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SECURITIES MARKETS

SEC Actions Needed to
Address Market
Fragmentation Issues

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Summary of Statement By
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In response to a request from the Honorable Edward J. Markey, Chairman, Subcommittee on Telecommunications and Finance, House Committee on Energy and Commerce GAO presented the results of its work on the issue of market fragmentation. Since the passage of the national market system amendments in 1975, trading of New York Stock Exchange (NYSE) listed stocks has become increasingly dispersed across multiple markets. SEC, Congress, and others have raised questions about the effects of this phenomenon upon investors' assurance of obtaining the best price when trading, and upon market efficiency.

GAO found that the NYSE continues to be the predominant market center for trading NYSE-listed stock. However, its dominance is being challenged by competition, particularly when measured by its share of trades. During the period 1980 through 1992, NYSE's share of volume declined from 88 to 82 percent, but its share of trades fell from 85 to 65 percent. Fragmentation has allowed markets to respond to the diverse needs of both investors and brokers. This has been facilitated by SEC's encouragement of competition and innovation among markets along with the emergence of new trading technology.

GAO found that the establishment of real-time quote and last-sale reporting systems has, for most trades, guaranteed that investors will receive the best displayed price when trading. However, debate continues about (1) potential adverse effects on an investor's ability to obtain a price that is better than those displayed, and (2) whether adequate market liquidity is available. While these are very complex issues, the central focus of the debate appears to be what market structure--the dealer or auction--best serves these functions. Because the markets continue to evolve, and because existing research on market fragmentation is limited, this debate has not yet been resolved.

Maintaining a national market system that is at once efficient, competitive, and fair is vital to U.S. interests. To ensure that such goals are achieved, GAO believes SEC should develop a strategy for monitoring the effects of market fragmentation on investors and U.S. securities markets. Such a strategy should include developing data on trends in the achievement of best trading price, the markets' ability to facilitate trading, widening in bid and ask prices, and the impact of emerging technology. Further, in light of increased market fragmentation and the continued evolution of the markets, SEC should consider whether an order exposure rule is needed.

Mr. Chairman and Members of the Subcommittee:

We are pleased to be here today to discuss issues surrounding U.S. securities market fragmentation--basically the buying and selling (trading) of the same stock in different markets at the same time. In my testimony, I will summarize three basic issues: first, the extent and nature of fragmentation for stocks listed on the New York Stock Exchange (NYSE); second, the reasons for this fragmentation; and third, the benefits and risks associated with it.

Overall, we found that the Securities and Exchange Commission's (SEC) encouragement of market competition, advances in computer technology, and investors' demands for reduced trading costs have fostered increased fragmentation of exchange-listed stocks traded in U.S. markets. This trend toward fragmentation has particularly affected the trading of stocks listed on NYSE. Although most trading in NYSE-listed stocks is still done at the NYSE, that exchange's dominance is being challenged. NYSE-listed stock is trading at an increasing rate among regional exchanges, the dealer market¹, proprietary trading systems,² and foreign

¹The dealer market refers to the trading of securities by broker-dealers or individuals registered with the National Association of Securities Dealers (NASD). Brokers act as agents for buyers and sellers of securities and dealers trade in securities for their own accounts. The part of the dealer market that trades NYSE-listed securities is known as the "third market."

²Proprietary trading systems refer to a variety of computer-based trading mechanisms that permit traders to electronically negotiate trades or have trades matched at predetermined prices.

markets. The greatest competition is from the dealer market, whose share of trades of NYSE-listed securities grew more than tenfold from 1980 to 1992.

The 1975 amendments to the Securities Exchange Act of 1934 called for the establishment of an efficient, competitive, and fair national market system for securities. At that time, Congress was concerned that market fragmentation would not ensure investors fair and equitable treatment because the same NYSE-listed stocks were frequently trading in unlinked multiple markets at different prices. Since the amendments, most of the different markets have been linked electronically with the guarantee that the investor will receive the best displayed price³. Today, much of the debate concerns whether trading at the best displayed bid or ask price ensures that investors obtain the best trade price⁴ and whether fragmentation interferes with the market's ability to provide sufficient levels of liquidity⁵.

See appendix I for a discussion of five proprietary trading systems.

³Best displayed price is the highest bid price of a security displayed by any market when an investor wants to sell and conversely the lowest displayed ask price of a security when an investor wants to buy.

⁴Best trade price, which can be in between the best displayed bid and ask prices, is the highest price that can be achieved for a sell order and the lowest price that can be achieved for a buy order at the time the trade is executed.

⁵Liquidity in the stock market refers to the ability of investors to buy or sell a given quantity of a stock quickly at the best trade price.

As you have heard in previous testimony before this Subcommittee, accurately quantifying the benefits and possible harmful effects of increasing market fragmentation has been difficult and the subject of much controversy among market participants. Available data are inconclusive about current and long-term effects of market fragmentation on both the overall U.S. securities market and investors' ability to obtain the best trade price.

Maintaining a national market system for securities trading that is at once efficient, competitive, and fair is vital to America's financial interests. Because the effects of market fragmentation on this system are currently uncertain, we believe the SEC should develop a specific strategy for monitoring the effects of market fragmentation on investors and the nation's securities markets and consider, as part of its Market 2000 study, whether an order exposure rule is needed.

Our testimony today is based on discussions with SEC officials, numerous market participants, and academicians, as well as a review of academic and industry studies related to the issue of market fragmentation. We discussed with SEC officials the scope of SEC's ongoing Market 2000 study of marketplace issues and reviewed public comments provided as input to the study. As of June 1993, SEC officials said that they had not yet reached final conclusions and are currently preparing a draft report. They said that a report is expected by the fall 1993.

NYSE-LISTED STOCKS ARE INCREASINGLY
TRADED IN OTHER SECURITY MARKETS

Since the 1975 national market system amendments, trading of NYSE-listed stocks has become increasingly dispersed across multiple markets. While NYSE continues to be the predominant market center for trading of NYSE-listed stocks, NYSE's share of trades has continually eroded. For example, 82 percent of the volume of NYSE-listed stocks that were traded in the United States in 1992 were traded on the floor of the exchange, down from 88 percent in 1980. During the same period, NYSE's share of the number of trades that occurred declined from 85 percent to about 65 percent. The greatest competition has been from the dealer market, which increased its share of trades of NYSE-listed stocks from less than 1 percent to almost 11 percent during this period. While the regional exchanges maintained about an 11 percent share of the volume of stocks traded throughout the period, their share of the trades of NYSE-listed securities increased from 14 percent in 1980 to 24 percent in 1992. The number of trades on proprietary trading systems remained fairly constant at less than 1 percent. SEC does not have data on the amount of trading of U.S. securities done in foreign markets, but SEC officials said they believe it is small.

MARKETS FRAGMENT IN RESPONSE TO DIVERSE
INVESTOR NEEDS AND BROKER COMPETITION

Fragmentation has been made possible by SEC's encouragement of inter-market competition and the use of technology. Development of informational linkages among most competing markets has provided real-time price quotes and last-trade data that allow brokers to guarantee an investor a trade at the best displayed price. As a result, markets appear to compete more on the basis of the services they offer--such as anonymity, faster execution of trades, and lower trading fees--than on price.

Both institutional and retail traders⁶ seek different services, and their choices of market tend to vary accordingly. For example, large institutional traders still prefer to trade at the NYSE. Our analysis of trade data disclosed that the NYSE retained 89 percent of block trades in 1991. Many institutional traders with whom we spoke told us that they continue to trade at the NYSE because they believe it offers the greatest liquidity and/or best price. Many of the large traders that have executed trades in a market other than the NYSE, appear to have done so to meet specific needs. For example, some institutional investors, such as pension plans, are primarily interested in trading groups of stock simultaneously to match the performance of stock

⁶Trades of 5,000 shares and less are generally considered retail, while those over 5,000 are institutional. Institutional trades of 10,000 shares or more are called block trades.

indexes. To meet these traders' needs, some regional exchanges and proprietary trading systems have developed systems that automatically match and execute buy and sell orders when prices meet specific levels. Proprietary trading systems also provide computer based technology that allows for greater anonymity and reduced trading costs.

In the case of small retail traders, the guarantee of receiving the best displayed price has allowed them to seek lower commissions and faster service. For these reasons, retail traders have turned more and more to discount brokers, who charge lower commissions for trading, but generally do not offer the full-range of services of traditional brokers. Brokers acting for retail investors in most instances decide in which market to execute an investor's trade, and they often choose a market that will minimize their own costs of trading.

As they compete for brokers' orders, some exchanges have discounted fees and some regional exchange specialists and dealers have begun paying brokers directly for orders. As you know from recent testimony before this Subcommittee, these direct payment arrangements are very controversial. In response to the controversy, some market participants have supported greater disclosure that would inform investors about how their trades are routed for execution.

BENEFITS AND RISKS OF FRAGMENTATION

SUBJECT TO CONTINUING DEBATE

SEC's encouragement of competition among markets has fostered several benefits, including increased market innovation and greater consistency in investor protection rules among the auction⁷ and dealer markets. Furthermore, the electronic linkages established since the 1975 national market system amendments have, for most trades, addressed concerns that market fragmentation would prohibit fair and equitable treatment of investors. As of 1991, over 99 percent of NYSE-listed stock trading volume in the United States was linked among markets for last sale reporting. About 1 percent of NYSE-listed trading volume was executed on proprietary trading systems in which quotes are either not linked or not applicable. An additional 40 percent represented block trades at NYSE, which are negotiated off the floor of the exchange and brought to a specialist for execution. An additional 4 percent of volume represented similar block trades done in other markets.

Despite these benefits, there is considerable debate about the potential adverse effects of market fragmentation on investors'

⁷In an auction market, such as the NYSE and American Stock Exchange (Amex), investors' offers to buy and sell stock are matched with each other by a specialist on the floor of an exchange. The specialists are responsible for making fair and orderly markets in their assigned stocks by buying or selling a stock for their own account when there is a temporary disparity between supply and demand for the stock.

ability to receive the best price when trading and the markets' ability to provide sufficient levels of liquidity. The debate focuses primarily on which type of market--auction or dealer--best achieves these objectives.

Supporters of the auction exchange system argue that it offers the best price improvement opportunities and the most market liquidity when all buy and sell orders are brought together on the floor of an exchange and trades can occur at prices between the best displayed bid and ask quotes. Specifically, NYSE estimates that about 37 percent of all trades occurred at prices between the buy and sell quotes. Supporters of the auction system contend that in a dealer market, investors trade at either the displayed bid or ask price, and therefore do not have an opportunity to receive a superior price between the displayed bid and the ask quotes. Further, they argue that liquidity would be enhanced if all traders bring their orders to an auction market, thus increasing the opportunity to trade quickly. Also, they argue that liquidity is enhanced because the specialist has the obligation to create orderly markets by ensuring that trades are executed.

In contrast, dealer market proponents claim that investors are frequently receiving best trade prices when their trades occur at the best prices displayed in the consolidated quote system, and that a "best trade" involves factors other than trade price.

Such factors might include the speed of execution and the total costs of the transaction. Further, the claims of price improvement by the NYSE have been challenged by some market participants who allege that certain NYSE trades occur at prices between the quotes because the exchange specialists set wider quotes than are necessary. They also allege that some specialists may be aware of certain customer orders that are better than the displayed buy and sell quotes, but do not display this information in the consolidated quote system before completing a trade. In response, the NYSE recently reminded its specialists that they are required to display trading interests that improve an existing quote. Dealer market proponents also contend that competing dealer market makers offer more liquidity than specialists, especially in difficult trading times such as when most investors want to sell a stock.

Resolving this debate is complicated by the continuing evolution of the markets, which is increasingly blurring the traditional distinctions between the dealer and auction market systems. Technological advances have allowed various markets to adopt price improvement features similar to those claimed by auction market proponents. For example:

- One regional exchange has developed a computerized system that uses mathematical formulas, that under certain conditions, give an investor a trade price that is in between the

displayed bid and ask quotes.

- The most prominent dealer market maker⁸ in NYSE-listed stocks claims to have a system that gives investors a price better than the displayed quotes in about 7 percent of its trades.
- One proprietary trading system claims that 50 percent or more of its trades are matched at superior prices, and another system is specifically designed to complete trades at the midpoint between the best bid and asked prices on NYSE at a given time.

These attempts to automate the NYSE's price improvement functions illustrate how the markets continue to evolve in response to competition.

Several studies have attempted to determine the effects of fragmentation on the achievement of best trade price and liquidity, but these studies are based on limited data and reach conflicting results. Moreover, the analyses may be outdated because of the evolving nature of the markets. For instance, one study comparing price improvement among the NYSE, regional stock exchanges, and the dealer market was conducted before the most prominent dealer market maker established its price improvement

⁸A market maker refers to a dealer who holds itself out as being willing to buy and sell a security for its own account on a regular or continuous basis.

process.

In June 1992, SEC sought public comments in connection with its study of market structure issues. Our review of over 50 comments received by SEC as of June 1993 disclosed continuing debate on the possible risks and benefits of fragmentation. In our opinion, none of the comments provided SEC with empirical data that could resolve the debate. Although the SEC has not completed its study and a draft report is not expected until the fall of 1993, SEC officials told us that they were not collecting any empirical data on the effects of market fragmentation.

AN ORDER EXPOSURE RULE MIGHT HELP

The markets have used technology to achieve linkages and increase exposure of orders across markets. Even so, stocks traded in large blocks and on proprietary systems are not linked or displayed to all investors. In addition, brokers use computer systems to internally match some customer orders without displaying them to other markets. Trading outside the linked system could increase further if SEC decides to relax certain trading restrictions in the future. One way this might occur is by modifying NYSE rule 390, about which SEC is obtaining comments as part of its Market 2000 study. NYSE Rule 390 is meant to prevent exchange members from competing with NYSE specialists by acting as market makers for NYSE-listed stocks.

In an attempt to foster competition among markets, SEC modified Rule 390 in 1981 to remove the restriction for stocks first listed on the NYSE after April 26, 1979. These stocks are referred to as 19c-3 stocks. SEC officials said that in 1979 they were concerned that further relaxing Rule 390 would allow broker-dealers to match their customers' orders from their own inventory without exposing them to orders in other markets. They said this could have lessened the amount of order interaction across all markets, impaired liquidity, and adversely affected an investors' ability to obtain the best price.

In 1982, SEC twice proposed a rule, known as an order exposure rule, that would have required customer orders that are matched from a broker-dealers' own inventory to be advertised to all other markets to see if a superior price were possible before completing the trade. Such a rule could lessen any negative impacts if current trading restrictions are relaxed. No final action was taken on the rule because SEC, at the time, believed that the costs of additional regulation that would be required, such as increased transaction costs and slower trade execution, outweighed the benefits of adopting the rule, such as assuring greater opportunity for best trade price. Additionally, it was believed that the existing level of fragmentation did not warrant such a rule.

Several commentators to SEC's Market 2000 study have addressed

the applicability of an order exposure rule to today's market. For instance, NYSE has suggested that such a rule would level the playing field by forcing all participants trading in NYSE-listed stock to display quotes reflecting buying and selling interest in all markets. In contrast, a proprietary trading system respondent did not believe that an order exposure rule was necessary because of the high level of information linkages in current markets. In its comments, NASD said that, while it did not believe additional exposure of orders on proprietary trading systems was required, if SEC considers such a rule, it should be applied equally across all markets. Further, NASD said that market quality has not been adversely affected by Rule 19c-3 which allows trading of some NYSE-listed stocks without such a rule.

CONCLUSIONS AND RECOMMENDATIONS

Available data are inconclusive about current and long-term effects of market fragmentation on both the overall U.S. securities market and investors' ability to obtain the best trade price. Maintaining a national market system for securities trading that is at once efficient, competitive, and fair is vital to America's financial interests.

Because the effects of increasing market fragmentation are

currently uncertain and given the increasing use of technology accompanied by the possible lessening of Rule 390 trading restrictions, we are recommending to SEC that it:

- Develop a strategy for periodically monitoring the effects of market fragmentation. Such a strategy should include developing information on trends in the achievement of best price, the ability of the markets to facilitate trading, potential widening in bid and ask prices, and the impact of emerging technology.

- Consider, as part of its Market 2000 study, whether an order exposure rule is needed.

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This concludes my prepared statement. My colleagues and I would be pleased to respond to any questions.

Description of the Operation of
Five Proprietary Trading
Systems⁹ Operating in 1992¹⁰

POSIT, operated by Jeffries since 1987, a registered broker/dealer with the National Association of Securities Dealers, is an electronic trading system that matches investor orders. POSIT allows institutional investors to trade portfolios, or groups, of stock directly with each other. Buyers and sellers use their own desktop computer to enter the name and number of shares of stock that they wish to trade. The order is sent to the central computer of POSIT where an attempt is made to match it with orders sent by other POSIT subscribers. Orders can be entered 24 hours a day and trades are executed twice a day. Trade price occurs at the average of the best bid and ask price displayed in the intermarket trading system at the time. Matched trades are reported to the consolidated tape on a real-time basis.

⁹SEC regulates proprietary trading systems as either a broker-dealer with a no-action letter or an exempt exchange. The effect of both of these processes is to remove these systems from some of the regulatory requirements that are imposed upon securities exchanges. As part of its Market 2000 Study, SEC is reviewing its approach to regulating alternative trading systems.

¹⁰Since 1969, SEC has granted no-action letters to six additional systems for the exclusive trading of securities that are no longer operating.

The Arizona Stock Exchange (AZX), operating since 1991 as an exempt exchange, is an electronic auction system that centralizes institutional orders at a point in time. Buyers and sellers use terminals to enter orders at the price at which they wish to trade between 4:00 p.m. and 5:00 p.m. eastern time. Orders can be entered for public display or to remain anonymous until executed. At 5:00 p.m. eastern time, the central computer conducts an electronic call auction, in which a single trade price is mathematically determined based upon all prices entered. All buyers who had bid over the calculated price and all sellers under the calculated price, have their orders executed at the calculated price. All other orders are unfilled. Executed trades are not reported to the consolidated tape.

Instinet, registered and regulated as a broker-dealer, operates three electronic securities information and trading systems. These systems allow institutional investors and trading professionals, such as exchange specialists, to trade directly with each other. As described below, one system allows subscribers to negotiate directly with each other during the trading day, while the other two take orders during certain hours and then match and execute orders based upon predetermined prices.

-- The Instinet System, instituted in 1969, operates from 2:30

a.m. to 6:00 p.m. eastern time and allows subscribers to enter buy and sell orders, which can either be matched automatically with other orders or negotiated electronically between subscribers. All activity is done anonymously, and completed trades are reported on a real-time basis to the consolidated tape when it is operating.

-- The Instinet Crossing Network, instituted in 1986, allows subscribers to directly enter from their computer terminals buy and sell orders from 4:00 p.m. until 6:30 p.m. eastern time. Between 6:30 p.m. and 7:00 p.m. eastern time, the computer automatically matches buy and sell orders for which there is corresponding interest. All trades for NYSE-listed stocks occur at the closing price on the NYSE. Trades are not reported to the consolidated tape.

-- The Instinet Market Match, instituted in 1991, allows subscribers to enter orders to buy and sell stock from 4:30 p.m. until 8:30 a.m. eastern time. Between 8:30 a.m. and 9:00 a.m. trades are matched, and subscribers are notified as to whether their orders will be executed. Trades are executed at 4:30 p.m. eastern time at a volume-weighted average price that reflects all trading of the stock on any market during that day. Trades are reported to the consolidated tape after execution for reporting before the opening of NYSE on the

APPENDIX I

subsequent day.

APPENDIX I

Table I.1: Overview of Proprietary Trading Systems

	Instinet System	Instinet's The Crossing Network	Instinet's MarketMatch	Jefferies Group, Inc., Posit	Arizona Stock Exchange, Inc. (AZX) ^a
Year initiated	1969	1986	1991	1987	1991
Regulatory classification	Broker/dealer	Broker/dealer	Broker/dealer	Broker/dealer	Stock Exchange ^b
Stocks traded					
NYSE	Yes	Yes	Yes	Yes	Yes
Amex	Yes	Yes	Yes	Yes	Yes
NASD	Yes	Yes	Yes	Yes	Yes
Regional exchange	Yes	Yes	Yes	Yes	Yes
Foreign	Yes	Yes	No	No	No
Order entry hours ^c	2:30 am - 6:00 pm	4:00 pm - 6:30 pm	4:30 pm - 8:30 am	24 hours per day	4:00 pm - 5:00 pm
Trade execution hours ^d	2:30 am - 6:00 pm	6:30 pm - 7:00 pm	4:30 pm	Twice daily at randomly selected times	Once daily at 5:00 pm
Price discovery ^e	Yes	No	No	No	Yes
Real Time reporting					
quotes	No	N/A ^f	N/A	N/A	No
last sale	Yes ^g	No	No	Yes	No
1991 Share volume					
NYSE-listed stock	288,227,000	153,493,000	200,450	493,034,856	5,360,945
all stocks	2,016,000,000	196,000,000	211,000	598,296,153	5,643,100
Subscribers	Institutional investors, broker/dealers, and exchange specialists	Institutional investors, broker/dealers, and exchange specialists	Institutional investors, broker/dealers, and exchange specialists	Institutional investors	Institutional investors and broker/dealers

^aFormerly known as the Wunsch system.

^bApproved under limited volume exemption from SEC.

^cAll times cited are Eastern time.

^dPrice discovery is the process by which a market price for a security is determined through the interplay of supply and demand.

^eThese are not applicable because only trade volume is provided in the orders.

^fTrades after 5:15 pm Eastern time are not reported on a real time basis.