Chapter 1

# Summary: Public Policy and Securities Markets

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# Summary: Public Policy and Securities Markets[1]

U.S. securities markets have been changed by strong social, technological, economic, and political trends over the past two decades. During the 1970s automated systems were put in place, institutions emerged as dominant investors, new kinds of financial instruments began to trade, and Congress passed landmark legislation encouraging greater competition among markets. In the 1980s securities and futures markets became linked through new financial products and computer-assisted trading strategies. The decade of the 1990s will bring still greater challenges for the markets, their regulators, and congressional oversight committees, as foreign competition becomes intense and electronic trading systems mature.

The world is moving toward electronic around-the-clock and around-the-globe securities trading.[2] These challenges will require strong efforts to maintain efficiency and fairness and to meet the needs of domestic and foreign investors. The ability of U.S. markets to compete with foreign counterparts is becoming critical. The U.S. regulatory structure will have to maintain and protect essential domestic policy objectives in an environment buffeted by change. The regulatory structure, designed for yesterday's markets and assets, may not be up to tomorrow's tasks. New or revised legislation may become necessary. The private sector cannot achieve, without government assistance, some of the necessary adjustments to keep American markets strongly competitive and to protect American investors and financial systems.

Securities markets are created by the exchange of information-bids, offers, orders, and prices. The efficiency of the technology used to send and receive information shapes the markets' structure and operation.[3] From the first telegraph in 1846 to electronic order routing systems in 1990, information technology has greatly increased the speed with which orders move from customer to broker to dealer. Increases in speed or in control over the direction of information flow can mean large profits or losses in securities markets. The obvious advantages of better technology have always in the past eventually overcome inertia, tradition, and cost to bring information technology into markets. Eager traders sooner or later seek the benefits of advanced technology for themselves and for their customers, either on established markets or by trading outside of those markets.

Now information technology is moving beyond merely routing and transmitting market data and orders, to acting on that information. It can automatically queue and match bids and orders, execute trades, move them through final settlement, and create an audit trail. The security itself can exist only in electronic form, with no printed certificate. Although some foreign exchanges are putting in place early versions of completely electronic marketplaces, no one is sure of what the costs, benefits, and risks of such systems would be. There is insufficient experience as yet to provide a basis for policymakers to mandate specific technological changes.

Fifteen years ago, Congress instructed the Securities and Exchange Commission (SEC) to guide and assist U.S. securities markets in using technology to create an efficient and fair national market system.[4] The SEC was to promote vigorous, open competition among exchange markets and over-the-counter (OTC) markets, among brokers and dealers, and among customer orders. The intent of Congress has

[1] This chapter is a summary of the report as a whole. For citations and for extended explanation or development of points, readers must go to the other chapters.

[2] See OTA Background Paper, *Trading Around the Clock: Global Securities Markets and Information Technology*, OTA-BP-CIT-66, (Washington, DC: U.S. Government Printing Office, July 1990).

[3] "Securities" usually refers to stocks, bonds, options, and closely related instruments that are either means of capital formation or contractual rights to buy and sell such assets (i.e., options). Equity securities are stocks-shares in the ownership of corporations. Debt securities include corporate, municipal, and U.S. Treasury notes and bonds. Debt securities are sometimes called "fixed-income securities," because in the past most debt has carried a fixed rate of interest; now debt securities includes both fixed- and variable-rate instruments. Options are contracts conferring the right to buy or sell assets (e.g., stocks) atspecified prices for aspecified length of time. Futures are contracts creating an obligation to deliver or receive assets at specified price at a future time. They are traded not on securities markets but on commodity markets. This assessment discusses futures contracts trading, primarily stock-index futures, but does not otherwise cover commodity markets.

[4] The Securities Act Amendments Of 1975.

been reaffirmed through legislation, authorizations, hearings, and recent legislative proposals.

Congress wisely did not specify how markets should design technology to meet these goals, leaving that up to market institutions. Decisions about the use of new information technology, by the markets, have however often favored preservation of traditional market structures, trading techniques, and professional skills-at times probably at the expense of the best interests of the U.S. market system as a whole. Insistence on maintaining personal intermediary roles and traditional face-to-face bargaining techniques may have led to inflexibility in dealing with economic and institutional forces for change.

At the same time, advanced information technology has encouraged market professionals and large investors to use computer-assisted trading strategies that can cause short-term price volatility, or spread selling or buying pressure from one market to others. Some people insist that financial markets have become "excessively volatile"; others insist that they are only more efficient (i.e., reflect investors' changing judgments more swiftly). From 1955 to 1982, there were only two occasions when stock market prices fell more than 4 percent in 1 day; from 1982 to mid-1990, there have been 10 such episodes. Many investors conclude that this indicates increased short-term volatility since 1982, when stock-index futures were introduced and computer-assisted intermarket program trading became common.

The changes buffeting U.S. securities markets and derivative products markets[5] do not come solely from technology. There are two other related factors: 1) the evolution of a global economy with multinational corporations seeking capital markets worldwide, and 2) the development of giant institutional investors, with increasing opportunities to satisfy their investment objectives in world markets. These are institutions with large investment portfolios, some worth billions of dollars. They include public and private sector pension funds, insurance companies, mutual funds, labor unions, and banks. Institutional investors differ from individual investors in many ways besides size. For example, they are managed by full-time professionals, they have fiduciary responsibilities (legal obligations to invest prudently to the advantage of their beneficiaries); they usually trade more often and are probably more likely to hedge, and to hedge in more complex ways, than individual investors. Many of them-such as pension funds-are largely tax exempt.

Securities, futures, and options markets are increasingly interdependent because of the opportunities technology provides for interactions between markets, for the purposes of portfolio hedging or short-term profits. Dual regulatory agencies may no longer be appropriate, for what is now one marketplace. The SEC and the Commodity Futures Trading Commission (CFTC) often take radically different positions on issues-e.g., on the tolerable level of price volatility, the causes of market breaks, and the efficacy of measures designed to calm markets under stress. These differences raise doubt about the reliability of their coordination and cooperation during market emergencies. Other problems, especially recurring dispute over authority for new products, also point to the need for improving the regulatory structure.

Reassessment of the regulatory structure is timely because U.S. markets currently have problems that will be *even* more serious in the future. Exchange-listed securities trading may be moving away from the primary exchanges to regional exchanges, OTC markets, off-board trading, and foreign markets. This is less a sign of healthy competition (since institutional barriers and regulations still limit competition) than it is evidence of growing dissatisfaction with the quality and cost of exchange trading.[6] There are problems in handling large block trades and basket trades for institutional investors. (A block trade is a transaction involving at least 10,000 shares of one stock; a basket trade is the synchronized sale or purchase of a large group or portfolio of many different stocks.) Small investors are worried about excessive price volatility and unacceptable levels of market fraud or manipulation in both securities and

[5]Derivative products are those like stock-index futures, stock options, and stock-index options, for which prices are dependent on the prices of cash market items (stocks).

[6]In 1989 only 69 percent of trading in stocks listed on the New York Stock Exchange (NYSE) was done on that exchange, the lowest percentage ever reached. Some of the trading is done on regional exchanges, some on proprietary electronic exchanges, and in some weeks, as much as 17 percent may be done in foreign markets. Usually price is not the determining factor. See ch. 3.


Photo credit: New York Stock Exchange

Trading support systems at the New York Stock Exchange.

derivative product markets. Futures and options markets are criticized for developing products that are suspected of increasing the likelihood of a market crash. These problems call for a reexamination of public policies including changes in the regulatory structure.

Stock exchanges have sophisticated trading support systems on their trading floors, but they have resisted the use of electronic systems for after-hours and remote-site trading. Just-announced plans for after-hours electronic trading are belated, cautious, and tightly limited. The OTC dealers represented by the National Association of Securities Dealers (NASD) are putting some international systems in place now. Futures markets are moving to seize the opportunity for around-the-clock and around-the-globe trading, but have resisted bringing technology into their domestic trading pits. There are signs that these conditions may be ready to change, but further congressional and regulatory encouragement is needed.

## THE PUBLIC INTEREST IN SECURITIES MARKETS

[See ch. 2]

Should governments "interfere" with securities markets? Some people believe that securities markets should be regulated only by the forces of the marketplace. Others believe that government regulation is needed because there is a strong public interest in the markets' efficiency, fairness, and competitiveness, and in their role in encouraging investment in economic growth. To understand the public policy issues related to securities markets, one must understand what the role of securities markets is in our economy, and how it is changing in response to technology and to economic and social forces.

The securities markets discussed in this assessment do not directly raise capital They are secon-

dary markets, for the public resale of securities after their issue and first placement. Secondary markets encourage people to invest their savings in securities by making it possible to resell their investments for cash when necessary, and by establishing the going price for stocks and bonds. Futures and options markets provide ways for people to hedge, or protect the value of their investments by related market transactions.

Securities markets have several vital functions in a democratic-capitalist society:

- Together with primary markets, they enable corporations to raise capital for growth and expansion, and make it possible for local, State, and Federal governments to borrow money.
- They help to direct capital toward its most promising use.
- They provide opportunities for people to increase their savings by investing them in profit-producing enterprises.
- They provide feedback and guidance to corporate management, by revealing the collective judgment of investors about a corporation's potential.
- They generate jobs and contribute to gross national product.

Securities markets have other political or social values as well. By giving citizens a tangible stake in wealth-producing industry, they may encourage citizens to pay attention to a broader range of economic decisions and policies. Because securities markets are sometimes considered barometers of economic health, they may bean important factor in maintaining confidence in our economic system.

But the importance of securities markets in the economy is, nevertheless, often overstated. These secondary markets do not directly generate capital, and most corporate capital is not, in fact, raised by issuing equity securities. Moreover, secondary markets may now be doing a poor job of resource allocation. The economic welfare of most American families is only indirectly affected, if at all, by stock market performance. The vexing problem of low national savings and investment probably cannot be solved by making securities markets either more efficient or less volatile. Finally, these markets directly generate less than 1 percent of national GNP and employment.[7] The many proposals discussed in this assessment for strengthening market structures are aimed at improving the operating efficiency and competitive position of U.S. securities markets, but it should be recognized that they may have little positive effect on American business or on the business cycle. By the same token, efforts to improve some aspects of market performance should not necessarily be ruled out on the grounds of any supposed negative effects on capital formation or GNP.

In spite of these caveats, sound securities markets and their smooth functioning are important. Public officials are rightfully concerned with their performance and their fairness, especially as mutual funds and pension funds investment increase the number of Americans affected by market behavior. Happily, improving the performance and fairness of securities markets is in the interests of both honest market participants and the general public. Most actions toward that end can be taken by market participants and private-sector institutions. The government role may, for the most part, be to remove unnecessary barriers to private-sector action. In some cases, however, the self-interests of market participants create resistance to desirable market improvements or modernization, or otherwise do not match the public interest. In these cases, more direct government actions may be necessary.

### *The Investors*

Institutional investors increasingly dominate U.S. securities markets in terms of total assets and volume of trading (doing about 55 percent of all New York Stock Exchange trades).[8] The largest and most numerous of institutional investors are corporate and government pension funds (with about $2.2 trillion in securities investments), insurance companies (another $1.2 trillion in securities investments) and mutual funds (assets of over $800 billion). The giant institutions trade large blocks of securities and allocate or hedge their portfolios in ways that can move markets, especially when they act in unison.

[7] Approximately 1 million jobs nationwide are related to securities exchanges, OTC dealers, and brokerage firms. Employment in the futures industry is estimated at approximately 100,000.

[8] They d. not yet own most of the stocks, but their proportion of the ownership of NYSE-listed stocks has increased over the last 40 years from 13 percent to nearly 50 percent. Institutions own about 39 percent of OTC stocks. They also dominate trading in privatelyplaced corporate securities, and hold 87 percent of all privately placed securities.

Their needs strongly influence the types of products offered by exchanges.

Fewer than one in five trades are done for individual investors, but individuals or households still directly own about 50 percent of American equity securities. There is a tiering of equity ownership, with about 45 percent of all individual portfolios holding less than $5,000, another 35 percent of individual investors with between $5,000 and $25,000 invested, and about 10 million individual investors (20 percent) with over $25,000 invested, probably averaging about $90,000.[9]

The United States has the highest level of individual participation in securities markets of any country. The long-term trend, however, is that small investors are leaving the market as direct investors, and are increasingly found under the umbrella of institutional funds. This has broadened the base of participation and given more Americans a stake in the liquidity, efficiency, and fairness of securities markets. But traditional public policies or regulatory procedures, framed around the objective of protecting "the small investor," may not recognize the implications of these changing patterns of market participation. It remains important to ensure investment opportunities and fair treatment for small investors, but even more Americans may be adversely affected if the needs of institutional investors are not also met.

### *Brokers*

The brokerage industry has seen major changes in its operations and structure during the past few decades, driven by the paper-work crisis of the late 1960s, the unfixing of commission rates in the early 1970s, the departure of many retail investors from direct investments in stock, and the increase of institutional investors. Some effects have been increased industry concentration,[10] a decline in brokerage fins' profits from commission revenues, and cyclical swings in the industry's employment and profit levels.

There have been other long-term effects, not all beneficial for small investors. During the 1980s, many firms broadened the scope of their brokerage business to add personalized financial consulting and other services and products, some of which are particularly profitable because they generate underwriting fees and commissions in addition to annual management fees. Brokers have a conflict of interest in selling those products that generate the highest commissions versus helping clients target on those investments best suited to their needs. Institutional investors that generate greater revenues may be treated more favorably by brokerage firms than other investors, paying lower commissions and having better access to research and analysis. This may soon create a three-tiered brokerage system with large institutional investors, medium-size institutional and large retail customers, and small retail customers treated differently.

## SECURITIES MARKETS UNDER PRESSURE [See ch. 3]

U.S. securities markets are the largest and probably the world's most liquid, efficient, and fair securities markets. The New York Stock Exchange (NYSE) lists 1,740 securities and does almost 95 percent of trading in exchange-listed stocks. The smaller American Stock Exchange (AMEX) lists 860 stocks. There are also five regional exchanges. About 4,300 securities are traded by OTC dealers. Trading volume in the OTC market, largely because of technology,[11] has grown to almost 80 percent that of the NYSE (in number of shares traded) .12 The problems of U.S. markets today are, in many cases, those of successful, growing markets that are slow to recognize the implications of growth.

[9]These estimates were based in part on survey data collected in 1985, and will have changed some. After the 1987 market crash, small investors decreased their direct investments and decreased their participation in mutual funds; more recently, they may have resumed their net purchases.

[10]In 1973 the top 10 industry firms accounted for 33 percent of the industry's share of capital, but by September 1989, their share had increased to 61 percent.

[11]Until 1971, OTC quotations were published only on daily "Pink Sheets." Since the introduction of an electronic system to display their quotations (NASDAQ), OTC volume has grown rapidly. The automated quotation system (National Association of Securities Dealers Automated Quotation System, or NASDAQ) displays timely dealer quotes on over 4,000 stocks (firm only for 100 share lots, or for those eligible for automated execution, for up to 1,000 share lots); transactions are negotiated by telephone. (Small orders can be filled electronically through the computerized Small Order Execution System SOES.)

[12]It is, however, about 27 percent by dollar volume, because of the lower average price of OTC stocks.

Securities markets, in the United States, have market-makers-dealers who stand ready, whenever the market is open, to buy or sell securities at firm, publicly displayed prices, or "quotations." Stock exchanges have one designated market-maker, called a specialist, for each stock. The specialists are exchange members, who in return for having the unique and profitable role as dealer for several assigned stocks, have an 'affirmative obligation' to provide liquidity and to moderate and smooth out price changes by buying for and selling from their own inventory if there are no bids (or offers) near the market price. They also have a "negative obligation' not to buy *or sell* for themselves when there are customer orders that can be matched (a buyer with a seller) at a price acceptable to both. The OTC stock market, in contrast, is made up of many market-makers-an average of 10 dealers for an actively traded stock—who do not match customer orders directly, but make markets by buying and selling stocks for and from their inventory. They compete for customers' orders by trying to make the most attractive bid (to buy) or offer (to sell).

### *The Specialist System*

Both exchange floor trading and the specialist system (as well as procedures for OTC dealing) evolved to serve markets that have now radically changed. There are at least four serious strains on the specialist system, which was developed to handle moderate-sized orders, in ''round lots" of 100 shares: 1) the greatly increased volume of trading, 2) capital inadequacy, 3) large block trades, and 4) basket trades.

Trading volume has increased in parallel with the growth of large institutional investment funds, from 16 million shares daily in 1973 to 162 million daily in 1989 (and 600 million daily in the midst of a crash). There are sharp peaks in volume associated with factors such as computer-assisted large transactions ("program trading") and the expiration of related futures and options contracts. The limitations on specialists' capital become apparent when many institutional investors begin to sell large blocks and baskets of stock at once. The ability of the specialist to balance these sell orders by buying for his own inventory may be rapidly exceeded.

The average size of a transaction on the NYSE is now over 2,300 shares. In 1961, there were about 9 "large block" trades (10,000 shares bought or sold in one transaction) per day, and they accounted for only 3 percent of share volume. Now there are more than 3,100 large block trades per day, accounting for more than 45 percent of the shares traded. Many of these blocks are of 250,000 shares.

Basket trades-the purchase or sale of many different stocks (a portfolio) simultaneously or as part of a single strategy-are usually the result of inter-market hedging strategies, that is, balancing stock investments with stock-index futures transactions. When many institutional investors are using similar inter-market hedging strategies, the stock exchange may be hit with a tidal wave of basket sales (or purchases), so that the entire market seems suddenly volatile.

These changes placed a heavy burden on the specialist system, and exchanges made efforts to relieve it. For example, the NYSE responded to the challenge of large block trades[13] by allowing large securities firms to act as block positioners. They effectively make markets ''upstairs, " soliciting and putting together enough buyers (or sellers) to move a block of stocks at a negotiated price. They must still bring the block transactions to a specialist for execution. This "fro" alleviated the problem, but it is not a perfect solution. Liquidity for large blocks is probably decreasing because big firms are less willing to risk their capital as block positioners. Block trades seem to be moving from the NYSE to regional exchanges and the ''fourth market' in search of better service.[14]

At the other end of the scale, small-order transactions were also a problem, becoming relatively more expensive and less attractive to execute compared to large blocks, after deregulation of commissions in

[13] Their execution as one block can sharply change the price even if one buyer (or seller) can be found to take (or sell) the entire block order. This would disadvantage other investors whose orders arrive or are on the limit order book while the block is being executed. Alternatively, the block has to be broken up and worked off, which takes time.

[14] The ''fourth market'' is the unorganized market of large institutions trading directly with one another, often through proprietary trading systems, without going through an organized market.

the early 1970s.[15] Exchanges have installed automated order routing and execution systems for 1,000 shares or under.[16]

When the NYSE developed a new "basket product," the exchange elected not to use the specialist system but to use competitive basket market-makers, operating upstairs with computer terminals. Like upstairs block positioning, the increased capitalization requirements, and the encouragement for large member firms to take over specialist fins, these actions seem to be tacit recognition of the limitations of the specialist system.

Strains on the specialist system are likely to increase. Barring another crash, the upward trend in trading volume will resume as institutional investors continue to grow both in numbers and in size.[17] Program trading and large block trading are also likely to increase. With growing cross-national investment and international securities trading, foreign money can flush in and out of markets. The risk that a market break will exceed specialists' capitalization has not been removed.

Meanwhile, exchanges struggle to cope with the awkward interface between electronic systems on the one hand, and person-to-person bargaining on the other hand. The threat to the NYSE is that its customers will decide that its services are inadequate or too expensive. But regional exchanges and OTC dealers, unless more fully integrated by an effective electronic order-routing system, may not offer the depth and efficiency that a concentrated market offers.

## The Crash of 1987

*In* spite of the vigor of U.S. markets, the stock market crash in October 1987 revealed three serious problems yet to be fully solved:

- the limits of technological systems when trading volume spikes,
- limits on the ability of market-makers to function when markets are under stress.
- recurring excessive short-term volatility that may promise further crashes.

Technological systems for quote dissemination, order routing, and small order execution, in both exchange and OTC markets, were overwhelmed by the unprecedented volume of orders on October 19 and 20, 1987. Some failures of design had not been apparent until the systems were stressed.[18] Steps have been taken in all of the markets to correct such problems and increase the capacity of electronic systems. But these systems for the most part only deliver orders to a market-maker or otherwise depend on personal intermediation at the transaction stage. During the crash, not just the systems but the market-makers also were overloaded and overwhelmed. The problems that occurred at the human/machine interface are probably the most difficult to correct, because human capacities are less expandable than machine capacity.

There were four major government studies of the 1987 crash, several exchange studies, and innumerable academic studies. No clear consensus emerged about the cause of the crash, nor is there agreement as to the cause of the near crash of October 1989. Frequent sharp short-term price volatility has been evident for about 4 years. Academic researchers disagree about the definition of "volatility," about whether it has increased, and about the break point between how much volatility is desirable and how much is excessive. The traditional objective of fair and orderly markets implies, nevertheless, that at some level volatility is excessive.

[15] Broker-dealer commissions were regulated until 1975; after that, competition in offering services for large investors drove their rates down while rates charged to small investors remained higher. But the larger volume handled for institutional investors still makes these services more attractive for broker-dealers.

[16] NYSE's SuperDot takes orders up to 2,099 shares. The OTC market, NASDAQ, also has a small order execution system.

[17] Pension funds and insurance funds should continue to grow as the U.S. population grows. Mutual funds may continue to grow as small investors seek an institutional umbrella.

[18] For example, the NASDAQ automated Small Order Execution System (SOES) was designed to stop trading any stock in which locked Or crossed orders occurred-i. e., the lowest priced offer to sell was equal to or lower than the highest priced bid to buy—and wait for the dealer to intervene. This occurred during the crash because the dissemination of quotes fell behind rapid price changes.

Certain kinds of computer-assisted trading, called portfolio insurance, were implicated in the 1987 crash.[19] They had two disastrous characteristics: 1) identical or similar computer programs were used by many institutional investors, so that many large sell orders were triggered almost simultaneously; and 2) portfolio insurance called for selling stock when prices were already dropping, which reinforced the trend.

Portfolio insurance is implemented through program trading, the simultaneous sale (or purchase) of large, diversfied "baskets" of stock, often but not necessarily in conjunction with a balancing purchase (or sale) in futures markets. Program trading (now accounting for about 13 percent of shares traded on the NYSE) is almost prohibitively cumbersome and expensive without computer support.[20] It could involve hundreds of different stocks. When many program traders attempt to buy, or to sell, huge baskets of stock at the same time, the ability of the market to provide liquidity-i. e., to execute these transactions without the price moving sharply in response-may be strained or exceeded. Proposals have been made to curb program trading,[21] but this would not address the needs of institutional investors to trade and hedge large portfolios with the lowest possible transaction costs.[22]

The most serious problem highlighted by the 1987 market crash is the limited capacity of market-makers to respond to extreme price movement and unprecedented high volume. Neither specialists nor OTC dealers can assure liquidity in a period of intense selling pressure caused by aggressive trading by large institutions. Exchange specialists for the most part tried hard to carry out their affirmative obligation to buy when prices are falling, in order to restore balance (to "lean against the market"). Many specialist firms quickly exhausted their buying power, however, and others gave up in the face of overwhelming selling pressure. At the most critical point in the 1987 crash, it was necessary for the Chairman of the Federal Reserve Board of Governors to make a public announcement encouraging banks to extend credit to market participants by promising that the Federal Reserve would back them up.[23]

CapitaI requirements for specialist firms have been increased since the crash, but the aggregate capitalization of specialists will still probably be inadequate on days when volume peaks and huge order imbalances appear. Even before the crash, the NYSE and AMEX had recognized this problem. They changed their rules to encourage large broker-dealer firms to buy or affiliate with specialist firms. However, there have been only four such acquisitions, and one of those firms has since gone bankrupt.

The performance of OTC market-makers in the NASDAQ system also faltered in October 1987. Some withdrew from the small order execution system, some probably abandoned the market altogether, and some ignored phone calls. Steps have been taken to strengthen discipline and performance in such situations[24] and telephone and computer capacity have been enhanced.

## *Securities Markets and Competition*

The Securities Act Amendments of 1975 directed the SEC to facilitate the establishment of 'a national

[19] A widely accepted scenario (but one disputed by the futures industry and the CFTC) goes like this. When stock prices began to fall, for whatever reasons, portfolio insurance programs were triggered. Widely used algorithms called for selling stock-index futures. As many institutions began to sell these futures contracts at the same time, their price fell, which in turn led index arbitragers to sell stock in order to buy index futures, causing stock prices to fall further. Many investors had limit orders to sell outstanding on the specialists' books. Falling prices jumped over these stop prices and their sell orders were not implemented (the problem of the 'gapping market' '). The portfolio insurance strategies were discredited by the crash and have not been used as much since. To compensate, some large brokerage firms reportedly began writing put options to provide a portfolio hedge for their large institutional customers, and on Oct. 13, 1989, when stock market prices began to slide sharply again, these securities firms rushed to adjust their own hedges by selling futures and stocks, again reinforcing the downward price movement,

[20] For a discussion of how this percentage is calculated, see chapter 3, op. cit., footnote 52.

[21] Some brokerage firms stopped doing program trading after the 1987 crash or after the 1989 near crash, either altogether or O@ for their own accounts, and usually for only a few months. A New York Stock Exchange "blue ribbon panel," established to study program trading after the 1989 break, reported in June 1990. It did not recommend restrictions on program trading but did recommend additional circuit breakers.

[22] Recognizing the problem of the market's inability t. absorb institutional portfolio trading, the SEC and the NYSE reports on the 1987 crash called for a "basket trading product" that could provide a more efficient mechanism than program trading for trading baskets of stocks. Exchange Stock Portfolios (ESPs) were introduced in late 1989. But ESPs cost about $5 million and there has been little trading in them.

[23] This, in a s$_{sin}$e, transferred risk t. taxpayers. However, the consequences of a complete market collapse for the economy (and taxpayers) have never been calculated.

[24] For example, participation in SOES is now mandatory; before the crash it was voluntary.

market system" with fair competition among brokers, dealers, exchanges, and markets. The SEC was instructed to encourage use of modern information technology and to move toward eliminating rules that limit competition.

The automated systems that have been put in use by the Self-Regulatory Organizations (SROs)[25] were designed to facilitate and support, but not replace traditional trading practices. They have probably increased the efficiency, fairness, and liquidity of markets, but they have not fully achieved the policy objectives of full and vigorous competition. An Intermarket Trading System, linking the NYSE and regional exchanges, has improved customer services and helped regional exchanges to maintain or increase volume, but it does not encourage the exchanges to compete with NYSE specialists in making markets by bettering the NYSE prices. Market participants on any exchange floor (but not brokers or public customers) can either route an order to a market with a better price, or execute the order themselves at that price. An alternative could be a direct link between brokers and markets that would automatically switch orders to the market with the best price (''a universal message switch' '). It is possible, however, that a universal message switch might not strengthen regional exchanges as market competitors, but might create an integrated electronic market in which all orders flow to the most liquid market. In that case, regional exchanges could become only service centers.

The SEC has not, since 1975, pushed the exchanges to eliminate some of the rules that limit competition. The NYSE'S Rule 390 prohibits exchange members from competing with exchange specialists by making markets off-exchange for listed stocks-crossing customer orders in-house (internalizing order flow) or acting as dealers.[26] Investors who wish to engage in after-hours trading of listed stock do so through the third market (non-member OTC dealers), the fourth market (direct investor-to-investor trades, often through proprietary' electronic systems), or in foreign markets. Many of these trades are now done in London markets .27

The risks in eliminating Rule 390, as cited by defenders of the rule, are: 1) with several securities fins, as well as the exchange, acting as dealers, fragmented markets would offer less liquidity; and 2) securities firms could internalize orders, not exposing customers' bids and offers to all market participants. It is possible, however, that competing market-makers might increase rather than decrease liquidity.

The costs of not eliminating Rule 390, as cited by critics of the rule, are: 1) spreads (the difference between bid and quote) may be wider than they would be with competing market-makers, and 2) investors will trade many of the NYSE-listed stocks of 1,740 major corporations on foreign exchanges. As for the first point, most NYSE spreads do not exceed the one-eighth point (12.5 cents) minimum now, and eliminating the restriction on dealing in 19c-3 stocks did not lead to narrower spreads on those stocks. However, with exchange rules that permitted less than one-eighth increments (not now permitted), spreads might be one-tenth or even one-sixteenth point.

The end of Rule 390 would probably encourage the development of proprietary electronic trading systems, by large securities firms or by information services vendors to serve those firms. This would encourage competition for NYSE and its specialists, but individual investors-particularly small investors-might not share the benefits of this competition.

The second rule that restrains competition between markets prevents exchange specialists from competing with OTC dealers by making markets in unlisted stocks. After a 15-year delay the SEC has just approved a pilot program allowing the AMEX

[25]The seven securities exchanges and the National Association of Securities Dealers (OTC dealers) are Self-Regulatory Organizations. Under the Securities and Exchange Act of 1934 and subsequent legislation, they have the authority to censure, free, suspend, or expel members and are responsible for drawing up their own rules, which must however be approved by the SEC. The futures exchanges and industry association are SROS with similar authority under the CFTC.

[26]There is exception for stocks first listed on the exchange after Apr. 26, 1979 (Rule 19c-3). Rule 390 does not forbid me* firms acting as market-maker for otherNYSE listed-stocks in foreign OTC markets*after NYSE exchange hours*, or on domestic exchanges or foreign exchanges at any time. But market-maker participation on foreign exchanges or in foreignOTC markets would in fact be determined by the rules of those markets and their regulatory authorities; and on U.S. exchanges there is only one market-maker, the designated specialist.

[27]Some say that they are often done b, U.S. firms here and reported as being done by the London affiliates or branches of those firms.

and regional exchanges to trade 100 unlisted stocks (the NYSE has chosen not to participate).[28]

### *Technological Directions for the Future*

The 1975 Securities Act Amendments anticipated that telecommunications and computers would ensure investors of the best execution of their transactions through vigorous competition among markets and among dealers. Although securities markets have installed powerful information dissemination and trading support systems, the dominant criteria in design of those systems (in both exchange and OTC markets) have been to maintain or enhance the competitive position of the particular market; to maintain the intermediary role of existing market-makers; and to preserve the traditional modes of trading of that market. These goals may have been consistent with the public interest in the past; they may not be so in the future.

Looking ahead, there are several approaches that American securities markets might take to cope with the challenge of information technology in domestic trading. The long-range goal may be to move carefully toward a fully electronic market, in which a national market system could automatically match customers' bids and offers, execute and record transactions, carry them through clearing and settlement, and provide an audit trail, with dealers making markets only when buyers and sellers are not in dynamic balance. But the most responsible approach to modernizing securities markets is a flexible approach, or several parallel avenues, because it is uncertain what the indirect costs and risks of completely electronic markets may be, and therefore how to avoid or control them. There are examples of securities markets with competing market-makers: the U.S. OTC market and the United Kingdom's International Stock Exchange. There are markets with no market-makers (e.g., Japan). There are markets with automated trading systems (e.g., Instinet, Toronto's Computer Assisted Trading System (CATS), U.S. exchanges' small order execution systems). There is one example of a fully automated market (the Cincinnati Stock Exchange). But there are as yet no adequate models of fully electronic trading in a major national securities market.

Parallel operation of automated and negotiated (dealer) markets would be a wise intermediate step. Securities firms might be allowed to compete in making markets through proprietary trading systems. Or the exchanges could have a "single price auction" daily or several times a day,[29] interspersed with traditional continuous auction trading. Proprietary trading systems might develop rapidly if remaining rules that restrict or discourage competition between exchange specialists, exchange members, and OTC dealers are eliminated.

> If exchanges are too slow to move in this direction they may be preempted by information services vendors. In one way or another aggressively trading investors will seek to take full advantage of modern information technology and its ability to overcome limitations of time, distance, and human skills. The result may be a larger and more liquid fourth market-i. e., many large financial institutions and institutional investors trading with each other over electronic proprietary trading systems, which are not now regulated as exchanges. In the best case, if done with regard for the public interest and guided by balanced public policies, such a highly competitive and efficient electronic market could attract investors from around the world. But if this development were driven entirely by self-interests, the public's interest in fair and open markets could be ignored or given low priority. This could result in fragmented markets, or markets used by institutions but inaccessible to individual investors, and less fair, efficient, and visible than today's markets. Such a two-tier market should be avoided.

U.S. stock exchanges will eventually be pushed by competition from abroad and by the demands of institutional investors to develop electronic systems for trading outside of exchange hours. In late June 1990, as this assessment is being completed, the NYSE announced plans for a five-step process "to prepare for continuous 24-hour trading by the year 2000. " The frost three phases of this plan merely extend trading, at the closing price, for a brief period after the NYSE business day. This is designed to recapture domestic trades now lost to London or Tokyo (estimated by NYSE officials at between 6

[28]The NYSE gets a significant portion of its revenuefrom the fees fOr listing corporate stocks.

[29]In a single price auction, all bids and offers could be collected and arranged by computer in order of price (and then by size and the order in which they were received). The computer would then find the single price that would clear, or most nearly clear, the market and execute the trades automatically.

***Photo credit: National Association of Securities Dealers***

Over-the-counter markets reach over the ocean.

and 20 million trades per day), rather than to facilitate or encourage international trading. The fourth phase envisions several single-price auction sessions during the night. Only the fifth phase, to be implemented about the year 2000, would be designed for around-the-clock, around-the-globe trading.

After the NYSE announcement, three exchanges (the AMEX, the Chicago Board Options Exchange, and the Cincinnati Stock Exchange) announced that they are working with Reuters to develop plans for an electronic after-hours trading system. It is possible that at some later time these exchanges could find their business hostage to one vendor. The NASD, already having links with overseas markets, expects to begin dawn trading hours on September 1, 1990; the OTC dealers will begin to trade electronically at 3:30 a.m. e.s.t. (corresponding to the opening of the London market).

## THE OPERATION OF FUTURES MARKETS

[See ch. 4]

Futures contracts are standardized, contractual agreements to buy and sell commodities at a specified price for future delivery, regardless of the cash market price at that time. They developed because of the needs of farmers and commodity merchants to manage the price fluctuations caused by weather and other crop cycle uncertainties. Because of the agricultural origins of futures contracts, they are traded on commodity exchanges. They are regulated by the Commodity Futures Trading Commission.

Futures contracts on financial instruments (e.g., currencies, bonds, interest rates) did not develop until the early 1970s. Financial futures now account for over 60 percent of all futures trading volume. Stock-index futures were not introduced until 1982,

and account for only 5 percent of all futures trading. They are enormously important, because they are used for inter-market trading strategies that link securities markets with futures markets.[30] Stock-index futures are used by institutional investors for hedging a diversified portfolio of stocks. This allows those who have fiduciary responsibilities to avoid unnecessary risk, to transfer some risk to professionals (speculators) who assume it in the hope of profiting by price movement. Speculators buy and sell stock-index futures as a way of betting on the market as a whole-taking on the risks that institutional investors seek to avoid. Arbitrageurs buy stock-index futures and sell the underlying basket of stock, or vice-versa, to profit by temporary disparities in their prices. This has the effect of bringing their prices back together by the simple operation of supply and demand, and in ordinary circumstances tends to stabilize prices.

It is these trading strategies that link securities and futures markets. Pressure in one market tends to increase pressure in another. Because it is easier, cheaper, and faster to buy a stock-index future contract than to buy the hundreds of shares represented by the stock index, changes in stock-index futures prices tend to lead, or forecast, prices in stock markets. In economists' terms, this is "price discovery." (But it is the average price of the basket that is "discovered.' To the extent that index arbitrage then affects its price and hence the price of individual stocks, the stocks will change price for extraneous reasons.)

All U.S. futures contracts are traded in auction markets, on futures exchanges. There is no OTC market and no electronic trading systems for futures contracts in the United States. Trading is done by ''open outcry,'' i.e., shouted bids and offers. It takes place on tiered exchange floors *or* "pits." Futures markets are now the focus of two kinds of policy issues: those related to the operations of the markets themselves, and those that focus specifically on stock-index futures.

### *Issues Related to Futures Market Operations*

Open outcry trading, cherished by market participants, has three characteristics that can cause problems: the limitations on volume inherent in face-to-face auctions, the lack of automatic time records or audit trails, and dual trading.

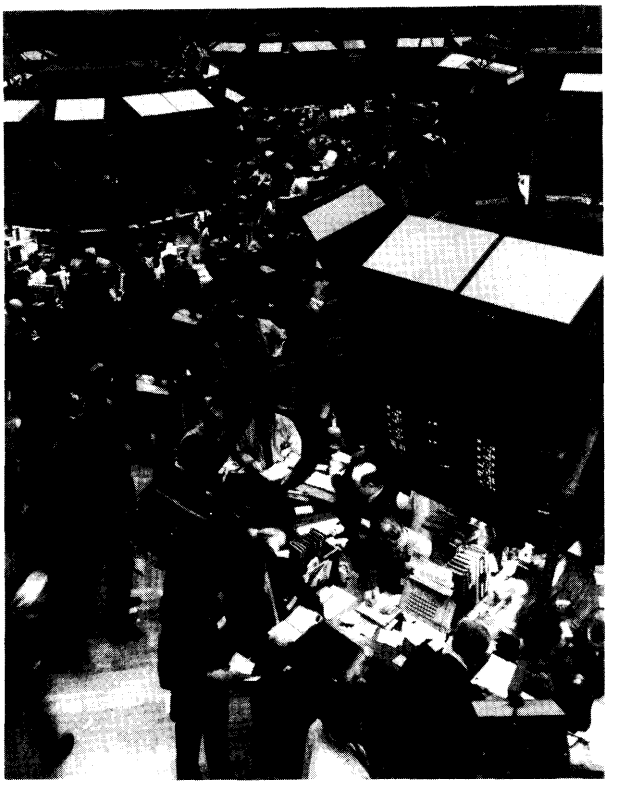

*Photo credit: Chicago Mercantile Exchange*

**Chicago Mercantile Exchange trading floor.**

The frantic action of several hundred shouting and gesticulating traders and brokers in financial futures pits makes it difficult to be sure that a customer gets the best price available at any one moment. It is doubtful that such a system can accommodate further growth. The Chicago Mercantile Exchange and the Chicago Board of Trade, in conjunction with Reuters, the British information services firm, are poised to introduce GLOBEX, an electronic trading system that will operate outside of exchange hours. GLOBEX is designed to meet the challenge of international trading. If it is successful, however—i.e., if market professionals make the transition to a different mode of trading and find it advantageous to use-GLOBEX could demonstrate one way to relieve the strain on open outcry trading threatened

[30] Stock-index futures cover the stocks represented in an index, such as the Standard & Poors 500 Stock Index (S&P 500). An index is a statistical indicator of market performance. It is the average price (usually a weighted average) of a diversified basket or portfolio of stocks. Stock-index futures must be settled in cash (the difference between the current index value and that specified in the contract) rather than by delivery of shares. There are no futures contracts on single stocks; this is now prohibited by legislation.

by further volume growth. GLOBEX could operate 24 hours a day, and become a real competitor for existing futures exchanges.

The lack of an automatically generated, firm audit trail for transactions in futures pits further limits surveillance and monitoring, and makes it difficult to detect and prove fraud and manipulation. This serious problem may be overcome by the introduction of hand-held computers, now being developed, to be used by traders on the floor to record transaction data and transmit it immediately to the central exchange computer.

In futures pits floor brokers may trade both for customers and for themselves, although not in the same transaction. This involves potential conflicts of interest. Dual trading has always been strongly defended by futures markets and their regulatory agency, the CFTC, as necessary for liquidity and beneficial for customers. After a recent study cast doubt on those assumptions, and after revelations and allegations of market fraud coming from FBI investigations in the futures markets pits, the CFTC has proposed a limited prohibition of dual trading of some futures contracts.

### *Issues Related to Stock-Index Futures*

After the 1987 market crash several task force or government agency reports identified the use of inter-market hedging techniques using stock-index futures as a major contributor to the break. A normal dip in stock prices may have set off and then been fed by complex shifting of resources between stock and stock-index futures, on behalf of institutional investors, as already noted. The effects were amplified by the widespread use of computer-assisted trading strategies. Some of the reports said that the effects were further amplified by the greater leverage in futures markets.[31] There were not enough active individual investors, making their own judgments of values, to offset this imbalance. Index arbitrageurs were unable to keep prices linked across the markets. The sudden violent surges of sell orders in stock markets overwhelmed the ability or the willingness of stock exchange specialists to counter and control them.

This is the most credible scenario of the market crash, but it is not universally accepted. It is, for example, vigorously denied by both futures markets and the futures regulatory agency, the CFTC. Statistical analyses of 1987 trading data by academic, industry, and government regulators are, in the aggregate, inconclusive. Their conclusions differ because researchers define volatility differently, use differing time periods, or use different statistical measures. Those on both sides of the debate pick and choose among the empirical studies to bolster their claims, and sometimes overstate the strength of the scholars' conclusions.

Recent studies of the market break of October 1989 by the SEC and the CFTC again offered differing interpretations of the extent to which trading in futures markets contributed to a price decline in stock markets, or merely foreshadowed it.[32] The SEC said:

> When concentrated selling (or buying) strains the liquidity of the futures market, program trading strategies such as index arbitrage, executed by large, well capitalized broker-dealers and institutional money managers, quickly transfer this activity to the stock market.

The CFTC said:

> Neither program trading nor futures sales by those with large positions, explain the observed price movements on these dates.

This again suggests that statistical analysis is inconclusive and cannot resolve the highly charged issue.

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[31] Leverage in futures markets is hi@ because of lower initial ~@, lower transaction costs, and speedier execution for stock-index futures transactions, compared to the buying or selling of a portfolio of 500 stocks.

[32] On Oct. 13, 1989 (Friday) the Dow Jones Industrial Average fell 191 points (6.9 percent); this was the index's second largest single-day point decline and the 12th largest percentage decline. On October 16 (Monday), the Dow fell an additional 60 points before rallying. Both the CFTC and the SEC studies noted that there was concentrated selling of stock by brokers who were hedging their risks from put options that they had written for institutional clients as a substitute for the portfolio insurance strategies that did not protect them in October 1987. CFTC, Division of Economic Analysis, "Report on Stock Index Futures and Cash Market Activity During October 1989," May 1990; SEC, Division of Market Regulation "Trading Analysis of Oct. 13 and 16, 1989," May 1990.

A second closely related policy debate focuses on the system of margining[33] used in futures markets and the question of whether the initial margin requirement should be raised. Futures exchanges, futures market participants, and the CFTC hold that the function of margins is to bolster the financial integrity of market participants, and that present levels are-and have proven to be throughout recent market breaks-fully adequate to fulfill that function. Higher margins are unnecessary, they say, because margin accounts are adjusted twice daily or more often to reflect market conditions and changing risks ( "marked-to-rnaxket"). Higher margins are undesirable, they also say, because they would reduce liquidity (i.e., tend to depress the volume of trading).

Some critics of futures markets or of stock-index futures call for higher margins to depress the volume of trading in stock-index futures, in the hope of reducing the likelihood of short-term volatility in stock markets. Other critics of futures margins say that higher margins would reduce the leverage that index futures trading exerts on stock prices. These critics, including the SEC and the Secretary of the Treasury, say that futures margin requirements should not be set solely with a view to protecting futures market clearing organizations, but should be set in the broader context of the effect on all financial markets.

This issue too cannot be resolved on the basis of empirical or statistical evidence. Adjustment of margin requirements as a tool of public policy would likely change the way stock-index futures are used for hedging, arbitraging, and speculation. This intervention, if undertaken could be justfied because of the public interest in the efficiency and fairness of securities markets. Whether such intervention would accomplish the desired end-control of stock market volatility-is uncertain. There are, as yet, few relevant studies of the effect of futures market margins on stock market behavior, since the direct linkage began with stock-index futures in 1982. Such studies as have been done (and more general studies of the relationship between stock market margins and price volatility) are again inconclusive and subject to differing interpretations. Proposals to create Federal authority to intervene in determining margin levels are discussed below.

## ISSUES RELATED TO OPTIONS TRADING

**[See** *ch.* 5]

An option contract confers the right to buy or sell an asset or financial instrument at a specified price, during the lifetime of the contract.[34] Options on individual securities and indexes of securities are traded on five stock exchanges or special options exchanges, and are regulated by the SEC. Options on commodities, on futures, and on stock-index futures are traded on commodity exchanges and are regulated by the CFTC. Options on foreign currency are regulated by the CFTC, except those on currencies traded on securities exchanges, which are regulated by the SEC. Methods of trading options vary accordingly; some are traded through open outcry, others through a modified version of the specialist system. A few are written and traded over the counter.

Since 1980, the right to trade a new option on a specific stock or index of stocks has been awarded to only one exchange, chosen by lottery. Anew SEC rule (Rule 19c-5) will allow all listed equity options to be traded on all stock options exchanges (“multiple trading”) after January 1991. This rule is aimed at the increased competitiveness goal of the 1975 Securities Act Amendments, but the change was long delayed while the SEC urged the exchanges to develop a market integration system.

The options exchanges resisted market integration systems in the form of order routing or execution systems, both to avoid increased competition and because of the difficulties of keeping their quotations current.[35] The size of the crowd on an

[33] Futures markets define margin as a performance bond put up by futures buyers and sellers to protect futures clearing organizations against default on the obligations embodied in the contract. Typically, it is 3 to 5 percent; margin accounts are adjusted twice daily or more often, and account holders may be called to put up additional margin if prices have moved against them. See ch. 4 (Futures Markets) and ch. 6 (Clearing and Settlement) for a full explanation. In stock markets, “margin” is a downpayment made by a purchaser of stock. It has been set at 50 percent for the past 15 years.

[34] A sell option is a “put.’ A buy option is a “call.’ Option ‘writers” write (i.e., sell both puts and calls. The options clearinghouse, however, takes the other side of the transaction for both option writers and option purchasers, and settles accounts with both of them.

[35] Each market-maker could be making markets in 500 options series and classes, their prices derivative of the frequently changing prices Of Up to 30 stocks. Market-makers said they could not keep up with these changes well enough to guarantee that their quotes were current and firm.

options trading floor (sometimes several hundred) also made it difficult to develop a quotations system that could identify the market-maker with the best quote. Technology can solve both of these problems. An "auto-quote" device is available that automatically adjusts options quotes to stock price changes, and hand-held computers are being tested for use by market-makers on the floor.

This could make an electronic market integration system feasible. It could be: 1) an inter-market system to route orders between exchanges, 2) a "neutral switch" to route brokers' orders to the market with the best quote, or 3) a central limit order file to expose all limit orders to all exchanges. The argument about technology continues, even as multiple-trading is about to begin. The SEC has mandated multiple-trading without insisting on a market integration system being in place. However, unless there is a system to force competition from the beginning of multiple-trading, past experience indicates that trading in each option may soon concentrate in one exchange where the most liquidity appears. Should this happen, the benefits sought from competitive market-making-i.e., narrower spreads-will not be achieved. There may still be some benefits from competition in terms of improved services.

The options margin system involves two issues: 1) proposals for cross-margining (under review by both the SEC and CFTC), and 2) proposals for futures-style margining (under review by the CFTC). Cross-margining would adjust margin requirements to reflect the amount of hedging that options buyers enjoy by trading in several markets (e.g., stock, futures, and options). The Options Clearing Corporation (OCC)-the only clearing organization for securities options markets-would be allowed to recognize positions in one market as hedging positions in another market (the options market) that reduce the position holder's total risk. This would reduce the demands for collateral from firms that are trading in more than one market (and therefore presumably increase the amount of money available for market transactions). Cross-margining requires cooperation between two or more clearing organizations serving different markets. There are reservations about the adequacy of cross-margining under all market conditions. There are, nevertheless, two pilot programs underway.

Futures-style margining for options is proposed by advocates of unified clearing systems, in order to reduce the obstacles resulting from having different margin systems for different markets. However, it is currently being considered only by the CFTC for options traded on futures exchanges. It is opposed by the OCC (which clears and settles all securities options), the securities industry, and the SEC because marking-to-market, daily margin calls, and the requirement of margins from options writers would alter the nature of equity-related options and the way they are used for hedging.

Debates about options margining involve inter-market issues and should be examined within the context of linked markets. As with many issues involving equity, options, and futures trading, the issues are complicated by the existence of a bifurcated regulatory structure in which the CFTC and the SEC make conflicting assessments of the effects of margining arrangements and neither position may reflect overall national interests.

## CLEARING AND SETTLEMENT

[See ch. 6]

Clearing and settlement is what happens after the trade: matching the records of buyers and sellers and delivery of the asset and payment, or (in the case of derivative products) satisfaction of the terms of the contract. Clearing and settlement is important because the failure of one or more major clearing members could have far-reaching effects on the U.S. financial system, and even on those of other nations.

The 1987 stock market crash put a public spotlight on clearing and settlement and raised questions as to whether the process had broken down under the strain. Several U.S. studies were made that resulted in recommendations designed to strengthen these critical systems. A later study by the Group of Thirty, an international forum of business leaders and financial experts, also developed recommendations, and improvements are underway. Some clearing and settlement problems are domestic in scope and others are international.

Better protections are needed for investors against the risk of default by clearing members. Protections now in place are piecemeal, non-uniform, and

complicated by differing Federal and State statutes.[36] A second concern involves risks in the payment process, including delayed or inadequate bank credit, uncoordinated timetables for finality of settlement, and disparate netting procedures. Problems may arise with 24-hour trading, if margin calls are made when banks are closed.

More information-sharing between clearing organizations is needed. Better decisions on extending credit can be made by creditors if they have more information about participants' positions and risk exposure. Inter-market trading patterns make information-sharing increasingly critical, as does the trend toward global investing. Some important improvements have recently been put in place but there are still shortcomings in the information-sharing process. A common format for reporting and distributing exposure information would be a major improvement, as would uniform approaches to evaluating risks.

Most of the U.S. clearing and settlement system is technologically advanced, but some areas need improvement. While clearinghouses have done significant upgrading of systems, the benefits of these upgrades can be diluted if all clearing members are not sufficiently advanced technologically to respond to new requirements.

Lack of standardization is another problem. The operating hours for banks and financial markets are not uniform; banks, including the Federal Reserve Bank, may be closed even if financial markets are open.[37] Cross-border trading makes this problem worse, since national holidays are not the same. The settlement period for equities must be shortened to reduce risk of default. This will require immobilization of securities in a depository and a change to same-day funds.[38] The elimination of physical delivery of certificates (which some investors insist on holding) and prompt payment by buyers are critical to further shortening the clearing and settlement process.

Resolving these issues will require continued efforts by the private sector. Some will also require efforts by government regulators, or legislative change. A number of clearing and settlement issues will require international consensus and coordinated efforts as well.

## TECHNOLOGY AND SECURITIES TRADING

[See ch. 7]

One hundred and fifty years ago, it took about 1 week for a market quote to travel from New Orleans to New York, and about 3 weeks for market news to reach Europe by clipper ships. Information technology—from the telegraph, stock ticker, and telephone in the 1800s, to the first computers in the 1960s, to today's automated order routing systems—has brought great changes in market operations. The overwhelming advantages of speed and accuracy have ultimately overcome the reluctance to change and the resistance of those who prefer traditional methods of trading based on personal, highly specialized skills.

Computers and telecommunications are now used by securities markets for trading support systems, including quotations display and dissemination, order routing, and transaction execution (for small orders). They are also used for market surveillance and monitoring, and for 'back office' data processing and clearing and settlement of trades. These functions are automated, in both exchanges and the OTC market, in such a way as to preserve the role of market-makers. This can enable investors to get a price 'between the quotes''—i.e., better than displayed bids and offers or dealers' quotations. It may increase liquidity, by attracting skilled professionals whose experience and understanding of floor behavior can make trading highly profitable to them and to their customers. However, the mixing of manual and automated steps in information processing seldom allows the optimum use of either manual skills or

[36] The Securities Investor Protection Corporation for example, provides a uniform level of protection to market users in equities, bonds, and equity-related options markets. The protections afforded to market users by exchanges and clearinghouses in futures markets, however, vary and are extended mainly to clearing members of the exchange's clearinghouse. Further, some failures in securities markets are resolved though bankruptcy proceedings under the Federal Bankruptcy Code, which relies largely on State laws to determine rights to property. These may include State commercial law that often relies on the Uniform Commercial Code (UCC), and since the UCC is accepted on a State-by-State basis and may be amended, investors may be treated non-uniformly. Laws dealing with bank liquidation also need to be updated and made more consistent with other bankruptcy laws. In nonregulated markets, such as foreign exchange, there is little investor protection.

[37] This issue, for the United States, was raised at the Feb. 8, 1990 meeting of the Banking and Clearinghouse Roundtable, where members agreed to hold further discussions. The problem is more complicated internationally and far from being resolved.

[38] Same-day funds means that payment is final on the day paid, as it would be with electronic funds transfer rather than with payment by check.

system capabilities, and may create backlogs and opportunities for error, diversion of information flow, or fraud.

The markets have not moved the country much closer to the integrated, highly competitive national market system envisioned in 1975. Instead, the ad hoc integration brought about by inter-market program trading imposes stress on all markets and on the fragmented market regulatory structure.

The technological link between the markets and their ultimate user, the investor, is the system that disseminates bids, quotes, last-sale prices, etc. Market data flows from organized markets through systems provided by information services vendors and common carriers to brokers and customers located in nearly every U.S. city, town, and hamlet. Advances in information technology have thrown the information services industry into a state of flux. Driven by competition, vendors are developing value-added products and moving into transaction services, creating proprietary trading systems that could become the markets of the future.

International trading has induced foreign vendors such as Reuters to enter the competitive arena for distribution of U.S. stock quotations, and American companies such as Quotron to expand their overseas operations. The financial information business is still growing and continues to attract new competitors. The growing interactions between equities, futures, fixed-income and foreign exchange markets have led vendors, who until recently specialized in one market, to diversify into other markets.

Because vendors can readily obtain data from most stock markets, the market for quotation, price, and volume data has itself become a ‘‘commodities market, ‘‘ in the sense of highly standardized products competing on the basis of price or on value--added features such as software for portfolio analysis. To satisfy the demand for analytical tools, vendors began to offer data in digital form, allowing users to reformat and manipulate data. This raises troublesome questions, e.g., copyright and pricing issues.

Information services providers are also moving to offer transaction services, via automated trading and execution systems. The largest of these, Instinct, now has about 13 percent of the daily volume of the NYSE (but this includes both exchange-listed and OTC stock). If institutional investors become dissatisfied with exchange services and their costs, or with the liquidity available for large block transactions, they may move to proprietary trading systems, perhaps offered by Reuters, Quotron, Telerate, or other vendors. Familiarity with trading private placement issues among themselves on NASD’S new Portal system may also encourage institutions to use other electronic systems.

U.S. exchanges are clearly wary of these developments but are adopting different strategies for dealing with it. The futures exchanges and, more recently, some stock exchanges are working with a dominant vendor (Reuters) to develop their own electronic transaction systems; the NYSE is developing a strategy that would ‘‘encourage many vendors to provide access to NYSE after-hours trading. ’

The SEC has jurisdiction over companies that collect, process, and deliver market data. So far information vendors have not been subject to much regulation. The SEC has in the past exempted proprietary trading systems from registering and being regulated as exchanges. It may now be appropriate to reconsider both of these exemptions.

It is not clear whether information technology has been a net benefit to small investors or has put them at a disadvantage relative to large investors and institutional investors. Sophisticated portfolio management software is available for home computers, but is used by relatively few individual investors, and even fewer have access to “at-home trading systems” (which send orders to brokers, but do not provide automated execution). Many small investors feel that they are put at risk by volatility that they suspect results from program trading techniques encouraged by information technology. Computerized surveillance techniques have been relatively ineffective against types of market fraud that prey on small investors, such as penny stock scams and collusion in futures trading pits.

Advances in technology to support exchange trading, OTC dealing, proprietary trading systems, brokerage order routing, and customer end use may require accelerated development of standards to ensure interoperability. Improvement is needed in three categories of standards: data, technology, and operational standards. Standards are, however, especially important in developing 24-hour systems for transnational trading.

## MARKET FRAUD
## [See *ch.* 8]

Both institutional and individual investors, but especially the latter, are deeply concerned about market fraud and manipulation. Fraud affects both the securities and futures markets, as recent disclosures show. In both, greed and dishonesty on the part of some participants are compounded by difficulties in surveillance and enforcement. Regulatory agents in both the SROs and in government are often thwarted by shortcomings in existing laws, regulatory measures, and surveillance technology. The costs of self-regulation are high-about 23 percent of total costs for the NYSE, for example.

Inter-market trading, and, increasingly, global trading, challenge continuing efforts to protect the public against undisclosed risks and assure all investors of fair practices. Enforcement efforts may be hampered by the divided regulatory structure that looks separately at each side of inter-market transactions, and by the limits of national sovereignty. Some market abusers profit by increased ability to operate from off-shore, often from locations where privacy laws block attempts at international cooperation in enforcement. Inter-market and international abuses are growing while more traditional forms of fraud continue.

Recent congressional hearings, FBI investigations, prosecutions, and news media revelations of abuse have stimulated both securities and futures regulators to look for improved methods of detecting and proving fraud. These measures include increased enforcement, expanded legislative authorities, and greater use of technology. Major foreign trading partners are strengthening mechanisms to control abuses in their markets; this shows promise for improved international cooperation in controlling fraud. These domestic and international efforts are likely to help curtail traditional forms of abuse. But new forms of fraud may occur as after-hours trading systems emerge, and many abuses are beyond the jurisdictictional reach of regulators to detect. The key issue will continue to be: how to balance public policy goals of fairness with other objectives, such as efficiency; the competitiveness of our marketplaces; and cost-effectiveness in enforcement?

## THE REGULATORY STRUCTURE FOR MARKETS
## [See *ch.* 9]

Securities and equity options are regulated by the Securities and Exchange Commission, established in 1934. Futures contracts, including stock-index futures and options on stock-index futures, are regulated by the Commodity Futures Trading Commission, created in 1974. The organic acts creating the two regulatory agencies were written 40 years apart. Both were written when some of today's most heavily traded derivative products did not exist.

Securities markets and futures markets were originally unrelated, and the regulatory structure reflects this. The markets are now linked. The prices of some products traded in the futures markets are derived from those of products in stock markets. Supply and demand in one market influence supply and demand in the other market. Problems and pressures are transferred from one market to the other. Yet the regulatory structures remain separate.

Since 1982, when stock-index futures contracts were introduced, three problems have become apparent: 1) confusion over jurisdictional responsibility for new trading instruments, sometimes carried to the courts for resolution; 2) differences in leverage caused by different margining systems; and 3) the effects of inter-market trading strategies on market volatility. The CFTC, as well as the futures industry and some academic experts, does not agree that these are problems. (See chs. 4 and 9.) Balanced against these drawbacks to the use of stock-index futures are the great advantages to institutional investors, who manage assets belonging to increasing numbers of Americans, of being able to hedge their portfolios.

As a general rule, the SEC regulates the trading of securities, or assets, which are instruments of capital formation, and the CFTC regulates instruments that are used for hedging and speculation (they are contracts, not assets) .39 Futures exchanges have been highly innovative in developing new products and the CFTC has been flexible and responsive in approving them. The SEC has been more cautious in approving new products for exchange trading. Innovation in securities exchanges maybe more difficult

[39]The major exception to this generalization is equity options, which are contracts and used for hedging, but are regulated by the SEC.

than innovation in futures markets.[40] Most innovative financial products are derivative of traditional assets (equity securities, debt securities, currencies) and are successful because they are useful for hedging or risk transfer. They almost always, for that reason, have some element of future delivery or settlement. Because of the way that the CFTC legislation is written ("the exclusivity clause"), such products fall under the jurisdiction of CFTC even if they are designed by securities exchanges to meet perceived needs of securities traders.

Stock exchanges have recently attempted to become more innovative. The result has sometimes been dispute over whether the SEC can approve and regulate the trading of such products. Exchanges try to shape new products to fit the authority of their preferred regulatory agency. Exchanges also are likely to challenge (in regulatory agency hearings) approval of innovations by other exchanges that are potential competitors for their own products. Futures exchanges have in a number of cases used litigation or the threat of litigation to discourage competition from securities exchanges.

The two regulatory agencies have strongly different perspectives on inter-market factors in short-term volatility, and on the relationship between futures margin levels and stock market volatility. These different perspectives make it hard to develop an objective and pragmatic approach to identifying and solving problems in either market. Their disagreement over the inter-market effects of futures margin levels results in turning that question into the issue of who should set margins on financial futures and particularly on stock-index futures.

The possible loci of responsibility for futures margin requirements are: the futures exchanges (who now set them), the CFTC (which maintains that margins should be set by the exchanges, and which has consistently defended current margin levels), the SEC (which does not have the authority to set margin levels for stocks), or the Federal Reserve Board (which sets stock market margin requirements but would like to rid itself of this responsibility and does not want responsibility for futures margins). The issue of whether this responsibility should be shifted turns on the question of the purpose of margins: should they be designed only to protect the futures exchanges' clearing organizations (and through them, the other major participants in futures markets) or should they also be designed to achieve desired effects in national markets as a whole? If the former, the current locus is probably appropriate. If the latter, the responsibility should probably not reside in private-sector organizations whose members have a strong self-interest in the determination of margin levels.

The most important question raised by a bifurcated regulatory structure is the reliability of smooth coordination of responses by two agencies in the event of an emergency—a threatened market crash. In the market breaks of 1987 and 1989, the two agencies stayed in constant communication and apparently worked well together. But continuing evidence of strong disagreement on the causes of such market breaks, and the efficacy of existing means of controlling them, raises the question of how much reliance can be placed on effective coordination in all such situations that may arise.

There are now several proposals, some developed in Congress and one presented by the Administration, to shift jurisdiction over stock-index futures from the CFTC to the SEC. There are also proposals before Congress to integrate the two regulatory structures. The several alternative approaches to be considered are outlined below.

### *Redefinition of Jurisdictions*

Another attempt might be made through legislation to define the respective agency jurisdictions so as to minimize confusion over innovative products. This could reduce the need for prolonged negotiation and the opportunity for resorting to litigation. However, it would do nothing to resolve other outstanding or potential problems, such as coordination in stressed market conditions. Shifting authority over stock-index futures trading to the SEC would be a step in the right direction for addressing some of the margin and emergency response issues. However, how that step will affect the willingness of exchanges to offer these instruments, the liquidity that will be available, and the ability of institutional investors to hedge large portfolios are all uncertain.

[40] Some of the most innovative securities—e.g., mortgage-backed securities and other 'asset-backed securities" are managed by banks and are not traded on exchanges.

### An Inter-Market Coordination Panel

The addition of another layer of responsibility over both agencies, to assure broader consideration of inter-market relationships and issues, is another possibility. Such a mechanism already exists, in the form of the President's Working Group on Markets. If the inter-market agency consists, as does the Working Group, of representatives of several government agencies, there is likely to be little gain over the present situation. A panel at the supra-agency level is not an operational working group, and usually is not prepared to intercede immediately, in the midst of an emergency. Inclusion of non-governmental experts may seem to promise a broader perspective, but in practice it would be difficult to find people knowledgeable about problems of markets that do not bring with them a history of affiliation with either futures markets or securities markets or their respective regulatory agencies.[41] With a panel representing the viewpoints of the two industries or the two regulatory agencies, jurisdictional disputes would have to be settled elsewhere.

### Integration of the Regulatory Structure

A third approach meriting strong consideration is the creation of one regulatory agency, to replace the SEC and the CFTC, with responsibility over the trading of securities and derivative products, including financial futures and options. Physical commodities and commodities futures trading could be left to another regulatory entity. Critics of this approach argue that the benefit of competition between regulators would be lost. The benefits of regulatory competition, however, carry with them the costs of regulatory arbitrage-i.e., it tempts the regulated industries to play off one agency against the other. It also tempts the regulators to identify closely with the regulated industry. A single agency would facilitate coordination, allow better consideration of inter-market relationships and interdependencies, and encourage a unified approach to ongoing cross-national efforts to strengthen clearing and settlement problems and harmonize regulations and enforcement related to international securities trading.

[41] One reviewer of this assessment commented about other reviewers, "If they are experts they are not neutral; if they are neutral, they aren't experts."