

TESTIMONY OF THE HONORABLE  
GEORGE D. GOULD  
UNDER SECRETARY FOR FINANCE  
U.S. DEPARTMENT OF THE TREASURY  
BEFORE THE  
COMMITTEE ON AGRICULTURE  
U.S. HOUSE OF REPRESENTATIVES  
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Good morning, Mr. Chairman and Members of the Committee. It is a pleasure for me to testify on the progress made by the President's Working Group on Financial Markets.

During the past two months, the principal members of the Working Group and our respective staffs have analyzed and discussed the extensive information and recommendations emanating from last October's market decline. Far from being a stalling device as some have criticized, the Working Group has moved forward, after much deliberation, on a number of critical issues to preserve the integrity, competitiveness, and efficiency of our nation's financial markets.

Our focus has been on positive actions that can be taken now -- immediately -- as contrasted with possible legislative restructuring that is subject to protracted debate and possible delay. Fortunately, the Working Group identified ways to act affirmatively, without legislation.

Collectively, the Working Group's action proposals address basic safety and soundness issues, should lessen the risk of systemic problems, and as a result, work to the benefit of all investors. The key issues -- identified by the Brady Commission, the General Accounting Office (GAO), the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), and others -- on which the Working Group has agreed unanimously and has taken constructive action include:

- an agreement on coordinated "circuit breakers" across markets to allow for cooling-off periods during times of extreme price declines;
- recommendations and conclusions on the credit, clearing, and payments system to ensure the necessary coordination of information and operations within and between markets and to avoid systems gridlock;
- agreement that current minimum margin requirements provide an adequate level of prudential protection to the financial system; and
- agreement on contingency planning, including the continuation of the Working Group, to ensure coordination and consultation in the event of future, rapid market disturbances.

I also am pleased to report that the securities, futures, and options industries already are

making -- and should continue to make -- significant efforts to enhance operational capacity, to increase individual firm and clearinghouse capital, and to improve the fairness and quality of order executions for all investors, large and small.

### THE NEED TO REDUCE SYSTEMIC PROBLEMS

The specific conclusions and recommendations are contained in the Working Group's interim report to the President, which has been sent to all members. It is essential, however, to understand the premise from which these conclusions evolved.

The Working Group views its primary mission as taking collective, safety and soundness actions which would substantially lessen possible systemic dangers to the U.S. financial system if we were again to encounter a severe stock market decline. Consequently, the Working Group -- acting on the most significant suggestions of the Brady Report and others -- views coordinated circuit breakers, prudential margins across markets, the proper functioning of credit, clearing, and payment systems, and contingency planning as key ingredients to prevent stock market declines from degenerating into self-feeding panics.

While markets will always react to changes in fundamental economic information, it is important to assure all investors as to the proper functioning of the financial system while such information is being digested in terms of market pricing. Indeed, reducing concerns over the viability of the mechanics and infrastructure of the system could mitigate the extent of market declines by reducing the risk premium inherent in those extreme situations where market participants worry about receiving full and timely payments. Hence, our emphasis on safety and soundness issues first during these past 60 days.

#### Daily Volatility Is Not A Systemic Threat

The issue of daily volatility, although an expressed public concern, is not in the category of systemic threat, in my opinion. However disconcerting such volatility can be on a short-term basis, it is important not to attempt cures that can do more harm than good. Markets must be allowed to adjust to new price levels without impediments to efficiency that in themselves cause disruptive market action. Narrow price limits for circuit breakers, causing frequent market shut downs, would be an example of such self-defeating "cures".

Moreover, volatility is a subject which often has been treated publicly with more emotion than analysis. It must be noted that, with the exception of the period October 1987 through January 1988, there is no evidence of any increase in daily volatility. Volatility from 1983 through 1986, during which time the futures market was growing rapidly, was moderate to low as compared to similar prior periods. This is illustrated in Exhibit A. I should note that since February 1988, daily price volatility has returned to levels such as were seen in 1973, 1974, 1975, 1980, and 1982, and which are statistically indistinguishable from the norm for 1971 through 1986. In any case, we must be cautious in ascribing events of those few months of extraordinary volatility to changes which have been in place for some time or in extrapolating that those events will be the new norm in the future.

Some observers believe the individual investor has left the market because of a perception of increased volatility. It is equally possible that much of the retreat is in fact investors' collective views that the bull market has paused or that more attractive alternative investments are available. Individual investors have "left the market" in the wake of other major market declines (e.g., in the mid 1970s). Those individuals who want to own equities but are concerned about competing with large, sophisticated pools of capital can, if they wish, invest through them (e.g., mutual funds and pension funds) rather than trying to compete with them.

We must recognize that investor withdrawal during such bear markets is a fact of life, reaffirmed recently in a New York Times article which states in part:

Investor disillusionment with the stock market is not a new phenomenon. Typically, investors withdraw each time there is a bear market -- contributing to the bleak mood. After the almost 50 percent drop in the value of stocks during the 1973-74 bear market, for instance, many individuals fled the market and stayed out until the bull market of the 1980's.

The number of individual shareholders who owned stocks on the New York Stock Exchange fell to 25.2 million in 1975 from 30.8 million in 1970. The number of shareholders of mutual funds dropped to 7.8 million in 1980 from 8.4 million in 1970, according to estimates by the Investment Company Institute.

#### Numerous Factors Cause Markets to React More Quickly Today

There are numerous factors that have made markets react more quickly today to changes in the fundamental determinants of stock prices. First, the nature of stock ownership has changed substantially over the past twenty years, led by private and public pension funds. There have evolved very large individual aggregations of capital of a size unknown in an earlier period.<sup>1</sup> This, in turn, has led to changes in the techniques of managing such capital, often with an emphasis on the market as a whole (e.g., the S&P 500) rather than individual stocks. In the case of major broker/dealers, the need for trading liquidity by large bodies of capital has also increased the need for hedging techniques by corporate treasurers and money managers. Thus, the stock index futures markets have evolved as the lowest cost, most efficient response to these changed needs. "Trading the market" and hedging are not in and of themselves either good or bad -- they are economic facts that are not going to go away.<sup>2</sup>

It is not the futures products themselves that are called into question; rather, it is the behavior of large institutional investors and large traders (e.g., Fortune 500 companies, union

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<sup>1</sup> At the end of 1987, U.S. private pension fund assets totalled almost \$1.5 trillion and U.S. public pension fund assets were approximately another \$500 billion. By comparison, total pension fund assets were approximately \$820 billion at the end of 1980.

<sup>2</sup> 1987 statistics for the largest 200 pension funds show that a growing percentage of their assets (11.8%) is in stock index funds. A growing percentage of these pension funds (36%) also uses stock index futures.

pension funds, mutual funds, etc.) that comes into play. I must admit, too, that I have some difficulty in my own mind when it comes to legislating behavior modifications of that magnitude.

Second, benefits of active futures markets are real: for example, they apply directly to the Treasury securities market. Treasury futures are used as hedging vehicles and as a cost-saving means to adjust positions in the underlying securities. These risk-reducing benefits of futures markets lead to a reduction of the risk premium investors require on the underlying Treasury securities and thus to lower interest costs for the Federal Government.

For an excellent discussion of the increasingly significant role of derivative products -- particularly futures on stock indexes -- in the securities markets, members of the subcommittee really should review Chapter Three of the SEC's Staff Report "The Effects of Derivative Products" (The October 1987 Market Break) which I have attached as Exhibit B of my statement.

Third, with the index futures markets having exhibited greater volume in the underlying stocks than the cash market exchanges, it can be argued that the Chicago Mercantile Exchange (CME) has become a leader -- rather than a follower -- in price discovery of equity market value levels. Cash market prices are now often following, rather than leading, the so-called derivative market. The Brady Report and others have underscored the close economic linkage between these markets. Thus, the public debate over the role of index arbitrage is often misdirected. Index arbitrage only takes place when there is a difference of price level between the cash and futures markets, and such arbitrage, as in its age old role, helps equate those price levels.

Fourth, while it is true that index arbitrage can translate buying or selling pressure from one market to another, if those markets are truly economically linked and responding to the same fundamentals, then such arbitrage serves the useful purpose of quickly equalizing the price levels between the markets. It is worth noting in this context that the proposal of the New York Stock Exchange (NYSE) for trading baskets of stock on the NYSE would itself produce "index arbitrage" between the value of the basket and the underlying stocks -- but this arbitrage would be within the NYSE. What often is overlooked in discussions of arbitrage is that if there were no linkage of the markets, then more selling or buying could spill over into the cash markets directly. If the futures market were to disappear from this country, pressures on the stock market would only increase. The Brady Report takes note of such selling when the linkage broke down in October.

Much public criticism of index arbitrage is a classic case of wanting "to shoot the messenger" that brings the bad news of selling on the CME to the floor of the NYSE. If selling is going to take place to a degree that pushes prices down sharply, then cash markets will not be made immune by eliminating index arbitrage. The emphasis, therefore, should be on increasing the capacity of systems like the Designated Order Turnaround (DOT) system of the NYSE so that the public has fair and equal access to order transmission, rather than on restricting mechanical linkages between economically-linked markets.

Put another way, if there were no index futures market, then there would be no index arbitrage. But there is no evidence that such a condition would give the cash markets immunity from selling pressure generated by responses to fundamental events - and no likelihood that having developed to meet a large and important investment need there will not be a viable index futures market, whether here or abroad.

Fifth, the volatility many people blame on index arbitrage could also be evident from direct selling in the cash market. In fact, pressures directly on cash markets are clear from history. Earlier in the postwar periods before the index futures markets came into existence in 1982, the Dow Jones Industrial Average (DJIA) had a number of significant declines as outlined in Exhibit C of my testimony. In fact, the 1973-74 bear market was worse than the 1987 decline; while it took longer, the end result was that price levels reacted to fundamental perceptions and adjusted accordingly. While individual share ownership is an important part of our financial system and should be encouraged, we cannot expect to be able to legislate normal human behavior -- any more than we should be expected to protect the revenues of brokerage firms by attacking symptoms rather than causes.

Sixth, the aggregation of capital is a factor in today's global markets, just as the phenomenon of rapid information dissemination also is important to recognize. The world now has the technological systems -- and therefore the ability --- for almost instantaneous response to any event. This provides another type of aggregation in the form of concerted buying or selling. While market liquidity has increased greatly in recent years, clearly some greater volatility can be intrinsic to concerted action. Eliminating information technology -- either by legislation or regulatory fiat -- hardly seems like a realistic reaction to concerns about volatility.

Finally, the Wall Street broker/dealer/specialist business has become increasingly capital-intensive. Since 1975, when fixed-rate commissions were ended, a notably larger percentage of revenues are now a function of capital returns rather than commission income. With capital risk thus less protected by a cushion of commission income, there is a tendency for block houses and specialists to become more risk averse in their bids during uncertain times. This, too, can lead to greater volatility.

#### Evolution in the Face of Change is Necessary

If I may be permitted a personal comment, I would like to point out that when I started in Wall Street in 1951, a million shares traded on the NYSE in one day was a big event. Wall Street was like a private club, and a rather exclusionary club at that. No one worked too hard, competition was limited, individuals were as important as institutions, the U.S. economy was dominant, and the NYSE was the market of the world. There is more than a little nostalgia for those times that influences today's debates about how markets should function.

I would suggest, however, that the Wall Street of an earlier time also had its drawbacks and never could have accommodated the demands of a growing U.S. economy without itself changing. Those changes continue, particularly in an internationally competitive world. It would be a mistake to focus only on the fall-outs of those fundamental changes when attempting to determine whether structural modifications are needed for the markets themselves.

### Strong Agency and SRO Action Needed Against Frontrunning and Market Manipulation

Before I turn to our recommendations, I want to take a minute to comment on an issue about which I feel strongly. Virtually all of the reports voiced concerns about customer protection, particularly in the areas of intermarket frontrunning and market manipulation. For example, the Brady Report recommended development of an extensive trading information system for the stock markets to better diagnose developing problems and uncover abuses. The CFTC staff urged establishment of standards for identifying potential intermarket frontrunning trading patterns and a mechanism -- perhaps the Intermarket Surveillance Group -- for the timely and effective communication of market surveillance data related to possible frontrunning activity among all exchanges with common self-regulatory interests. The SEC recommended strengthening current prohibitions and working with the CFTC and self-regulatory organizations (SROs) to ensure that adequate intermarket information is available to pursue such matters.

The Administration fully agrees that vigorous action against problems of intermarket frontrunning and market manipulation is essential. Along with the benefits of new products, technologies, and trading strategies have come increased opportunities for abuse by market professionals and insiders. These abuses have hidden economic costs in addition to their more obvious effect on smaller individual and institutional investors who come to believe that the rules are rigged against them. We deplore this situation and expect the regulators and SROs, who are in the best position to take affirmative action, to continue to do so. They already have made significant progress:

- The CME has just circulated a proposed definition of frontrunning to futures industry representatives;
- The NYSE recently notified its members that trading futures based on knowledge of impending orders in the stock market is a violation of exchange rules. The NYSE plans to provide the futures exchanges with audit trail information on stock trading that would enable the Chicago futures markets to conduct ongoing surveillance for frontrunning; and
- The American Stock Exchange (Amex) has recently implemented systems to automatically monitor option trading for frontrunning, mini-manipulation, and pegging-and capping. The Amex also is developing an expert system which uses artificial intelligence software to analyze potential insider trading market manipulation cases.

It is in the best interest of all investors concerned that the problems of frontrunning and market manipulation be resolved quickly and effectively by the agencies and SROs. Such action is crucial if we take seriously the charge that markets are rigged to the disadvantage of the small investor.

## RECOMMENDATIONS

Let me now briefly summarize the Working Group's recommendations and conclusions. Our efforts have focused so far on six subjects which are described in more detail in our report to the President.

### 1. Continuing Coordination

The Working Group believes that its continuation is an excellent way to coordinate what should be an on-going process to address intermarket issues. The Brady Report and others have recommended that some additional regulatory mechanism be established to resolve these issues. Recognizing this concern for coordination, we believe cooperative efforts under the existing regulatory structure will continue to be effective, and in large measure, fulfill the intent of several legislative proposals. The very existence of this group has helped to keep the pressure on the various SROs and market participants to devise and implement necessary reforms on their own.

### 2. Circuit Breakers

In addressing coordinated trading halts and reopenings, so-called circuit breakers, the Working Group has focused on market events that are so dramatic as to trigger ad hoc closings of equity markets and to pose potential systemic risks to our financial system. The Working Group has devised a cross-market mechanism to avoid ad hoc and destabilizing market breaks, recognizing that any disruption of trading is undesirable.

Our proposal is designed to substitute planned for unplanned, ad hoc trading halts, without increasing the overall frequency of such disruptions. Planned halts should allow time for the dissemination of information and consideration of decision to buy or sell in rare situations in which panic conditions threaten.

### 3. Prudential Margin Requirements

The Working Group reached agreement on several key points regarding prudential margins and concluded that:

- current minimum margin requirements provide an adequate level of protection to the financial system, although they do not cover all possible price movements, and that margins sufficient to cover all possible price movements would have unacceptable costs for the liquidity and efficiency of markets;
- there are additional protective cushions in place from capital requirements and surveillance for firms and clearinghouses; and
- given differences in price volatility of stocks and indexes and grace periods for settling margins, a consistent and harmonious margin regime

among markets would produce significantly higher levels of margin for stocks than for futures.

The positions of the Working Group members on the need for margins in excess of the prudential level, and of the need for federal oversight, are set forth in the report to the President.

#### 4. Credit, Clearing, and Settlement

As former Senator Nicholas Brady, who chaired the President's Task Force on Market Mechanisms, indicated recently, extreme stress on our clearing and credit systems came close to damaging our financial system last October. While a complicated and technical area, our financial system's network of clearing, credit, and settlement procedures truly is the nuts-and-bolts that allow hundreds of millions of transactions to be conducted and financed on a daily basis.

The Working Group has reviewed existing clearing, payments, and settlement systems to identify and set priorities for measures that they recommend be taken to reduce uncertainty, increase coordination, to assure confidence in the integrity of such systems, and to facilitate their smooth operation in volatile markets.

The Working Group endorses the view that the proper functioning of these systems is integral to the proper functioning of the financial markets as a whole and is pleased to report that significant progress has been made in this area. As more fully set forth in the report to the President, the Working Group is proposing an agenda of additional measures to be pursued to achieve the goal of more perfectly coordinated systems.

#### 5. Contingency Planning

The Working Group believes that the purpose of contingency planning is to ensure that regulatory agencies and the SROs have in place systems which will allow them to identify emerging problems quickly and to react appropriately in the event of a market crisis. In an important sense, the Working Group recommendations for implementing circuit breakers, improving information flows, clarifying credit arrangements, and strengthening the clearing and settlement process can be viewed as a key part of contingency planning. By improving the market system's ability to withstand and react to shocks, these measures will enhance the system's first line of defense.

Going beyond this, the Working Group has given high priority to enhancing channels of communication among staffs of the respective regulatory agencies and the Treasury. In addition, staff of the three agencies are working jointly to improve information sharing across the agencies, with particular emphasis on a framework for coordinated monitoring of exposures and developments at major market participants. Finally, regarding international policy coordination, steps are being taken by the various agencies to strengthen existing contacts with their counterpart authorities in other major market centers to further improve this aspect of market surveillance.



6. Capital Adequacy and Systems Capacity Enhancement

Market participants, SROs, and regulatory agencies have taken or are planning a number of significant actions to enhance financial integrity and improve automated systems -- two of the issues the Working Group, the Brady Report, the GAO and others have identified as critical to the financial integrity and smooth functioning of the markets. Our report to the President cites the many constructive steps already taken in these areas. The Working Group encourages these efforts and will continue to monitor developments to ensure that needed improvements are made.

CONCLUSIONS

In summary, Mr. Chairman and Members of the Committee, the Working Group has commenced action on a number of significant steps that collectively will work to reduce systemic threats to our financial markets. In so doing, we have pursued a sizeable portion of the agenda defined in large measure by the Presidential Task Force on Market Mechanisms,<sup>3</sup> the GAO, the SEC, the CFTC and other market observers. Indeed, Senator Brady concluded his recent public letter with a position that in fact has been the operating basis of the Working Group:

We are not attempting to legislate against decline or interfere with the smooth functioning of the markets. The market will always seek its level ground; we are only trying to assure that it gets there safely.

The collective and coordinated actions recommended by the Working Group -- and corrective steps already taken by others -- help to assure that the market in fact does "get there safely" when it moves for whatever reasons.

We cannot legislate against market declines, regulatory dictates cannot eliminate volatility, and executive fiat is no more effective. Price controls and capital controls have never worked effectively in this country and no amount of government control can sway markets if underlying economic fundamentals -- or investor perceptions of those same fundamentals -- take the market one direction or another.

Moreover, it is unrealistic and ultimately counterproductive to attempt to roll back developments in financial markets brought about by advancements in telecommunication and computer technology and by changes in investment needs. We cannot go back to the days of the abacus or mechanical adding machines. If we did -- by trying to legislate against particular products or investor preferences or market strategies, for example -- then we would ultimately lose whatever competitive edge we now have to places like Toronto, Tokyo, or London.

Mr. Chairman, I would be remiss if I did not commend the cooperative actions and constructive dialogue on the part of the Working Group members. We have spent considerable time and energy to arrive at our initial recommendations. The members of the Working Group

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<sup>3</sup> See, for example, the summary comparison of the recommendations in the Brady report and the actions taken by the Working Group in Exhibit D.

have demonstrated that it is possible to address major, complex issues in a cooperative fashion -- even though we bring different perspectives and preferences to the table -- and in a reasonably short time frame. Disagreements on some matters have not blocked significant agreements that are apparent upon careful examination of the package we have presented to the President.

The public also has been well served by the Working Group's high caliber staff and their professional analyses, and I salute them.

We have made progress on basic elements that are essential to the safety and soundness agenda that we view as a priority. More work will be done, and we welcome the continuing challenge.

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Exhibit A

Volatility Measures, 1971-1988

Standard Deviations of Daily Price Changes  
(in Percentage Points)

<u>Years</u>	S&P 500	NYSE Composite
1971	0.640	0.645
1972	0.500	0.494
1973	0.997	1.007
1974	1.373	1.354
1975	0.967	0.949
1976	0.694	0.676
1977	0.570	0.539
1978	0.787	0.775
1979	0.682	0.682
1980	1.029	1.017
1981	0.843	0.825
1982	1.141	1.073
1983	0.868	0.781
1984	0.794	0.738
1985	0.632	0.589
1986	0.949	0.874
1987	2.120	1.972
1988 (Jan-Apr)	1.420	1.275
<u>Inclusive Periods</u>		
1971-1974	0.943	0.939
1975-1978	0.774	0.755
1979-1982	0.944	0.916
1983-1986	0.821	0.756
Jan-Sep 1987	0.984	0.905
Oct 1987-Jan 1988	3.538	3.290
Feb 1988-Apr 1988	1.073	0.960

Note: These standard deviations were calculated by the S.E.C. from daily data for the entire period indicated in the left column. Approximately two thirds of all daily price changes during a period will lie within one standard deviation of the average price change for the period. (About 95 percent of all changes will fall within two standard deviations and 99.75 percent within three standard deviations.)

## Chapter Three

### THE EFFECTS OF DERIVATIVE PRODUCTS

Derivative products, particularly futures on stock indexes, play an increasingly significant role in the securities markets. For example, the trading volume of stock index futures has grown spectacularly since their introduction in 1982. By the week preceding the October market break, trading in the Standard & Poor's ("S&P") 500 index futures contract ("SPZ") was averaging 106,400 contracts.<sup>1</sup> This daily contract volume (based on the value of the S&P 500 index during the week preceding the market break) was the equivalent of approximately \$16 billion worth of equity securities, and represented more than two times the average daily dollar volume of trading on the New York Stock Exchange ("NYSE") during September 1987.<sup>2</sup> Similarly, options on stock indexes were the fastest growing segment of the options market in 1987 and, by October 1987, on average accounted for more than 43% of total options contract volume.<sup>3</sup>

The growth of derivative products reflects, in part, the trends toward greater institutionalization of the markets and of market basket trading, coupled with the changing nature of investment strategies. Analysis of these trends sheds light on the growing impact of futures trading in the securities markets.

#### A. Institutionalization

During the last ten years, institutional investors have held an increasingly large percentage of all outstanding equities. In particular, the growth of United States pension funds and mutual funds, and the accompanying changes in investment policy and asset allocation, primarily are responsible for the increasing institutionalization of the securities markets.<sup>4</sup>

At the end of 1975, institutions held 35.3% of the \$685.1 billion total market value of all NYSE-listed stocks. At that time, pension funds held a total of \$252 billion in assets, \$113 billion of which were equity holdings.<sup>5</sup> By the end of 1980, the market value of all NYSE-listed

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<sup>1</sup> See Divisions of Economic Analysis and Trading and Markets, Interim Report to the Commodity Futures Trading Commission ("CFTC") on Stock Index Futures and Cash Market Activity During October 1987, November 9, 1987, Table 2.

<sup>2</sup> See NYSE, Marketing Research Report (November 1987).

<sup>3</sup> Total volume for options contracts traded on all exchanges for the period from January to October 1987 was 276,570,000. The volume for index option contracts traded for the same period on all exchanges was 119,535,000 contracts. Index option contracts generally are one-fifth the size of index futures contracts.

<sup>4</sup> See Chart 3-1 (overview of pension fund growth and management trends).

<sup>5</sup> See J. Light & A. Perold, *The Institutionalization of Wealth: Changing Patterns of Investment Decision Making*, in Wall Street and Regulation 98 (1987, ed. S. Hayes).

stocks had increased to \$1.2 trillion, while the institutional investors' share of that market value had remained constant, increasing only .1% to 35.4%. At that time, however, the total value of pension fund assets had increased to \$485 billion, \$220 billion of which were equity holdings, which accounted for 14% of all equities outstanding.<sup>6</sup> By 1985, pension funds had more than doubled their 1980 level of equity investment, to almost \$500 billion worth of stocks, which accounted for 22% of all equities outstanding.<sup>7</sup>

The 1980s have seen not only a substantial growth in the market value of institutional holdings, but also a surge in the percentage of the total trading volume on the NYSE accounted for by institutional investors.<sup>8</sup> Large block transactions,<sup>9</sup> a gauge of institutional participation in the stock market, have increased sharply since 1977. A total of 54,275 large blocks, accounting for 1.2 billion shares (\$34 billion), were traded in 1977.<sup>10</sup> These transactions accounted for 22.4% of the reported volume on the NYSE for that year. By 1983, these figures had more than doubled. In that year, 363,415 block transactions occurred, accounting for 9.8 billion shares (\$346.92 billion), and representing 45.6% of reported volume on the NYSE. A record average of 2,631 daily block trades occurred in 1986, up from an average of 2,139 daily block trades in 1985, representing 49.9% of reported volume on the NYSE. Moreover, the total number of block transactions on the NYSE increased 23.5% in 1986 from the previous year. This represented a 25.2% increase in the number of shares accounted for by those trades.<sup>11</sup> As further evidence of the rapid growth of these institutional transactions, on April 10, 1986, a new record was set when 48.8 million shares of Navistar International were traded, which was the largest block transaction in history as of that date.<sup>12</sup> Prior to April 10, 1986, the largest block transactions in history had occurred on May 25, 1983, when 7.0 million shares of Ramada Inns were traded, and on November 30, 1983, when 6.35 million shares of AT&T changed hands.<sup>13</sup>

## B. Market Basket Trading

The types of institutional transactions that occur and the investment decisions made by money managers also have changed as a result of evolving investment and trading strategies.

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<sup>6</sup> Id.

<sup>7</sup> Id.

<sup>8</sup> See Chart 3-2.

<sup>9</sup> Large block transactions are transactions of 10,000 or more shares.

<sup>10</sup> See Chart 3-2.

<sup>11</sup> See Chart 3-2: 539,039 block transactions occurred in 1985, accounting for 14.2 billion shares (\$501.26 billion). In comparison, 665,587 block transactions occurred in 1986, accounting for 17.8 billion shares (\$685.3 billion) traded.

<sup>12</sup> NYSE, Fact Book 12 (1987).

<sup>13</sup> Id.

Institutional money managers have made increasing use of passive asset management strategies. In 1980, money managers reported a total of \$9 billion in indexed assets.<sup>14</sup> This figure rose to \$48.2 billion at the end of 1984. By 1985, index fund managers reported \$81 billion in indexed assets, almost a 70% increase over the previous year's figure. As of May 31, 1987, the value of indexed assets for U.S. pension funds grew to \$187.96 billion, \$124.07 billion of which tracked U.S. equity indexes.<sup>15</sup>

As a result of the proliferation of index funds and the growth in indexed assets, along with investment tactics that require the simultaneous trades of large blocks of stocks, institutional investors increasingly have used program trades. Index fund managers began program trading in the mid-1970s.<sup>16</sup> Currently, an estimated 25% of all institutional trading is accomplished by use of program trades.<sup>17</sup> These trades include straight execution of multi-stock orders, as well as index arbitrage and substitution strategies, among others. The increase in this activity appears to have accelerated in 1987. For example, in January 1987, an average of 12.1 million shares per day was executed through the List Order Processing ("LIST") capability of the NYSE's Designated Order Turnaround ("DOT") system but by August 1987, that number had increased to an average of 16.6 million shares.

### C. The Effects of Futures

The increasing institutionalization of the markets and the growth of passive investment strategies, such as indexing,<sup>18</sup> have been accompanied by the increasing use by institutional investors of derivative products such as index options and financial futures. By 1984, only two years after the introduction of cash settled stock index options and futures, a number of institutional investors were using or actively considering using derivative markets to earn incremental returns on managed money, allocate assets to adjust for market risk, and manage various commercial and financial risks.<sup>19</sup> Forty of the top 200 pension funds were using stock index futures at that time. Their use of derivative products, however, did not include dynamic

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<sup>14</sup> Christman, Indexed Assets up 70% in 1985, Pensions & Investment Age 6 (Dec. 23, 1985).

<sup>15</sup> Berkowitz, Indexed Assets Top \$187 Billion, Pensions & Investment Age 3 (July 13, 1987).

<sup>16</sup> See, e.g. Investment Dealers' Digest 25 (March 2, 1987).

<sup>17</sup> Light & Perold, supra note 5, at 110.

<sup>18</sup> Indexing involves holding stocks in proportion to a widely followed index like the S&P 500.

<sup>19</sup> Board of Governors of the Federal Reserve System ("FRB"), Commodity Futures Trading Commission and the Securities and Exchange Commission ("SEC"), A Study of the Effects on the Economy of Trading in Futures and Options (Dec. 1984) ("Joint Study") at IV-17.

hedging or portfolio insurance to any large extent. In 1984, only an estimated \$200 million in pension fund assets were dynamically hedged.<sup>20</sup> This changed rapidly over the next three years as pension funds expanded their use of dynamic hedging or portfolio insurance strategies. In 1985, portfolio insurance was applied to an estimated \$6 billion of pension fund assets.<sup>21</sup>

By 1986, the amount of pension fund assets committed to portfolio insurance strategies had increased to at least \$8.5 billion, forty times greater than the value of pension fund assets that were dynamically hedged in 1984.<sup>22</sup> By October 19, 1987, stock valued at more than \$60 billion, mostly held by pension funds, was reported to be managed under portfolio insurance strategies.<sup>23</sup>

The Division of Market Regulation (“Division”) has attempted to verify the total dollar value of portfolio assets that were subject to some type of portfolio insurance or protective hedging program during the October 1987 market break. Division staff spoke with the major vendors of portfolio insurance programs, with broker-dealers and banks that manage large portfolios, and with many corporate pension plan managers. Based on these interviews, the staff has identified a minimum of approximately \$55 billion in portfolio assets that were committed to some type of portfolio insurance strategy. This figure is a minimum estimate of portfolio assets subject to some type of portfolio insurance or protection plan.<sup>24</sup> Moreover, staff interviews with market professionals indicate that a wider range of institutions actively use the futures markets. While these institutions do not employ the precise trading strategies dictated by portfolio insurance, they do employ the futures market to quickly adjust their relative equity holdings in a manner that can have effects on the market similar to portfolio insurance trading.

## 1. Benefits

As the staff has noted in prior analyses, the impact of index-related trading on the markets should be viewed in the context of the benefits provided by such trading. Various

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<sup>20</sup> Ring, Funds Watch as Others Try Program Trades, Pensions & Investment Age 1 (April 28, 1986).

<sup>21</sup> Ring, Dynamic Hedging Grows Despite Debate, Pensions and Investment Age 3 (April 14, 1986).

<sup>22</sup> Id.

<sup>23</sup> Ring, Execs Ponder Compatibility of Strategies, Pensions & Investment Age 15 (July 27, 1987).

<sup>24</sup> While this figure is smaller than estimates ranging from \$60-\$100 billion that have appeared in the press, we have attempted to the maximum extent possible not to double count portfolio assets. Various portfolio insurance programs are licensed by vendors. As a result, obtaining an accurate estimate of the amount of portfolio assets subject to some type of portfolio insurance strategy is difficult because information obtained from licensees also may have been provided by vendors.

studies conducted before the October 1987 market break concluded that futures and options on stock indexes offer significant benefits to today's capital markets.<sup>25</sup> These studies found that the markets for these index products, especially the market for SPZ futures, add substantial liquidity and pricing efficiency to equity markets generally. Moreover, using these products, investors are able to control the risks in their portfolios in accordance with their particular needs. As a result, the markets perform their various economic roles more efficiently.

a. **Liquidity Efficiencies**

As described in Chapter One, an index option or future is a single instrument that can be used as a surrogate for many stocks. Substantial market making capital is concentrated in the more successful of these products, especially the SPZ future and the S&P 100 index option. In addition, market makers and hedgers are afforded favorable margin requirements, enabling them to effect transactions at lower cost. These factors contribute to the futures market's liquidity, allowing investors to execute large transactions with much smaller market effects than is possible in the separate stocks.<sup>26</sup>

b. **Transactional and Hedging Efficiencies**

The availability of derivative index products has substantially enhanced institutions' and other market professionals' hedging and market timing capabilities. Index futures and options also significantly reduce transaction costs when assets are reallocated among such as stocks, bonds and cash equivalents in a portfolio, or when additional funds are invested.<sup>27</sup> Because commission rates, as well as execution costs, are lower for futures than for stocks, institutions changing the proportion of stocks in a portfolio can do so at lower cost by initially using the futures rather than the stocks themselves. For example, a debt portfolio can be converted rapidly to equity by simultaneously selling bond futures and buying stock index futures. In doing so, managers can increase their equity exposure without incurring the relatively higher transaction costs of the stock and bond markets. Thus, futures not only allow for the rapid reallocation of a

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<sup>25</sup> See, e.g., Joint Study, *supra* note 19, at IV-35; H. Stoll & R. Whaley, Expiration Day Effects of Index Options and Futures (1986) ("Stoll Study").

<sup>26</sup> A 1985 study by the investment firm of Kidder, Peabody & Co. estimated the difference in costs as follows: the cost of executing a \$20 million stock trade in terms of the effect on the price of the stock would be 0.27%; for a similar futures trade, 0.04%. R. Wunsch, *Stock Index Futures* (Kidder Peabody & Co., April 23, 1985). More recently, Morgan Stanley estimated the market impact cost of a \$120 million S&P 500 basket as 1.30 index points (or \$520,000) in the stock market versus .05 index points (or \$20,000) in the SPZ. R. Johnson, *Program Trading Presentation* (Morgan Stanley, July 9, 1987).

<sup>27</sup> Of course, the cost of executing a program has changed over time. According to Fredric A. Nelson of Bankers Trust, a \$50 million S&P 500 program would have cost an investor \$290,000 to execute in 1984, \$165,000 to execute pre-October 1987, and \$345,000 to execute after October 1987. F. Nelson, *Trading Strategies and Execution Costs* (Bankers Trust Company, December 3, 1987).



portfolio, but create substantial savings in execution and transaction costs. Of course, when and if the stock transactions take place, commission costs are incurred.

Moreover, as hedging vehicles, stock index products can offer investors substantial benefits. Through the sale of futures contracts, pension, endowment and other institutional investors can quickly, at relatively low cost, shift risk to those more willing to accept it.

## 2. Price Impacts of Futures

The existence of an active futures market in stock indexes has created, in effect, an alternative or “synthetic” stock market for the growing number of institutional investors who choose to trade passively by investing in funds tied to specific indexes or who are interested in buying and selling stocks in “baskets.” The data set forth in the Market Chronology (Chapter Two) demonstrate the substantial impact this alternative stock market can have on the equity market, especially by increasing intra-day price volatility.

When futures on stock indexes were introduced, little attention was paid to the possible “price discovery” aspect of this new product or to its ability to displace the stock market as the preferred vehicle for trading baskets of stock. The primary emphasis was on the significant potential for hedging investment risk that was offered by a cash-settled future. Nevertheless, it is our view that, as a result of the increasing use of the futures market by institutional investors, including investors employing passive investment strategies and dynamic hedging techniques,<sup>28</sup> the character of the market has changed to the point where the “price discovery” feature of the derivative market is leading, rather than following, price trends in the underlying equity markets. Moreover, through index arbitrage, the prices “discovered” in the futures pit are quickly transmitted to the floor of the NYSE where prices adjust to the general market sentiment expressed in the futures arena.

There are several reasons for the increased impact of futures. First, low transaction costs, low margin requirements, and normally high levels of liquidity, the very benefits cited by futures proponents, have made the futures market the “market of choice” for many active institutional traders. Many institutional traders who use futures reported to the staff that they did so because futures were a “cheaper” alternative to buying individual stocks. Some believed that they could increase or decrease market exposure virtually instantaneously, with little market or liquidity costs. For this reason, as noted above, the underlying market value of index futures traded daily generally exceeds the dollar volume on the NYSE.<sup>29</sup> Accordingly, institution-led market movements are usually observed first in the futures markets.

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<sup>28</sup> Dynamic hedging involves rebalancing a market portfolio to increase or decrease the proportion of equity exposure depending on market movements.

<sup>29</sup> The dollar value of SPZ 500 futures contracts traded daily has exceeded the dollar value of daily transactions on the NYSE since the last quarter of 1983. See N. Katzenbach, An Overview of Program Trading and Its Impact on Current Market Practices, 10 (December 21, 1987).

Second, the capital available for index arbitrage has increased substantially. In the early developmental stages of index arbitrage strategies, large broker-dealer firms trading for their own proprietary accounts dominated the business. These same firms continue to be the major players in index arbitrage, but today much of their business is as agent for institutional customers. Moreover, the availability of an efficient order routing system for baskets of stock (the NYSE LIST system) has decreased the time, and therefore the execution risk, involved in executing program trades. Efficient order routing also has increased the speed with which market movements in futures can be transmitted to the stock market.

Institutional investors also can make greater use of index arbitrage strategies than firms can trading for their own accounts. As noted below, the ability to initiate a so-called “short” arbitrage (i.e., buy futures, sell stocks “short”) is limited by the Commission’s and exchanges’ short sale rules, which require that the “short stock” portion of the arbitrage be executed on “plus” ticks or “zero plus” ticks<sup>30</sup> for each of the stocks comprising an arbitrageur’s basket. Many institutional investors, particularly those who manage passive or index funds, already own the stocks underlying the index and, therefore, can initiate an arbitrage transaction involving stock selling without considering the short sale rule, because their sales would be “long” sales and not subject to the “tick” test provisions of the short sale rule. Moreover, because these institutions already own the securities comprising the index, the return they must receive on the arbitrage is less than would be required by other market participants. Accordingly, they are willing to effect arbitrage transactions with a smaller spread between the futures price and theoretical fair value.

The result of all these trends has been to increase the speed and frequency with which index futures price movements are transmitted to the stock market. There is, of course, nothing inherently wrong with index futures providing price discovery for the stock markets. Indeed, such close coordination of two related markets generally enhances pricing efficiency. The emergence of futures as a stock price leader, however, has had a significant impact on the stock market.

First, it increases the difficulty of enforcing marketmaking obligations imposed on specialists. As discussed in detail in Chapter Four, stock specialists are generally expected to buy or sell securities to offset temporary imbalances in supply and demand and to provide price continuity, depth, and liquidity, the general indicia of fair and orderly markets. Interviews with specialists confirm, however, that if the future is trading at a discount or premium to its theoretical value, specialists are unwilling to act aggressively to offset imbalances because the discount or premium indicates that more arbitrage selling or buying will enter the market.<sup>31</sup> Other market participants may be equally reluctant to trade against pricing signals emanating from the futures market.

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<sup>30</sup> A “plus tick” is a trade at a price greater than the immediately preceding transaction and a “zero-plus tick” is a trade at a price greater than the last transaction at a different price (e.g., a trade at 20 would be a plus tick if the prior trade was 19 7/8, and a zero-plus tick if the two prior trades were 19 7/8 and 20).

<sup>31</sup> See Chapter Four, *infra* for a discussion of specialist obligations and performance standards.

Second, the relatively low margins and absence of short sale restrictions in the futures market may encourage additional trading that might not occur if the derivative index products did not exist, in that large stock equivalent positions can be established or liquidated more quickly. The price movements caused by this increased trading velocity are then rapidly assimilated into the stock market through arbitrage, because arbitrage liquidations and index substitution activity again can occur consistent with short sale restrictions.

The staff believes that these two effects of futures price leadership (greater difficulty in maintaining orderly stock markets and an increase in the velocity of trading) have converged to contribute to increased intra-day volatility in the stock market. Indeed, recent studies have indicated that while, prior to 1987, inter-day stock price volatility was not out of line with prior periods, intra-day volatility was increasing. Moreover, by early 1987, inter-day volatility appeared to be increasing as well.<sup>32</sup>

This price impact does not appear to occur because of speculative activity in the index futures market. Neither our examinations of price volatility on September 11 and 12, 1986 and January 23, 1987 nor our analysis of futures trading during the October market break indicates that speculative activity in the futures market was predominant. Rather, as detailed in Chapter Two, institutions, not speculators, were the primary net sellers of futures on October 19, the day of the greatest market decline.

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<sup>32</sup> See, e.g., Cowan, Whether Swings Will Continue is Uncertain, *N.Y. Times*, January 2, 1988, at 31, col. 3 (“It used to be that, on a given day the [DJIA] moved up or down by more than 2[%] only about once a month. Since May, such swings increased in frequency to almost once every three weeks, and by the fourth quarter of 1987, they occurred almost every other day on average”); N. Katzenbach, *supra* note 29, at 21-23; F. Edwards, Financial Futures and Cash Market Volatility: Stock, Index and Interest Rate Futures 18 (September 1987) (“Beginning in 1986; . . . volatility began to rise, and in 1987 increased even more. This pattern is evident for all measures of volatility, which show similar movements [footnote omitted].” According to Professor Edwards, from 1985 to 1986, the standard deviation of the high-low estimator for the S&P 500 increased from 0.3534 to 0.5832, while the mean of that indicator increased from 0.7809 to 1.1204. It should be noted, however, that Professor Edwards also stated: “It is doubtful that the rise in stock market volatility is due to anything associated with futures trading.”)

We would note that some of the studies which have sought to measure market volatility before and after the introduction of stock index futures have done their comparisons using the Spring of 1982 as the relevant “event date” because that is when such futures were first introduced. However, such an “event date” does not accurately capture the full effects of futures trading. The dollar equivalent of stock trading via futures did not exceed NYSE trading volume until late 1983, proprietary index arbitrage did not become significant until Spring/Summer of 1984, index substitution programs only came into play during 1985-86, and dynamic hedging became considerably greater in 1986-87. Thus, whether such pre-/post-studies can ever “prove” that the market has been more or less volatile since the introduction of stock index futures, such studies should, at least, use a more finely textured “event date.”

Exhibit C

Percentage Declines in Postwar Bear Markets.  
by Month-end Peaks and Bottoms in the  
Dow Jones Industrial Average

Dates	Closing DJIA	Duration	Percentage Drop
May 1946	212	5 months	20.3
Oct. 1946	169		
Dec. 1961	731	6 months	23.2
June 1962	561		
Dec. 1965	969	9 months	20.1
Sept. 1966	774		
Apr. 1969	950	14 months	28.1
June 1970	683		
Dec. 1972	1020	24 months	39.6
Dec. 1974	616		
Dec. 1976	1004	14 months	26.1
Feb. 1978	742		
March 1981	1003	16 months	19.4
July 1982	808		
Aug. 1987	2662	3 months	31.1
Nov. 1987	1833		

## SUMMARY COMPARISON OF BRADY RECOMMENDATIONS AND WGFM ACTIONS

	<u>Brady Task Force Recommendations</u>	<u>WGFM Actions</u>
1. <u>Circuit Breakers:</u>	Recommends circuit breakers across markets.	<u>Action:</u> Circuit breakers across markets; followed five guidelines in recent letter by Senator Brady.
2. <u>Clearing and Settlement Procedures:</u>	Clearing systems should be unified to reduce financial risk; Senator Brady said flaws came close to damaging financial system in his recent letter.	<u>Action:</u> Numerous recommendations and proposals to increase coordination and facilitate smooth operation of market mechanisms; goal is a more perfectly coordinated system.
3. <u>Intermarket Regulation:</u>	One super-regulator, prefers FRB, but Senator Brady recently stated that action on reform on other intermarket issues was more important than one regulator at this time.	<u>Action:</u> Consultation and coordination by WGFM will be on-going; important element of contingency planning.
4. <u>Margins:</u>	Should be consistent to control speculation and financial leverage, though not necessarily equal for futures and stocks; prefers to be set by FRB.	<u>Action:</u> Existing margins (which have been increased since October) are prudential and harmonious across markets to protect against trader or investor default; prudential margins appropriate for carrying stock should be significantly higher than those for a stock futures index contract; best left to SROs to regulate; additional cushions exist in capital requirements and surveillance.

4. Margins:

Should be consistent to control speculation and financial leverage, though not necessarily equal for futures and stocks; prefers to be set by FRB.

Action: Existing margins (which have been increased since October) are prudential and harmonious across markets to protect against trader or investor default; prudential margins appropriate for carrying stock should be significantly higher than those for a stock futures index contract; best left to SROs to regulate; additional cushions exist in capital requirements and surveillance.

5. Information Systems:

Monitor transactions and conditions in related markets (e.g., customer information behind each large trade).

Action: Numerous recommendations and proposals for improved intermarket information flows; SROs are exploring information for large stock traders; Administration favors strong action against front running and manipulation.