

Corporate Equities and the National Market System

The last decade has witnessed more fundamental changes in the structure and organization of the market for corporate equities than any comparable period since the 1930's. Responding to widespread concern over the progressive fragmentation of the equities market during the 1960's and early 1970's, the Congress and the Securities and Exchange Commission (SEC) initiated a period of rule-making and legislative activity that culminated in the abolition of fixed minimum commission rates on "Mayday" 1975 and the enactment shortly afterward of the Securities Acts Amendments of 1975, which mandated development of a national market system (NMS). The key features of the NMS as envisioned in the 1975 legislation are nationwide interaction of buy and sell orders and competitive market makers.

Though the Congress mandated the establishment of the NMS, it specified only broad criteria and left the determination of operational details to the SEC and the securities industry. Currently, two very different NMS prototypes are in active competition for their support. Both trading systems have in common that they rely heavily on electronic communications systems, but they differ greatly in their implications for the mechanics of trading. (See box on pages 14-15 for a brief description of trading in the secondary market.)

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The Intermarket Trading System (ITS), promoted by the New York Stock Exchange (NYSE) and much of the securities industry and put in operation on a pilot basis in April 1978, provides an electronic linkage between the New York, American, Philadelphia, Pacific, Midwest, and Boston exchanges. ITS currently permits orders for about 300 listed stocks to be routed from the floor of one participating exchange to the floor of another. It has recently been supplemented by the Composite Quotation System (CQS), which allows instantaneous display of quotations for the stocks.

The Multiple Dealer Trading System (MDTS)—famously referred to as the "Cincinnati experiment"—is a fundamentally different trading system. MDTS is an integrated electronic display and execution system operated under the sponsorship of the Cincinnati Stock Exchange. It is an outgrowth of the Regional Market System (RMS), an essentially similar system which connected specialists on the floors of several regional stock exchanges. MDTS supplanted RMS on May 1, 1978, when any broker-dealer firm which was a member of the Cincinnati Stock Exchange was allowed for the first time to install MDTS terminals in its own "upstairs" offices. Currently, forty stocks are traded on MDTS by five broker-dealer firms as members of the Cincinnati Stock Exchange as well as by specialists on the Boston, Midwest, and Pacific stock exchanges.

No final commitment has been made by the SEC and the securities industry to either of the two NMS prototypes, and their supporters continue to debate their relative merits. To understand the controversy, it is useful to review briefly the pressures which led to the

The Secondary Market for Corporate Equities

The secondary market for corporate equities performs a central role in the nation's economy by providing liquidity—i.e., the ability to buy and to sell securities quickly without causing significant price changes. The existence of a secondary market encourages potential savers to invest in new and outstanding corporate equities, thus facilitating the process of capital investment by business firms. Equally important as the market values the shares of different firms, it facilitates the flow of capital to firms with superior performance and disciplines poorly managed firms.

Trading

There are several ways in which buyers and sellers may find appropriate trading partners. The classic procedure for concentrating buyer and seller interest is a public auction in which buyers and sellers (or brokers representing them) may make bids and offers for securities. If the auction is held at a designated time as in a "call market" all buyers and sellers make bids and offers for a security simultaneously, after which auction trading ceases until the next auction. The advantage of concentrating buying and selling interest at a specific time is that possible price distortions resulting from a temporary imbalance of buy and sell orders are minimized, thus enhancing the liquidity of the market.

A public auction can also be organized on a continuous time basis—as is done on United States stock exchanges—so that buyers and sellers may enter orders at any time during the trading day. An important advantage of a continuous auction market relative to a call market is that it permits much more time for auction trading, thus allowing investors greater flexibility in reacting to events and executing transactions. However, the longer the trading day during which orders may be brought to the market the more the order flow is spread out over the day, and the more likely it is that a temporary imbalance of buy and sell orders may exist at some point during the day. In such a situation, the market price would tend to be deflected momentarily from its longer term level. To the extent that this occurs, market liquidity would be impaired.

However, the price pressures created by such momentary imbalances open up opportunities for professional securities dealers—often referred to as market makers—to profit by standing ready to buy when there is an excess of sell orders and to sell when there is an excess of buy orders. They will profit by maintaining an offering price sufficiently higher than their buying price (their bid-asked spread) to compensate them for the risk involved in allowing their inventory of securities to act as a buffer against temporary order imbalances. The result of dealer activity will be reduced

price volatility and thus a more liquid secondary market.

Dealers will not be willing to participate in all transactions. For example, some securities are not widely held and are seldom traded so that it is uneconomic to provide dealer services for them. Also, some offerings of well-known and widely traded securities may be so large that no individual dealer would be able to take the opposite side of the trade. In such cases, direct negotiation—generally through a broker—is necessary for the buyer or seller to find a trading partner.

The exchange auction procedure

In the United States by far the greatest volume of stock trading takes place on stock exchanges and as the table indicates, the New York Stock Exchange is the premier stock exchange. Stocks listed on the NYSE are the most widely held and the most actively traded. Though many of them are traded on regional exchanges and in the "third market,"¹ the NYSE remains their primary market.

The NYSE auction trading procedure is designed to ensure fair, orderly, and liquid markets by incorporating certain features of call and dealer markets to supplement the continuous public auction. When trading is opened, all the buying and selling interest which has accumulated since the previous close of trading is represented in what resembles a call market. If an imbalance of orders exists for a stock, the stock specialist will try to solicit matching orders to resolve the imbalance. Failing that, he will resolve the imbalance by buying or selling for his own account.²

After the opening, trading is conducted in a continuous auction market designed to maximize the likelihood that public buy and sell orders will be executed directly with each other to minimize the public's total costs of trading. Were the public to trade only with a dealer, their costs of executing matched buy and sell transactions would be increased by the amount of the dealer's bid-asked spread. Trading by dealers for their own accounts is kept to a minimum by the priority of execution assigned to public orders. A specialist, for example, will have priority of execution only if his bid price is higher, or his offering price lower than that of any public order on the exchange. In the event of an imbalance of incoming orders, it will be impossible for all public orders to execute against each other and the specialist will be able to trade for his own account. In doing so, specialists on the NYSE and the Ameri-

¹ The so-called "third market" is the group of centers who trade NYSE-listed stocks off the floor of any exchange.

² Broad guidelines for trading by specialists are contained in NYSE Rule 104 "Dealings by Specialists."

Market Value and Volume of Sales of Stock on United States Securities Exchanges, June 1978

Stock exchange	Value (millions of dollars)	Volume (millions of shares)
American	1,566	97
Boston	136	5
Cincinnati	19	1
Midwest	1,095	39
New York	20,557	744
Pacific	641	27
Philadelphia	398	14
Intermountain	*	*
Spokane	*	1

* Less than 0.5 million.

Source: Securities and Exchange Commission.

can Stock Exchange—but not on regional exchanges—have an “affirmative obligation” to ensure continuity of transaction prices. On the NYSE, about 90 percent of specialists’ transactions achieve this purpose.³

When an investor decides to sell some stock, he generally contacts a brokerage firm to assist in the transaction. The firm will probably transmit the order to its broker on the floor of an exchange where it can be executed. Since the investor is remote from the market, he must give his broker instructions as to how the order is to be executed. For example, if the investor is primarily interested in selling the stock immediately, he will give the broker instructions to sell the stock “at the market”. To execute such a “market” order, the floor broker will take it to the position on the exchange floor where the stock is traded and execute it at the best obtainable price by trading with either a member of the “crowd” or the stock specialist.⁴ With a market order, the investor gains certainty of execution, but he cannot be completely certain what the market price will be when his order is executed. Alternatively, the investor may be more interested in avoiding trading at an unacceptable price than in assuring that the trade will take place. In such a case he can give his broker a price-limited, or “limit”, order, which will be executed only at the specified price if

³ NYSE, *Annual Report of the Quality of Markets Committee* (1977), page 16.

⁴ On some exchanges, electronic communications facilities allow some orders to be transmitted directly to the specialist, who represents them to the crowd and executes them as a broker. On the NYSE, this system is called Designated Order Turn-around (DOT) and handles about 40 percent of total transactions.

obtainable.⁵ If a limit order cannot be executed immediately, it may be held by a floor broker in the crowd in front of the position where the stock is traded on the exchange floor, or the floor broker may leave it with the specialist, who will enter it in a book which he maintains. Either way, when the limit price of the order is reached by the market, the order generally will be executed in whole or in part.⁶

Large block transactions

Large block transactions—usually defined as a transaction involving at least 10,000 shares of stock—typically require the assistance of broker-dealer firms to locate suitable trading partners and to assist the buyers and sellers in negotiating the terms of the trade.⁷ The reason is that the inflow of orders to the exchange floor is generally too small to execute the trade in a reasonable period of time, and specialists typically do not have sufficient capital—and are not sufficiently indifferent to risk—to execute such transactions on a dealer basis. In addition, NYSE rules do not allow specialists to communicate directly with public buyers and sellers as do block positioners. When the trade has been negotiated, it is “crossed” on the exchange.⁸ Because of their size, block transactions initiated by sellers usually take place at a discount from the auction market bid price. NYSE Rule 127 requires that blocks crossed on the NYSE must allow public limit orders held in the crowd or by the specialist in the order book to participate in the transaction at the negotiated or “clean-up”, price. In this way, the block trading procedure is integrated with the auction market on the exchange floor. The integration is not complete, however, as only public limit orders must be allowed to participate, and they are limited to 1,000 shares or 5 percent of the block, whichever is greater. Moreover, since some regional exchanges have very few limit orders for NYSE-listed stocks left with them, brokerage firms may send block transactions to these exchanges and effectively avoid allowing public limit orders to participate.

⁵ A large variety of limit orders exists, depending on how the price is specified, the length of time for which the order is valid, etc. These are defined in NYSE Rule 13, “Definitions of Orders”.

⁶ This is true of all limit orders except the “fill or kill” order, which must be executed in its entirety immediately upon receipt or canceled.

⁷ Several broker-dealer firms popularly known as “block houses” specialize in this kind of activity.

⁸ A “cross” is the execution by a broker of two or more matched orders. The orders may not be crossed without first representing them to the crowd and the specialist to determine whether any other limit orders have priority to participate in the trade.

Congressional mandate for the NMS and then to consider how trading takes place in the two systems.

Growth of institutional trading

The principal stimulus to the development of proposals for the NMS was the strain on the equities market caused during the 1960's and early 1970's by the increase in the institutional share of trading.¹

An important source of institutional dominance in equities trading was the steady decline in holdings of equities by the household sector (individuals, personal trusts, and nonprofit corporations). Flow-of-funds data indicate that households have been net sellers of corporate equities in every year since 1962. There are several reasons for this persistent withdrawal of households from direct participation in the market. First, in the 1950's and even more so in the 1960's, the view was widely held that professional management of an equities portfolio could lead to significantly better performance, and hopes for improved returns undoubtedly stimulated many individuals to invest in shares of mutual funds rather than to purchase corporate equities directly. Another advantage of mutual funds was the enhanced liquidity provided by the right of redemption of mutual fund shares. Also, households' investments in life insurance and contributions to private pension funds increased dramatically during this period, and the attractiveness of such tax-exempt sources of income may well have displaced direct investment in equities to some extent.

Paralleling the decline in net purchases of equities by households during the 1960's was the rapid increase in net institutional purchases of such securities. Private pension funds and state and local government retirement funds in particular increased the portions of their portfolios that were allocated to equity investments. In addition, during the late 1960's and the early 1970's, institutional investors generally increased the turnover of their portfolios, which also contributed to their dominance in equities trading.

Institutional dominance was not reduced by the general reduction of turnover in institutional portfolios that began around 1972. Institutions currently account for about 45 percent of total volume on the NYSE and about 55 percent of total value. The institutional share of public trading—*i.e.*, total trading less trading by NYSE member firms for their own accounts—is about 60 percent of volume and 70 percent of value (Chart 1). Large block transactions—which are almost exclu-

sively accounted for by institutional trades—now account for almost a fourth of total volume (Chart 2).

Market fragmentation

Historically, a variety of restrictions on price competition governed the NYSE. The most important of these was the requirement of fixed minimum commission rates, which precluded competitive pricing of commission rates and enabled the NYSE membership to function as a cartel. Other restrictions enhanced the value of membership in the NYSE by preventing free entry and by discouraging members from sending orders to be executed off the NYSE. Rules designed to channel transactions to the NYSE floor were in the public interest to the extent that they served to encourage a steady inflow of orders, permitting specialists to maintain tight bid-asked spreads and thus fostering a more liquid securities market than might otherwise have existed. But these gains were offset insofar as they were achieved at the cost of commissions paid by the investing public, which were higher than justified by the costs of executing their transactions.

In general, the survival of cartels tends to be jeopardized by the incentive that individual members of the cartel have to lower their prices in order to increase their sales at the expense of the other members of the cartel. Undoubtedly something like this would have happened to the NYSE, except for the fact that the NYSE, as a self-regulatory organization under the supervision of the SEC, had the power to promulgate rules for its members and to enforce compliance. For example, during the 1950's, when some NYSE member brokerage firms began to send orders off the exchange to the third market in order to lower net execution costs for their customers, the NYSE adopted Rule 394 to discourage this practice.

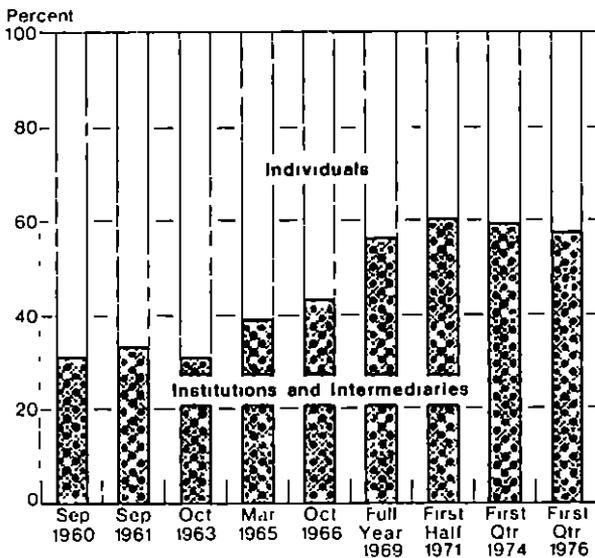
Such internal discipline would have been inadequate to preserve the cartel, however, if other market centers had been capable of executing transactions at significantly lower net costs than those of the NYSE. Such competition was inhibited, however, by the considerable economies of scale involved in making markets in securities. As noted in the box, the larger and more uniform the inflow of orders, the more liquid the market. The result is that, if an existing market center already has a large order flow, its costs should be substantially lower than those of a new market center contemplating competition. Compounding this disadvantage to new marketplaces is the fact that investors value certainty of execution and thus may have an incentive to send their orders to the largest market, even if dealers in another market center charge somewhat lower commissions.

The fixed-rate commission structure of the NYSE

¹ The major institutional investors include private pension funds, state and local government retirement funds, mutual funds, bank-administered trust funds, and insurance companies.

Chart 1

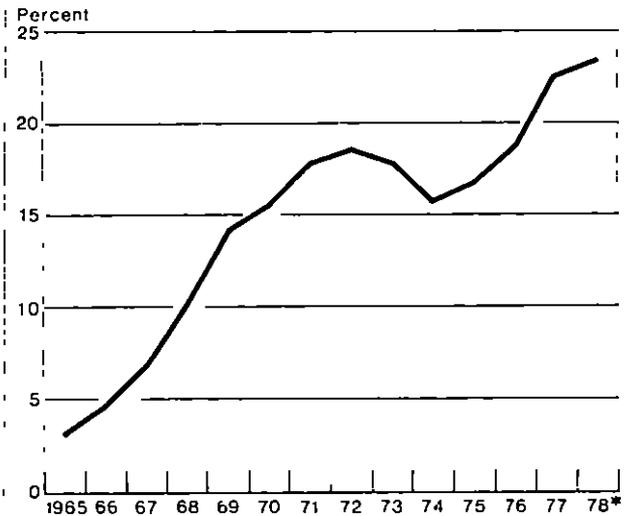
Distribution of Public Share Volume on the New York Stock Exchange



Source New York Stock Exchange

Chart 2

New York Stock Exchange Block Transactions as a Percentage of Reported Volume



* First eleven months of 1978

Source New York Stock Exchange

which was in place throughout most of the 1960's provided for a minimum commission determined according to the value and volume of shares involved in the order. Although brokers could charge more than the minimum commission, in practice almost all transactions were executed at the minimum rates. While the calculation of the minimum commission was complex, the important feature was that the commission charge per share did not decline as the number of shares in the order increased, even though the per share costs of executing large transactions are generally far less than those for small transactions.²

Institutions are peculiarly inclined to trade in blocks because their holdings of individual stock issues are frequently so large that a realignment of their portfolios can be achieved in a reasonable period of time only if large amounts of certain issues are bought and sold. As a result, institutional investors were generally confronted with a commission-rate schedule that levied commission charges far in excess of the actual costs of execution of their transactions.

Institutions responded to fixed commission rates

² An exception was the minimum commission rate for odd lots (transactions for less than 100 shares) which was substantially higher than that for one or more round lots of 100 shares.

by trying to lower their net execution costs in a variety of ways, some of which caused problems for market efficiency and raised serious questions of equity. Since NYSE member brokerage firms could not compete for institutional commission business by lowering their rates, they competed by providing free a variety of ancillary services, such as research and marketing of mutual fund shares in return for commission income. For example, a mutual fund might direct a brokerage firm executing its order to "give up" part of the commission to another brokerage firm to pay for the services of the latter to the mutual fund.³

Another strategy for reducing net execution costs was for an institution to establish a brokerage subsidiary on a regional exchange—a practice that was prohibited on the NYSE and the American Stock Exchange (ASE) by rules of the exchanges. The subsidiary would either execute the parent's transaction on

³ On December 5, 1968, the SEC ordered that directed commissions of commissions be abolished and that a volume discount be initiated for commission rates on the portion of orders exceeding 1,000 shares and that negotiations be permitted for the amount of commission in excess of \$100,000. Later on April 5, 1971, negotiated rates were permitted on the portion of orders exceeding \$500,000 and in April 1972 the break-point for negotiated commissions was lowered further to \$300,000.

the regional exchange and earn the commission itself or, more likely, a NYSE member firm could execute the parent's transaction on the NYSE and later send the subsidiary an agreed-upon amount of commission business for execution on the regional exchange to reciprocate for the parent's commission business. Such reciprocal brokerage arrangements created potential conflicts of interest for institutional managers and brokerage firms.

Another way for investors to reduce their net execution costs was to send orders to the third market. During the 1950's, a number of broker-dealer firms which were not members of the NYSE began making markets in stocks listed on the NYSE, thus competing with the NYSE specialists. These third-market firms were not bound by a fixed minimum commission rate, and investors could sometimes realize considerable economies by routing transactions to the third market.

To the extent that investors sent their transactions off the NYSE and ASE to reduce their net execution costs, the equities market was fragmented, and several undesirable consequences were produced. First, transactions on the regional exchanges and in the third market were not recorded on the NYSE and ASE tapes and thus were not immediately disclosed to the investing public. Second, public orders on the NYSE floor, for example, had no opportunity to participate in transactions routed off the NYSE, even if their bid or offer prices were better than those at which the trades were made in the other markets. When this occurred, the classic auction principles of price and time priority were violated.

Much of the impetus for the development of the NMS derived from a growing conviction in the Congress, the SEC, the securities industry, and among the investing public that a truly national secondary market was necessary to avoid the inequities and inefficiencies associated with market fragmentation.

Response of the Congress and the SEC

The Institutional Investor Study Report, submitted to the Congress by the SEC on March 10, 1971, was a milestone in the early discussion of the NMS. The voluminous report examined in detail the impact of institutional investors on the equities market and reached several conclusions of major importance for succeeding developments. The first of these was the SEC's conclusion that fixed-rate commissions on orders of *institutional size* were the source of many difficulties in the market, including market fragmentation and the growth of reciprocal brokerage arrangements. In addition, the report concluded that "institutional trading overall has not impaired price stability in the market", thus tending to support the view that small

trades and institutional trades can be transacted in the same marketplace without serious consequences for small investors. Most importantly, in the letter of transmittal of the report, the SEC for the first time advocated development of a central market system (CMS), and thus departed from its historical position of tending to favor competing but separate marketplaces. The SEC stated the goal of the CMS concisely:

our objective is to see a strong central market system created to which all investors have access, in which all qualified broker-dealers and existing market institutions may participate in accordance with their respective capabilities, and which is controlled not only by appropriate regulation but also by the forces of competition.

About a year later, on February 2, 1972, the SEC issued its Statement on the Future Structure of the Securities Markets (the Structure Statement) in which it identified several problem areas in the securities markets, endeavored to refine its concept of a CMS, and put forward a preliminary program for its implementation. Of principal concern to the SEC were the growth of trading in large blocks, the dispersion of trading to many market centers, the growth of reciprocal brokerage practices, and the increasing amount of trading in listed stocks which was not reported publicly.

The CMS was defined as a system of communications among all market centers, including exchanges and over-the-counter markets, and a set of rules governing their interaction. The two basic objectives of the CMS were (1) to centralize all buying and selling interest in order to maximize the opportunity for public orders to meet each other without recourse to a dealer and (2) to maximize market-making capacity in order to provide the greatest possible liquidity for large transactions. Accordingly, the Structure Statement contemplated that both broker and dealer markets would remain integral parts of the trading system.

The implementation of the CMS was felt to require, among other things, development of a nationwide disclosure system to make available information in trading and quotations in all market centers and the elimination of artificial impediments to trading in the best markets. The disclosure system comprised a composite tape reporting trades of major securities occurring in all markets and a composite quotation system reporting firm quotations of all market makers. Among the impediments to trading which the Structure Statement viewed as inconsistent with the CMS were fixed-rate commissions and rules preventing member firms from sending orders to other market centers. It was also contemplated that, to stimulate competition be-

tween market makers, it might be necessary to make the order book public rather than to allow a specialist to have exclusive knowledge of it.

The Structure Statement perceived (correctly, as it later turned out) that the elimination of fixed commission rates would redirect existing competition into price channels, thus lowering commission rates for transactions of institutional size and making outright institutional exchange membership less desirable.

Of some interest in light of later developments, the Structure Statement advanced the view that, since evidence indicated block trades caused some short-term price volatility and since the burden of this volatility was borne by the investing public in the form of reduced liquidity, public orders in the CMS should be allowed to participate in block transactions.

The SEC soon implemented many of the proposals contained in the Structure Statement. In early 1972, proposed rules for a consolidated tape, including all transactions in NYSE-listed shares, and for a composite quotation system to collect quotations for such shares from all market centers were released. Several committees were appointed to make recommendations concerning other proposals, and rules were issued to control the abuse of reciprocal brokerage and the establishment of brokerage subsidiaries by institutional investors to evade established commission rates. In addition, at the urging of the SEC, the NYSE adopted Rule 127, which subject to certain limitations (see box on pages 14-15) allowed public limit orders on the NYSE to participate in a large block transaction at the "clean-up" price, thus integrating the floor action more effectively with large blocks crossed on the NYSE.

On March 29, 1973, the SEC issued its Policy Statement on the Structure of the Central Market System (the Policy Statement). This release reiterated many of the views expressed in the Structure Statement but, building on information obtained through committee reports and hearings, it also proceeded to outline the kinds of rules that would be necessary in the CMS. The SEC proposed two such trading rules, an auction trading rule and a public preference rule. The auction trading rule proposal would provide price priority for all public limit orders throughout the system. The effect of this rule would require that any broker putting together a cross would have to clear the order book of all eligible limit orders in all marketplaces in order to allow them to participate in the transaction, thus eliminating market fragmentation. The Policy Statement advanced the view that this rule would create a greater incentive for the insertion of limit orders, thus enhancing the stability of the market. The public preference rule would accord preferential treatment to public orders by preventing any broker-dealer in the CMS

from participating as principal in any CMS transaction unless his purchase price was better than any public bid or offer in the system. The object of this rule was "to provide the maximum opportunity for public orders to meet" without the intervention of a dealer. Taken together, these rules were felt to be adequate to preserve the public auction procedure within the CMS.

In addition, the SEC emphasized the importance of the principle of best execution—*i.e.*, the obligation of a broker to seek the best possible price for his customer—in an agency auction market. The existing market structure fell far short of attaining best execution in the SEC's view, because a variety of inefficiencies or impediments to trading—such as NYSE Rule 394—either prevented best execution or could be used to rationalize a broker's failure to obtain it. In the CMS, information on quotations in all market centers would be readily available and all obstacles to achieving best execution on the basis of that information would be eliminated. The SEC stated that it would abolish Rule 394 if the NYSE did not do so first. In its place was to be a broader rule confining virtually all trading in listed securities to the CMS.

Extensive Congressional hearings led to passage of the Securities Acts Amendments of 1975, the most fundamental and far-reaching piece of securities legislation enacted since the 1930's. The Amendments provided that, after the date of enactment (June 4, 1975), "no national securities exchange may impose any schedule or fix rates of commissions, allowances, discounts, or other fees to be charged by its members". An extension of the cutoff date to May 1, 1976 was, however, provided for minimum fees for floor brokerage and odd-lot dealer activities. This provision thus mandated negotiated commissions, both for institutional customers and small investors. However, the SEC had already moved to abolish fixed minimum commission rates effective on Mayday 1975, and by the date of enactment of the 1975 Amendments, commission rates were beginning to decline from their pre-Mayday levels.

The part of the legislation concerned with the NMS noted that securities markets are an important national asset which must be preserved and strengthened and that electronic communications technology created an opportunity for more efficient and effective operations. Furthermore, it stated that

The linking of all markets for qualified securities through communication and data processing facilities will foster efficiency, enhance competition, increase the information available to brokers, dealers, and investors, facilitate the offsetting of investors' orders, and contribute to the best execution of such orders.

The Amendments directed the SEC to facilitate the establishment of the NMS and to designate securities appropriate for trading in it. The legislation also directed the SEC to establish a National Market Advisory Board to study the means available for implementing the NMS and to make recommendations. The SEC was directed to review all off-board trading rules and to amend any such rules found to impose a burden to competition not necessary or appropriate for the furtherance of the purposes of the Exchange Act. In addition, the SEC was authorized to regulate information processors, and its authority to regulate broker-dealers generally, including those in the third market, was significantly enhanced.

Implementation of the 1975 legislation

The 1975 legislation laid out only broad goals for the NMS, leaving a variety of issues to be resolved by the SEC and the securities industry. Among the most important is the question of whether the NMS is to be structured as a linkage of existing exchange floors or as an electronic trading system with no inherent dependence on any exchange floor. While the Congress clearly contemplated that the exchanges and the third market would continue to compete, the legislation did not mandate any specific design for the NMS. In essence, the Congress expressed a preference for nationwide implementation of public auction trading principles, for competition in all aspects of the market, and for the development of an electronic communications system to facilitate attainment of these objectives.

Following passage of the 1975 legislation, the SEC continued to press for enhanced disclosure of transaction and quotation information. The composite tape, rules for which had been proposed earlier, was actually put in operation on a full-scale basis on June 16, 1975. More difficulty was encountered with the composite quotation system. Vendors who developed display systems for the quotations experienced considerable difficulty in marketing them, since the quotations generally were "subject to change"—*i.e.*, not necessarily current and not binding—and thus of little use for trading purposes. The SEC responded to this problem by establishing a requirement that all quotations supplied must be binding. Following this initiative, the system finally commenced operation for a selected list of about fifty NYSE-listed stocks on August 1, 1978.

The SEC has also proposed that nationwide limit order protection be incorporated in the NMS to prevent the price and time priority of limit orders in one market center from being violated by transactions taking place in another market center. Nationwide limit order protection requires that certain information concerning the limit orders held anywhere in the NMS be

communicated to broker-dealers when necessary and that orders be capable of being executed against any limit order in the system. The only way of satisfying these requirements strictly is to establish a central limit order book (CLOB), in effect an electronic file of all outstanding limit orders for a stock, irrespective of the geographical location of the broker-dealer who entered them. However, as will be seen shortly, the strict price and time priority of limit orders in a CLOB poses serious problems for the existing exchange auction procedure, and accordingly other proposals have been advanced to attempt to achieve a measure of nationwide limit order protection without recourse to a CLOB. More than any other feature, it is the strategy for implementing nationwide limit order protection which distinguishes the alternative designs that have been proposed for the NMS.

Rule 390

In June 1977 the SEC released its proposal for abolition of restrictions on off-board trading by member firms. This proposal was consistent with the SEC's stated intention to promote competition in the securities industry by removing anticompetitive barriers. Earlier, the SEC had mandated that Rule 394 be modified to allow member firms to send agency orders out of the NYSE to third-market dealers. Effective March 31, 1976, this was done, and the modified Rule 394 was renamed Rule 390. The objective of the modification was to facilitate competition for orders by the third market, as mandated by the 1975 Amendments. The June proposal was designed to remove barriers to executing principal orders off the exchanges as well. However, the June proposal generated considerable concern, especially in the securities industry, since it in effect sanctioned removal of what was felt to be a critical regulation channeling order flows into the public auction markets and preventing large retail firms from siphoning off order flows to be executed on an "in-house" basis.

As noted earlier, in the Policy Statement the SEC advocated confining all trading in listed stocks to the CMS. Such a rule would clearly prevent "in-house" order execution. The problem was that the National Market Advisory Board had not been able to agree on a design for the NMS, and the industry had made little progress toward its implementation. The SEC, bound by its Congressional mandate, proposed to abolish Rule 390 in advance of the establishment of the NMS, and it was the absence of Rule 390 during the (possibly lengthy) transition to the NMS which would create an opportunity for "in-house" order execution and would present several problems. First, to the extent that buy and sell orders were merely crossed in house without being sent to the exchange floor, the order flow on the

exchange would be reduced as would the liquidity of the public market. Second, in the absence of rules requiring strict observance of nationwide limit order protection, price and time priority might be violated for some investors. In addition, broker-dealer firms might be tempted to engage in "overreaching", i.e., executing agency orders on a dealer basis at less than the best obtainable terms. The existing Rule 390, it was argued, avoided these problems. The SEC's June release presented only proposals designed to mitigate the occurrence of such problems during the transition to the complete NMS. Thus it was not surprising that, in hearings held during the summer of 1977, considerable criticism was directed at the proposal to remove Rule 390 without implementing at a minimum some sort of interim procedure to forestall its potentially undesirable effects.

In January 1978 the SEC reacted to the criticism of its June release by backing off somewhat from its earlier demand for removal of Rule 390. Whereas the June release had called for the removal of Rule 390 by January 1, 1978, the January release postponed implementation of the removal. The SEC emphasized its view that a variety of configurations might be consistent with the attainment of the objectives of the NMS and that it did not intend to assume the role of designing the system. At the same time, the SEC clearly interprets its mandate from the Congress as requiring that it ensure that the industry develop a trading framework conforming to the NMS within a reasonable period of time.

Evaluation of the reforms

The reforms imposed on the equity market by the SEC to date have already had significant impacts on the

structure of the market. First and most importantly, the repeal of fixed-rate commissions has led to a substantial reduction of commissions primarily for institutions. As the table indicates, commissions for very large trades by individuals have declined roughly in line with the commissions paid by institutions, but the commissions paid by individuals on small trades of one or several round lots have scarcely changed. This disparate pattern undoubtedly reflects both the relative costs of executing individual and institutional orders and the fact that institutions are more aware of the opportunities for negotiating commission reductions than are most individuals.⁴

Since the introduction of fully negotiated commission rates, a considerable number of broker-dealer firms have merged. However, the influence of negotiated commission rates on this process is not entirely clear. Industry concentration—as measured by the share of total commission revenues accounted for by the ten largest firms—was increasing even before Mayday, so that any additional impact due to negotiated commission rates is difficult to quantify. Concentration in the securities industry still remains far below that in most other industries in the United States. Accordingly, most of the recent concern about concentration in the securities industry has not focused on the existing

⁴ The data in the table probably understate the impact of negotiated commission rates in at least two ways. First, the changes are measured from commission rates prevailing immediately prior to Mayday 1975, but at that time commissions on orders of \$300,000 or more were already negotiable. Accordingly, the impact of negotiated rates on commissions on large transactions is probably understated. Second, the surveys on which the table is based did not cover the small brokerage firms that have been most actively soliciting individual commission business on a "no frills" basis and offering very competitive discounts.

Commission Rates on Institutional and Individual Equity Transactions

Size of trade (shares)	Commission rates* (cents per share)		Institutional Percentage change		Commission rates* (cents per share)		Individual Percentage change	
	April 1975	December 1977	April 1977		April 1975	December 1977	April 1975	
			December 1977				December 1977	
Less than 200	60.0	40.4	-32.7		50.0	48.7	- 2.6	
200 to 999	46.0	25.4	-44.8		33.0	30.8	- 6.7	
1,000 to 9,999	28.0	14.0	-50.0		20.0	16.1	-19.5	
Over 10,000	15.0	8.9	-40.7		9.0	5.7	-36.7	

* Commission rates are averages of those charged by firms surveyed.

Source: Securities and Exchange Commission.

industry structure, but on the consequences for future industry concentration of various proposals being advanced to implement the NMS.

Alternative designs for the NMS

Basically there are two competing designs for the NMS currently being implemented on a pilot basis. The SEC has given its sanction to both as possible prototypes for fulfilling the Congressional mandate but has refrained from designing a system itself and imposing it on the securities industry.

Intermarket Trading System

The design favored by the NYSE and much of the securities industry is an electronic linkage of existing exchanges. Such a linkage would preserve the exchange floor as the prime locus of the auction process, while facilitating the flow of orders from brokers and specialists on one floor to specialists on another. Its essential components are (1) CQS mandated by the SEC and implemented on a pilot basis on August 1, 1978 and (2) ITS, which started on a pilot basis on April 17, 1978. CQS is an electronic system designed to display to broker-dealers on an exchange floor the best quotations with size for listed stocks in different market centers. As a display system, it contains no execution capability. Also, since CQS displays only the best quotations in different market centers, specialists continue to have exclusive knowledge of limit orders in their order books, and a broker still must be physically present on the floor to know of limit orders being held in the crowd. This is inconsistent with nationwide protection of limit orders. Accordingly, the NYSE recently informed the SEC of its intention to develop an electronic market center limit order file (MCLOF) to replace the NYSE specialists' limit order books currently in use and to integrate it into ITS. The NYSE MCLOF—and similar files possibly developed for other market centers—would facilitate protection of limit orders in all market centers and would integrate them more effectively with block trades. In addition, it is planned that brokerage firms will be able to insert limit orders directly into the MCLOF without their being carried by floor brokers, an innovation which should reduce substantially the expense of floor brokerage and speed transmission of orders to the market.

Currently the ITS trading procedure is as follows. Upon receipt of an order, a broker on the floor of a participating exchange checks the CQS display screen showing quotations on the various markets. If the quotation on his exchange is as good as or better than any other on the display screen, the broker would execute it on his exchange. If the display screen shows that a better quotation is posted on another exchange,

the floor broker may decide to send the order there.

To do this, he enters a commitment for the bid or offer, stipulating the amount of shares and the price, in an ITS terminal located on the exchange floor and transmits it to the specialist on the other exchange. In principle, the price placed on a buy order must be the offering price quoted for the destination market on the CQS display, and a sell order must carry the bid price quoted for the destination market; the broker cannot enter a price between the quoted bid and offer. The specialist can either fill the order or cancel it. He might cancel it if there has been some sort of malfunction or if he was in process of changing his quotation. Any commitment not accepted within two minutes is automatically canceled by the system.⁵ While an order commitment is in ITS, the sender may not retrieve it to execute it on his own floor. Currently, the average time elapsed between submission of order commitments and receipt of return messages is slightly less than one minute.

The time delay results largely from the separation of the order execution system from the quotation display system. Due to this delay and the irretrievability of an order commitment once entered, a floor broker might want to avoid using ITS in a fast-moving market, where a two-minute delay in receiving notice of a canceled commitment (due, perhaps, to a change of quotation by a specialist) might result in an order execution substantially inferior to what would have been obtained if other exchanges had been ignored.⁶

The implementation of means to facilitate the flow of orders between different market centers would appear likely to increase the relative attraction of the NYSE and the ASE. If this happened, the ITS market linkage might actually make itself obsolete as the NYSE and the ASE became increasingly better markets relative to their competitors. No doubt the regional exchanges would attempt to provide bid-asked spreads equally as good as those on the primary exchanges, but with reduced order flows this would be more and more difficult. Indeed, the limited experience with ITS so far suggests that considerably more orders flow to the NYSE from the other participating exchanges than flow to them from the NYSE. If this tendency should gather momentum, the viability of specialists for NYSE-listed stocks on regional exchanges might be seriously impaired. The potential contradiction between implementation of procedures to facilitate the flow of orders

⁵ In addition, the sender of the commitment may specify a shorter time limit if desired.

⁶ At present, about 30 percent of commitments entered in ITS are returned canceled. The NYSE is actively seeking to reduce the cancelation rate.

to the best market and the maintenance of separate market centers has not yet been resolved by proponents of market linkage systems.

Similarly, once instantaneous display of alternative firm quotations becomes widespread, it should become increasingly difficult to tolerate much slower forms of order execution, such as those currently in place on exchange floors. This conflict between instantaneous information display and slower execution capability may increase pressure for the implementation of an integrated electronic display and execution system.

Multiple Dealer Trading System

Such a system, known as a "hard CLOB", integrates the display of the electronic order book with the capability of executing orders.⁷ At present, the only hard CLOB operating in the equities market is the Cincinnati Stock Exchange's MDTs. A broker-dealer with access to the system can enter his own quotations and limit orders into the system, and he can "hit" bids and offers displayed on the system essentially instantaneously. Assuming that all transactions in listed securities were required to be executed through the system, broker-dealers with sufficient capital and expertise to make markets could do so without also having to be capable of generating an inflow of retail orders. This feature of a hard CLOB could be important to increasing competitive market-making capabilities.

Another advantage of a hard CLOB is that it is extremely easy to impose priority rules of the type proposed by the SEC. For example, price and time priorities are almost implicit in the operation of the electronic execution system. Priority differentiations according to order size and other characteristics would be somewhat more difficult to agree on, but whatever system was implemented would be compatible with the hard CLOB. The advantage thus rests, not with the precise formulation of the priority rules, but with the ease with which a hard CLOB permits them to be enforced.

Similarly, a hard CLOB facilitates regulation of specialists and other market participants, since their activities leave a clear record for any future audit. In addition, rules governing reconciliation of differences in the process of settlement could be simplified, since the process of entering and hitting bids and offers provides a single, definitive record. Also, no rule is required concerning the posting of nonfirm quotations. Thus, from the standpoint of reducing the complexity and expense of rule making and regulation, an elec-

Glossary of Abbreviations

- CLOB Central Limit Order Book. An electronic file of all outstanding limit orders, irrespective of the market center in which they were inserted. Sometimes referred to as CLOF (Central Limit Order File). A "hard CLOB" integrates electronic order execution capability with the CLOB.
- CMS Central Market System. The SEC's designation for its proposed restructuring of the equities market; supplanted in 1975 by the NMS.
- CQS Composite Quotation System. A display system for quotations for certain NYSE-listed stocks in different market centers.
- DOT Designated Order Turnaround. A system for electronically transmitting smaller market and day limit orders from brokerage firms directly to specialists on the NYSE floor.
- ITS Intermarket Trading System. An electronic linkage of six stock exchanges allowing orders to be sent from the floor of one exchange to the floor of another.
- MDTS Multiple Dealer Trading System. A hard CLOB sponsored by the Cincinnati Stock Exchange.
- MCLOF Market Center Limit Order File. An electronic file of limit orders held in a market center.
- NMS National Market System. The designation of the restructuring of the equities market mandated by the Congress in the Securities Acts Amendments of 1975.
- RMS Regional Market System. An electronic trading system which linked several regional exchanges; supplanted by MDTs.

tronic execution system integrated with an electronic display system has much in its favor.

Such a system has not been without its critics, however. Many market participants have sharply criticized the notion of a "black box" which would supplant the "crowd" of floor brokers in front of the specialist posi-

⁷ The first full statement of the rationale for and operation of a hard CLOB was presented in Junius W. Peake, Morris Mendelson, and R. T. Williams, Jr., "The National Book System: An Electronically Assisted Auction Market", submitted to the SEC on April 30, 1976.

tions on the floor of an organized exchange. There is some truth in this view. For example, on the NYSE limit orders may be held in the specialist's order book as well as in the crowd, but it would be very difficult for an electronic system to recognize the priority of orders not entered into the system. Similarly, instead of a broker representing a market order in the floor crowd, the order could be entered into the hard CLOB at a price which would match that of the best contra order stored in the system or, if the price of the best contra order stored in the system did not appear sufficiently favorable, the broker could attempt to improve on the execution of his customer's order by entering it into the system at a better price. If the order were not hit in a reasonable period of time, the broker could reprice the order to hit the best contra order. Thus, market orders must be priced *provisionally* in the form of limit orders to be entered into a hard CLOB; like the exchange floor, however, market orders are priced *definitively* when they are executed. Because orders may quickly be inserted and retrieved (if unexecuted), other, more complex trading strategies may also be implemented through the broker-dealer's entering of bids and offers into the system. The "crowd action" of a dynamic auction market would continue to exist, but it would operate through electronic terminals and not through direct, face-to-face contact on an exchange floor.

Another issue raised by the hard CLOB is the role of specialists. MDTs does not preclude the existence of specialists. Indeed, it enhances opportunities for market makers to compete because the order book is public and orders may be hit irrespective of the geographical location of market makers. The problem is that exchange specialists currently derive a substantial amount of commission income by executing limit orders left with them. In MDTs, execution of such orders is automatic and there are no commissions to be earned. Thus specialists may have less of an incentive to accept an affirmative obligation to preserve price continuity in the market unless some other means of compensating them is developed. Whether such compensation is necessary—and if so, how best to provide it—is an important policy issue, but there is no logical inconsistency between payments for specialist services and hard CLOB.

MDTs has been hampered by a regulatory problem. Its initial authorization from the SEC was for the eight months ending January 31, 1979. During this time, the possibility that the authorization might not be extended naturally inhibited broker-dealer firms from making the financial commitments necessary to initiate trading on MDTs. The SEC's recent extension of the authorization to January 31, 1980 should substantially alleviate

that problem. Nevertheless, the possibility that authorization might not be extended beyond January 1980 will probably continue to discourage expansion of capacity beyond the fifty stocks which MDTs currently can handle.

Implications of the NMS

As should be apparent, the development of the NMS has important implications for the organization and structure of the nation's capital markets. Implementation of the NMS thus far has increased the visibility of trading activity in NYSE-listed stocks by the printing of all transactions on the composite tape and also has increased the visibility of quotations available in different markets by their dissemination through the CQS display system. The ability of investors, or brokers representing them, to act on this information has been enhanced by the electronic linking of exchange floors, as through ITS, and by integrated electronic trading as in MDTs. The same systems also improve the ability of market makers to compete and thus should improve the liquidity provided by the market. Though these systems are not yet fully developed, further enhancements—such as the MCLOF being developed by the NYSE—are in the offing. These innovations, though clearly given momentum by the regulatory activity of the SEC and the 1975 Congressional mandate, should be seen as part of a general trend toward use of electronic communications and data-processing facilities as a means of securing faster, more accurate communications and order execution while reducing costs.⁸

An example of this trend is the Designated Order Turnaround (DOT) system of the NYSE, which allows member brokerage firms to send smaller market and day limit orders directly from their offices to specialists on the NYSE floor and thus avoid the expense of using floor brokers to carry them. Though not an integral part of the NMS, DOT represents one way the NYSE has automated the order delivery process in order to reduce the costs of order execution.

The results of this and similar innovations should be increased operational efficiency in the capital markets. In addition, to the extent that trading rules are built into the software of automated trading systems, they may decrease significantly the burden of regulation, while creating a detailed audit trail which would make investigation of suspected abuses easier than it is today. Furthermore, the development of facilities to implement nationwide limit order protection—whether through a CLOB or a set of MCLOFs—should

⁸ For a discussion of recent innovations in the Government securities market, see Kenneth D. Garbade, "Electronic Quotation Systems and the Market for Government Securities", *Quarterly Review* (Summer 1978) pages 13-20.

tend to reduce further the kind of market fragmentation that contributed to the original interest of the Congress and the SEC in the NMS.

One of the most interesting opportunities created by electronic trading systems is that of substantially reducing the "remoteness" of the investor from the market in which his order is executed. At present, an investor contemplating a sale of shares, for example, cannot see prices currently available in the market but only reports of recent transactions. As described in the box on pages 14-15, the investor must accordingly rely on a broker to execute his order. To ensure that the execution conforms to his wishes, the investor may choose among a variety of different kinds of orders. However, if the market were not remote from the investor, his ability to "call the shots" would be greatly increased, and the order execution process could probably be simplified considerably.

Whither the NMS?

In the 1975 Amendments, the Congress laid down only very broad goals for the NMS and generally left detailed operational questions to be resolved by the SEC and the securities industry. Within this broad framework, the development of the NMS is essentially open ended, with no specific trading system mandated as the target toward which the securities markets are evolving. As a consequence, the SEC's task of enforcing implementation of the NMS is difficult. The SEC has wisely refrained from attempting to design a system and to impose it on the industry, and has instead proceeded to implement the NMS by prodding the industry to develop trading systems that possess the essential features of the NMS as mandated by the Congress. This approach has occasionally given rise to considerable controversy—especially in connection with the proposed removal of NYSE Rule 390—but the result has been to set in motion a variety of innovations which have transformed and will continue to transform the procedure of stock trading.

At present, it is not possible to predict in detail how the future equities market will operate, although two prototypes—ITS and MDTs—are now in operation. However, some general trends can be discerned. The trend toward automation of routine aspects of the trading process is likely to continue as the securities industry endeavors to improve service and to reduce costs. For example, the National Securities Clearing Corporation is progressing toward replacing physical transfer of stock certificates with an automated book-entry system, thus greatly speeding the clearing pro-

cess and reducing its costs. In the order execution process, systems such as DOT are likely to be enhanced to carry a greater volume of transactions in the near future, and the NYSE MCLOF is scheduled to be implemented on a pilot basis during 1979 as an interim step toward nationwide limit order protection. An important feature of the MCLOF is that broker-dealer firms will be able to insert limit orders directly into it and thus to reduce floor brokerage expense and the time delay between the receipt of orders by firms and their representatives on the exchange floor. With this capability, only a minor modification would be required to allow firms to execute orders electronically by inserting a bid, for example, which matches an existing offer in the MCLOF. Should this occur, the system would then possess the essential features of a hard CLOB—integrated display and execution of orders. In other words, the NYSE—responding to pressures from the SEC to implement the NMS objectives of disclosure, access, and limit order protection and from its members to reduce operating costs—is rapidly automating many features of equities trading, and a real possibility exists that the trading system may develop into a hard CLOB despite the NYSE's avowed intention to avoid replacing the exchange floor with a "black box".

Irrespective of the actual course of future enhancements of ITS, there will be continual comparisons between it and a hard CLOB, as represented by the MDTs. The reason is that both systems are providing their users with concrete information concerning the comparative speed and economy of order execution through the two systems. By encouraging experimentation with such prototypes, the SEC has performed the useful service of shifting the focus of the continuing NMS debate from the arena of largely impressionistic arguments over the advantages of the floor crowd versus a "black box" to concrete comparison of the relative merits of two operating systems: one using electronic communications and processing facilities to link exchange floors and the other using comparable facilities to allow trading from "upstairs" offices as well as on exchange floors. If the future pace of change in the equities market continues at anything like the rate observed during the last few years, a fully developed NMS should be attained before long. Along the way numerous questions of detail must be resolved by the SEC and the securities industry. It already seems safe to say, however, that the trading system which ultimately emerges will differ significantly from that which has traditionally characterized the equities market.

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