</i>	273	\$13,757.27	68	\$35,848.15
<i>1999</i>	485	\$50,425.22	49	\$54,418.51
<i>2000</i>	397	\$52,585.09	48	\$59,699.95

Figure 3 - Total Initial Public Offerings on NASDAQ & NYSE
Source: NASD

B.V. Automated Trading Systems – ATs

To register as an ATS, one firm should submit a form, report material changes, register as a broker-dealer, become a SRO member, permit SEC and SRO inspections, maintain certain records, make quarterly reports, ensure the protection of subscribers' confidential trading information, and refrain from calling oneself an "exchange".

It also requires order display and fair access, capacity, security, and integrity standards. From this point on, a trading system can register as an exchange or be regulated as an ATS.

In a few words, the SEC rule that regulates Automated Trading Systems does the following:

- (a) Improves linkages by requiring ATSS to become self-regulatory organization members;
- (b) ATSS with more than five percent of the volume in any security must make all their best-priced orders in those securities available to the public quote stream and accessible to non-subscribers;
- (c) Will make all the best prices for the significant markets in any equity security available in the NMS;
- (d) Equalizes competition by leveling the playing field between ATSS and exchanges and
- (e) Encourages competition through technological innovation.

It is difficult to generalize about ATSS because they are changing all the time. Moreover, the unclear number and complexity of these systems makes generalizations more difficult. Over 140 broker-dealer firms have informed the SEC that they operate some kind of ATS. Some of these systems are run completely in-house, while others are available for customers or for market participants generally.

Alternative trading systems (ATS) currently handle almost 4 percent of orders in New York Stock Exchange listed securities, and 20 percent of the order in NASDAQ.

Part C. The new concept of business in the trading activity

C.I. Electronic Communication Networks – ECNs

An ECN is a communication network designed to match orders. In its regulations, the SEC defines a crossing network as a system that allows participants to enter unpriced orders to buy and sell securities. Orders are crossed at specified times at a price derived from another market.

ECNs are a kind of ATS that are not exchanges and, by definition, do not use their own money to buy and sell stock. Instead of having a supply side that provides bid and ask prices, the matching system consists of a book where limited buy and sell price orders are displayed. When the two sides match, a deal is made and reported to the quoting system.

ECNs were designed to compete with existing market makers on the financial markets and particularly on NASDAQ, where they have eliminated the need for a human broker-dealer.

There are many consequences to this working process. By providing electronic access and acting as a “middleman”, they have been able to offer after-hours trading capacities. By bypassing market makers and broker-dealers, they have been able to bear low transaction cost. Because they match orders passively, they do not participate in the price discovery scheme. Because their major target is matching orders, they have to develop a client structure where buyers can meet sellers, and both sides must be able to execute.

They have to avoid as much as possible a disproportionate client portfolio with only one side (either buyer or seller). The ECN provides a pure transactional service with no price discovery. The security's underlying price can be represented by the midprice between the bid and ask prices, by the preceding closing price, or by the volume-weighted average price over some period. Orders are aggregated and passively matched by the ECN. If there is an imbalance, orders on the excess side are randomly selected to match the number of orders on the smaller side. Orders that are not selected do not execute. For example, if there are orders to buy five units and sell three units, all three units are sold and three of the five buy units are randomly selected and executed.

Electronic trading technology lowers the start-up costs for new trading systems, which is why we have seen such an explosion in the number of available systems. In addition, the operating costs are usually lower. It changes the dynamics of the marketplace. It removes at least three barriers imposed on markets:

- (a) The physical space: on a traditional exchange, the floor members have time and place advantages over those off the floor,
- (b) The need to be a membership organization and
- (c) The geography location: market participants can be geographically dispersed.

This ability that has made foreign markets increasingly wanting to provide direct electronic access to U.S. investors.

Electronic trading technology has a great potential for disintermediating the markets. It provides a means for natural buyers and sellers to meet directly, without intermediaries, like market makers or specialists. It does not mean that intermediaries

will disappear, although they may lose their importance for the most liquid stocks under normal market conditions. Intermediaries will still play a critical role maintaining orderly markets where trading interest is concentrated on one side of the market.

As its name explicitly shows, an ECN is not an electronic stock market. This has sometimes led to confusion. ECNs are often called e-bourses or e-markets. The fact is that there is still a difference between ECN and electronic stock markets. It is obvious that both are supported by a set of terminals linked by a specific protocol and a communication network. Both enable the trading of stocks. However, an electronic stock market gives a price for each product traded and guarantees execution and delivery of the trades. This is not the case with an ECN. Basically an ECN gathers orders from its members and matches them when possible; it also posts its own quotes on NASDAQ. It does not have a direct impact on the real price discovery process but it may have some influence on the prices through the quote display. An ECN replicates the prices given by the stock markets. It does not guarantee delivery and execution.

In 1994, the only ECN of any prominence was Instinet. This network allowed institutional investors to trade privately with each other and NASDAQ market makers. Suspicious of Instinet private participation, the SEC effectively forced ECNs to post their quotes on NASDAQ's trading bulletin board, known as the Level II screen.

Allowing ECNs onto the Level II screen market was a crucial change. Previously, ECNs were required to attract both buyers and sellers in order to match trades. By forcing Instinet into the public marketplace, the SEC opened the public market to ECNs.

ECNs and traditional market makers each serve different purposes within the NASDAQ market. In contrast to market makers, who assume capital risk and profit based on the spread¹³ at the transaction, ECNs simply match buyers and sellers for a per-share fee.

While subscribers can access each ECN via direct links, all of the market participants can connect to ECNs via SelectNet¹⁴. However, only the subscribers have the privilege to see the entire order book of ECNs. As registered broker-dealers, ECNs merely function as an agent broker. ECNs' special privilege lies in the fact that they have the ability to display their best bid and ask quotes in the NASDAQ Quote Montage.

ECNs are also popular because they enable buy-side firms to buy and sell a large volume of orders anonymously, thus decreasing the chance of other market participants finding out and causing the market to move against them. ECNs have also become attractive because of their greater level of automation. Instead of shopping around and making endless phone calls and negotiating prices, a buy-side or broker-dealer may simply place their orders into an ECN and, if the other side can be found, those orders will be matched automatically.

Contrary to popular belief, ECNs are not in direct competition with NASDAQ itself. ECNs participate in the NASDAQ market as members, making NASDAQ function more efficiently by providing automatic matching capabilities. The real

¹³ Bid-ask quotes are commonly referred as the spread.

¹⁴ In 1988 NASDAQ's SelectNet system was introduced and allow participants to route orders to a particular market maker or ECN.

competition is between the ECNs and the market makers. ECNs have taken a big slice of trade volume away from market makers.

At present, there is no unified pricing or reporting structure among the ECNs. The lack of one regulatory body or user group decreases the transparency of the market. Determining ECN market share, or ECN volume as a percentage of total NASDAQ volume, is a tricky task. The players use different reporting methodologies. Some report trades only when two buy-side institutions are involved in a transaction. NASD (The National Association of Securities Dealers) has some figures about each ECN's participation in NASDAQ:

<i>Date</i>	<i>ATS</i>	<i>Dollar Volume</i>
<i>Dec 2000</i>	Instinet	14.7%
<i>Dec 2000</i>	Island	10.4%
<i>Dec 2000</i>	Redi-Book	3.6%
<i>Dec 2000</i>	Archipelago	1.5%
<i>Dec 2000</i>	Brut	1.6%
<i>Dec 2000</i>	B-Trade	1.8%
<i>Dec 2000</i>	NexTrade	0.0%
<i>Dec 2000</i>	Attain	0.0%

Figure 4 - ECN dollar volume over total NASDAQ dollar volume
Source: NASD

Institutional investors have long recognized the need for alternative markets that provide low-cost execution while sacrificing immediacy and execution guarantees that coexist with the traditional trading institutions.

When both markets coexist, each trader has to decide whether to submit his/her order to the dealer market or to the ECN. Following common market practice, the two markets are not mutually exclusive: traders can take advantage of both markets by first using the ECN and – if their orders are not executed on it – subsequently going to the

dealer market. Traders' decisions are based on their value to trade, the costs in each market, and their estimates of the probability of execution on the ECN.

We should consider Continental Europe, which, until now, has not seen any development of ECNs. Since European financial markets turned much earlier to an electronic trading system, they may not be so vulnerable today but competition will intensify in the following years.

In Brazil the current regulation forbids such networks: one must be registered as an exchange or as a broker dealer (CTVMs, DTVMs or investment banks). In the OTC market, the regulation is also applicable.

C.II. SuperMontage at NASDAQ

On January 2001, SEC approved the proposal for the NASDAQ Order Display Window – SuperMontage. The proposal was originally submitted in October 2000.

SuperMontage will partially eliminate the distinction between quotes and orders and expand the ability of NASDAQ Quoting Market Participants to represent quotes/orders in the NASDAQ market. It will permit these participants to enter multiple quotes/orders at the same price or at different prices. In addition, SuperMontage will allow NASDAQ Quoting Market Participants to enter orders anonymously, although market makers will be obligated to maintain a two-sided order consistent with SEC and NASD rules.

SuperMontage will replace NASDAQ's current SOES¹⁵ and SelectNet services with a new process. The new system will give investors a better understanding of the supply and demand for trading a stock by showing the total number of shares available at the three best prices.

The main advantages of SuperMontage over the current system are that it will give investors a better snapshot of the supply and demand for trading a stock by showing the total number of shares available at the three best prices and it allows investors to access trading interest at multiple prices from many different sources.

The ECNs have lobbied furiously against SuperMontage, alleging, perhaps with justification, that it is an attempt to put them out of business. But, after numerous changes to its proposal, NASDAQ now has come up with something that the SEC can live with.

C.III. Online brokers

It started out as a curiosity, quickly became a fad, and now it's a revolution. The simple act of tapping a stock trade into a personal computer has transformed a multi-billion-dollar industry. "My broker says" has been replaced by "I read on the Net." Some of this interest will be fleeting. The public's fixation with stocks and trading clearly could never have come about without the historic bull of the 1990s. It is not probable that this would have happened if a bear market have lasted for a long time. And it is still unclear how the current bear market will affect trading levels.

¹⁵ In 1984 NASDAQ introduced the Small Order Execution System (SOES), which allow participants to

Thanks to the Internet, new intermediaries known as online brokers have emerged (E*Trade, Datek and Ameritrade), and others have had significant growth (Charles Schwab). Actually, the Internet is a powerful tool that can aggregate demand for stocks and then reach an important volume with a huge number of small accounts.

The online securities trading business is currently experiencing astounding growth rates. The main reason that most of these companies enter the online business is to capitalize on competitive opportunities. The Internet media has permitted small, no-name companies to compete with the larger firms who have the brand marketing strength built on traditional brokerage or other financial services. Already, online securities trading companies that were unknown companies only five years ago have established a niche in the financial service world.

Charles Schwab & Co. was the first established brokerage firm to embrace the Net, and it quickly saw thousands of its clients give up its toll-free phone lines and place their orders online. By the end of 1998, more than half of its stock trades came in over the Net, and across the industry, roughly one in six stock trades originated from orders that were placed online. There were 7.1 million online brokerage accounts, up from just 1.5 million two years earlier. The number of accounts is expected to reach 18 million by 2001.

As if any more evidence were needed that Wall Street couldn't afford to remain uninvolved from online investing, Schwab's market capitalization value edged above that of Merrill Lynch & Co. in late 1998. Since NASDAQ is having a long bear market these market values have changed significantly, and Merrill Lynch's market

capitalization is now twice as big as Charles Schwab's¹⁶. Besides, Schwab recently announced a large layoff of personnel (about 10%) due to less trading activity.

All of these market values will continue to zigzag with the stock market, but few people now expect online stock trading to go away. The phenomenon has clearly touched a nerve with the investing public and tapped into investors' desires to use technology as a means to accomplish things cheaper and faster.

According to online brokers, online securities trading is primarily equity trading. Averages for the percentages of four different products traded online are equities (80%), options (12%), mutual funds (6%), and fixed income (2%) – February 2000.

The deep discounter segment, which offers deep volume discounts, sees itself as the leader of the industry in innovation, technological capability, experience, and long-term commitment.

Besides their low commissions, there are three popular methods used by those brokers for recovering costs:

- (a) Payments for order flow: most of the best-known discount brokers are paid several cents a share by those who complete their orders;
- (b) Internalizing orders: in this method buyers and sellers are matched in-house;

New SEC rules, that took effect in January 30, 2001, made disclosure of some of the hidden costs of dealing routine. Under these rules, stockbrokers are required to tell

¹⁶ Market cap: Charles Schwab (NYSE:SCH): US\$22.19bi and Merrill Lynch (NYSE:MER): US\$ 48.21bi – March 28th, 2001.

customers in which market their trade was executed, whether the broker was paid for the order, and what the spread was. In the past, brokers were told simply to provide their customers with “best execution”, without being given much detail about what that meant.

Today floor-based exchanges already do most of their trading electronically. Most of the floor-based exchanges have electronic order routing networks and limit order books. The NYSE’s SuperDOT order routing and trade reporting system is an electronic network that broker-dealers across the country can access from their desktops. Meanwhile, the regional exchanges receive well over 90% percent of their order flow electronically and automatically execute most of it without any human intervention. Nowadays at BOVESPA, 50% of the daily volume trade is matched electronically, representing more than 80% in number of trades.

Part D. The trading activity in Europe and Brazil

D.I. The European case

This year the London Stock Exchange (LSE) is celebrating 200 years of existence. However, its origins go back a hundred years further; it was in the wake of the French revolution that it established itself as Europe’s leading center for the trading of securities. Despite its ups and downs, that is the position it has held ever since. It is also, in terms of the foreign companies whose shares are listed there, the most international one.

The LSE suffered, as did many other exchanges, from its mutual-ownership structure. The members who owned it were also its main customers, many of whose

interests conflicted. So it was hard for management to act decisively. Although the LSE has turned itself into a company owned by shareholders, they still do not behave like investors in a normal company. One problem is the nationalism that affects its activity, although most participants are foreigners. The other is that demutualization has not removed conflicts of interest, and its shares are still in the hands of the old “mutual” members.

Recently the LSE has become the object of a contest as interesting as any played out in its long history as a market for corporate control, although this movement to buy the LSE has taken place for much smaller exchanges (including Sweden's om Gruppen). This phenomenon happened because these small exchanges have responded to the challenges of technology and globalization much faster than the LSE.

Stock exchanges have been slow to abandon geography. The pressures to do so, however, are beginning. The Internet has made it easier and cheaper for individuals to trade shares from their computers. Technology has also led to the rise of new electronic exchanges. And it has opened up the possibility of a global digital market in which blue-chip shares could be bought or sold by any investor anywhere at any time. The most powerful impediments to the creation of such a market are justifiable regulatory concerns and the less defensible interests of national stock exchanges.

In Europe, the advent of a single currency three years ago made these obstacles all the more obvious. Despite the Euro, it still costs a European investor far more to trade across Euro-zone borders than in his/her domestic market. This has led to a merger

between the French, Dutch and Belgian exchanges, known as Euronext, and the collapsed deal between the LSE and Deutsche Borse (iX).

D.II. The Brazilian case

The most important Brazilian stock exchange, the São Paulo Stock Exchange (BOVESPA) was founded in August 1890. Up to the mid-1960s, BOVESPA and other Brazilian exchanges were official entities linked to the finance departments of state governments, and brokers were appointed by the public sector.

After the enactment of the Securities Act in 1965, the Brazilian financial system and capital market underwent a series of reforms, which created the institutional character the Brazilian stock exchanges still have today. The Brazilian exchanges became non-profit, self-regulating institutions, with administrative and financial autonomy. Brokerage firms replaced the traditional individual government securities broker. Today BOVESPA is a SRO entity that operates under the supervision of the Brazilian Securities and Exchange Commission (Comissão de Valores Mobiliários - CVM).

Since that time, BOVESPA has been steadily improving its technology and the quality of services provided to investors, market intermediaries and listed companies.

In 1972, BOVESPA pioneered the implementation of automated trading sessions with information displayed online and in real-time via a computer terminal network. At that time, BOVESPA also developed a fungible custody system and implemented an online service network for brokerage firms.

In 1990, trading operations started being carried out through the Computer Assisted Trading System/CATS, which operated simultaneously with the traditional Open Outcry System. In 1997, BOVESPA implemented the Mega Bolsa, its new electronic trading system. Using the same platform used in Euronext, Mega Bolsa expanded the potential information processing volume and allowed BOVESPA to consolidate its position as the most important trading center in the Latin American market.

In March 1999, BOVESPA introduced an internet trading system, named Home Broker, which allow investors to automate his relationship with their brokerage firm by using a personal computer linked with the Internet, much like the Home Banking systems offered by banks. In other words, Home Broker technology offers the stock market investor ways to substitute most of the need for telephone contact.

By August 2000, the agreements entered into by the nine stock exchanges registered in Brazil (São Paulo, Rio de Janeiro, Minas-Espírito Santo-Brasília, Extremo Sul, Santos, Bahia-Sergipe-Alagoas, Pernambuco and Paraíba, Paraná and the Bolsa Regional) were completed, and have integrated the Brazilian stock market on a nationwide level, with the inclusion of Member Firms from all over the country.

The overall trading of equities is being carried out on BOVESPA. The other regional exchanges now will concentrate activities on market development and on providing services to the local markets. This integration was defined to provide Brazil with a single liquidity center and with significant representation on the global market.

At the same time, BOVESPA is holding multilateral talks with a number of international exchanges with the purpose of creating a Global Equity Market. The following stock exchanges are participating in this project: Tokyo Stock Exchange, Hong Kong Stock Exchange and Clearing, Australian Stock Exchange, Euronext - which comprises the Paris, Brussels, and Amsterdam Stock Exchanges, the New York Stock Exchange, the Toronto Stock Exchange and the Mexican Stock Exchange.

The Global Equity Market was defined to meet the needs of investors from all over the world, 24 hours a day, through an electronic trading system. This new global liquidity center will be accessed through local stock exchanges, which will maintain their brand and individuality.

Collectively, the market capitalization of the companies listed on these stock exchanges amounts to more than US\$ 20 trillion, accounting for 60% of the global market's overall value.

D.III. New Markets

Trying to compete in this changing context, in December 2000 BOVESPA launched the New Market (*Novo Mercado*), a listing segment established for the trading of shares issued by companies that voluntarily agree to adopt corporate governance practices and disclosure requirements in addition to those already mandated by the Brazilian Legislation.

This market has been modeled based on the concept that the valuation and liquidity of shares are directly related to the rights given to shareholders, the quality of the information provided and the efficiency in guaranteeing investors' rights.

To participate in the New Market, companies will have to adopt more stringent rules generally known as "Good Corporate Governance Practices". The main rules introduced are: voting shares (ON) will be listed the only ones listed; free float must be at least 25% of the total capital; the same rights provided to majority shareholders in the sale of control must be extended to all shareholders ("Tag Along" rights); financial statements will follow US GAAP or IAS GAAP; there must be a lock up period of six months before shareholders can sell their shares; and companies must notify shareholders of a meeting at least 15 days before it is schedule to occur, instead of the eight days presently required in the Brazilian Corporate Law.

Actually, since the inception of the *Novo Mercado*, there have been no firms that have fulfilled all requirements to participate in it.

The first "new market" appeared in Germany and can express the background for this new experience. The amount of capital the *German Neuer Markt* raised in three years was astonishing. Just two years ago it was the darling of Europe's growing high-tech community. Founded in March 1997, as part of Frankfurt's Deutsche Börse (DB), it had outrun other European exchanges for the hottest listings and boasted a huge market capitalization of almost US\$300 billion, bigger than the Brazilian one (US\$ 225 billion).

Part E. Conclusion - The signs of convergence

With the emergence of electronic marketplaces all around the world, the fundamental differences between the markets tends to disappear. NASDAQ is becoming closer to the NYSE besides both market shares are strongly different.

The evolution of exchange towards continuous market has been undertaken due to the ECN's pressure. In a near future, the biggest stock markets in the world will probably be open 24 hours a day. However, the need for immediacy is not crucial for most of the orders. Since liquidity varies with time and strategy, people will also trade-off between immediacy and liquidity, and the role of market makers and specialists will last for a longer time.

The recent decision made by the U.S. SEC in relation to the NASDAQ Order Display Window – popularly known as SuperMontage, will definitely change ECNs' status and comparative advantage to other participants.

Where will that leave the ECNs? They have often been touted as the future of trading, capable of blowing away both the NYSE's floor-based-system and traditional NASDAQ broker-dealers. Yet few ECNs have attracted enough trading volume to justify the initial enthusiasm for them. A consequence of fuller disclosure could be that some would for sure disappear.

In this environment, ECNs will need to build economies of scale and find better ways to differentiate themselves from the competition. There are several routes that the ECNs can take to achieve these goals, including the following:

- (a) Consolidation: whether it occurs via mergers, alliances, or partnerships, consolidation provides a mechanism through which firms can pool resources and increase liquidity;
- (b) Registration for exchange status: several ECNs are attempting to register for exchange status, an option that affords them an opportunity to generate incremental revenues, trade additional products, and protect themselves from the threat of new regulation. The main disadvantage is the need to implement self-regulation, which is an expensive and time-consuming process and
- (c) Partnerships with the exchanges: exchanges, with their vast resources, would make the best partners for the ECNs. In fact, such alliances could determine the winners and the losers in this field.

And after all, why has a global marketplace not been created yet? Shares of big companies are widely held by foreign investors and traded as Depositary Receipts (DRs). Commodities and foreign exchange are traded around the globe, so why not equities?

The answer lies partly in conservatism on the part of investors and issuers, partly in national regulation and accounting standards, and partly in downright protectionism on the part of exchanges. All this is changing, although probably more slowly than it should.

Many possibilities are under discussion, but no decisive step has been taken. Currently all exchanges are talking to all others almost all the time; this might cause them to all get together, creating a single global equity market.

The interests that own and control the exchanges are hard to satisfy; regulation of markets that operate across borders is inevitably embarrassing, since it has long been jealously guarded at the national level; old-fashioned protectionism drives many governments to preserve “their” stock exchanges.

This raises issues of public policy. One is how such a market should be regulated. There is unlikely to be a world Securities and Exchange Commission any time soon: regulation will remain largely at the national level. A solution could be a move towards a Basel-type-group now used in Banking. National regulators should be doing more together on such matters as common listing requirements and international accounting standards. The evidence is anyway that most participants prefer to deal on well-regulated markets.

Another legitimate concern is whether a global market will make it easier to achieve one stated aim of nationally regulated exchanges: the best prices and execution for all investors. The answer is that all investors, even small ones, will ultimately benefit from the greater liquidity and lower costs that a global market should bring. This will be especially true if clearing and settlement systems, which account for a big part of share-dealing costs and are especially difficult to deal with for trades across borders, can be merged and simplified.

A longer-term question is whether to worry about the risk of a single global stockmarket exercising monopoly power. Because trading always gravitates to whichever market has the biggest share of liquidity, stockmarkets have a tendency to be

natural monopolies. Just as the fight between NYSE and NASDAQ has benefited both the American economy and the exchanges themselves, it would be probably better for the world to look for two global equity markets rather than one. But, as national exchanges have found, even a monopoly is vulnerable to attack by new rivals. So for now it would be better if regulators, investors and stock exchanges worried less about the impact of consolidation than about how to achieve it.

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