

The Working Group on Financial Markets

Robert E. Rubin, Secretary  
Department of the Treasury

Brooksley Born, Chairperson  
Commodity Futures Trading Commission

Alan Greenspan, Chairman  
Board of Governors of the Federal Reserve System

Arthur Levitt, Chairman  
Securities and Exchange Commission

August 18, 1998

The Honorable Phil Gramm  
Chairman  
Subcommittee on Securities  
Committee on Banking, Housing, and Urban Affairs  
U.S. Senate

The Honorable Christopher J. Dodd  
Ranking Member  
Subcommittee on Securities  
Committee on Banking, Housing, and Urban Affairs  
U.S. Senate

Dear Senator Gramm and Senator Dodd:

In your letter of October 29, 1997, you asked the President's Working Group on Financial Markets (the "Working Group") to undertake a comprehensive study examining how well circuit breakers functioned on October 27, 1997, and whether the circuit breakers accomplished the goals for which they were created. We respectfully submit the attached report by the staff of the Working Group participants in response to your request.

The cross-market trading halt procedures were triggered for the first time at 2:36 p.m. on October 27, 1997, when the Dow Jones Industrial Average ("DJIA") declined 350 points (4.5%), thereby initiating a 30-minute trading halt in the stock, stock options, and stock index futures markets. After trading resumed at 3:06 p.m., prices declined rapidly to 554 points (7.2%) below the previous day's close, thereby

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triggering the 550-point circuit breaker that would have halted trading for one hour. Because the DJIA reached the 550-point circuit breaker at 3:30 p.m., the circuit breaker closed the market for the remainder of the day, ending the trading session 30 minutes prior to the normal stock market close.

The events of October 27 focused considerable attention on circuit breakers. In November 1997, representatives from the SEC and the CFTC met with officials of the securities and futures markets to discuss possible changes to the circuit breaker procedures. Without reaching a consensus on the specifics of implementation, participants at the meeting agreed, in general, on the need to raise the thresholds for circuit breakers and to structure circuit breakers to permit the orderly establishment of daily closing prices.

On January 29, 1998, representatives of the Working Group agencies testified before the Senate Subcommittee on Securities. The Working Group representatives all generally expressed the view that markets function best when they are unencumbered by artificial constraints like circuit breakers. We also believe that markets should remain open as long as they are functioning efficiently. Circuit breakers were designed to halt trading only during market declines of historic proportions, and to substitute an orderly, pre-planned halt for the ad hoc trading halts that can occur during a dramatic and destabilizing market decline. The 7.2% DJIA decline on October 27 was not the type of extraordinary market decline that circuit breakers were meant to address. Due to the increase in information, trading, and settlement system capacity since the adoption of circuit breakers, the markets were operating efficiently on October 27, with no threat of an imminent breakdown. The need to halt trading on that day was not evident. Accordingly, we supported an increase in the circuit breaker trigger levels to ensure that they are activated only during extreme market declines. In addition, we indicated our belief that circuit breaker procedures should allow for an orderly close each day, and that they should be re-evaluated periodically.

In response to Congress's and the agencies' concerns, the securities and futures exchanges submitted proposals to revise their circuit breaker procedures. The SEC and CFTC approved the revised procedures in April 1998. The circuit breakers adopted by the securities exchanges establish trading halts following one-day DJIA declines of 10%, 20%, and 30%. The NYSE will calculate the trigger levels at the beginning of each calendar quarter, using the average closing value of the DJIA for the previous month to establish specific point values for the quarter. Under the securities exchanges' revised circuit breaker procedures, trading will halt for one hour if the DJIA declines 10% prior to 2:00 p.m., and for one-half hour if the DJIA declines 10% between 2:00 p.m. and 2:30 p.m. If the DJIA declines by 10% at or after 2:30 p.m., trading will not halt at the 10% level. If the DJIA declines 20% prior to 1:00 p.m., trading will halt for two hours; trading will halt for one hour if the DJIA declines 20% between 1:00 p.m. and 2:00 p.m.; and trading will halt for

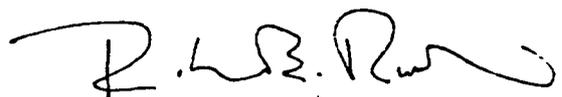
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the remainder of the day if a 20% decline occurs at or after 2:00 p.m. If the DJIA declines 30% at any time, trading will halt for the remainder of the day.

In our testimony before the Subcommittee, representatives of the Working Group agencies also testified that the NYSE's sidecar procedures and collar rule were probably outdated and should be eliminated or, in the alternative, that the trigger level in the collar rule should be raised substantially. The members of the Working Group submitted a letter to the NYSE, dated May 7, 1998, that addressed the need for further revisions to these rules, a copy of which is enclosed.

Although recent developments have reduced the need for an extensive study of circuit breakers by the Working Group, the Working Group nonetheless asked its staff to prepare a narrowly focused report analyzing the operation and effectiveness of circuit breakers on October 27. The attached report attempts to review the effects of both the cross market trading halts and the NYSE's sidecar and collar rules. We appreciate your interest and assistance in helping to ensure that circuit breakers and other regulatory measures designed to protect markets function to maintain the efficiency, liquidity, and integrity of our nation's capital markets.

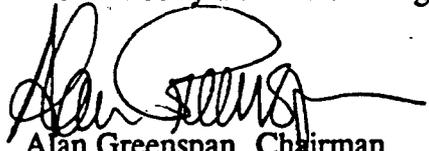
Sincerely,



Robert E. Rubin, Secretary  
Department of the Treasury



Brooksley Born, Chairperson  
Commodity Futures Trading Commission



Alan Greenspan, Chairman  
Board of Governors of the Federal Reserve System



Arthur Levitt, Chairman  
Securities and Exchange Commission

Enclosures

## Working Group Staff Report on Circuit Breakers

### I. Introduction

In response to the events of October 19, 1987, when the Dow Jones Industrial Average ("DJIA") sustained a one-day decline of 508 points (22.6%), the nation's securities and futures markets in 1988 adopted rules that provide for coordinated, cross-market trading halts in all equity and equity-derivative markets following specified declines in the DJIA. These coordinated trading halts, or circuit breakers, were designed to operate only during significant market declines and to substitute orderly, pre-planned halts for the ad hoc and destabilizing halts which can occur when market liquidity is exhausted.<sup>1</sup> The circuit breakers also provide opportunities for markets and market participants to assess market conditions and potential systemic stress during a historic market decline.

The circuit breakers were activated for the first time on October 27, 1997, when the DJIA declined 554.26 points (7.18%) to close at 7161.15. The circuit breaker procedures in effect on October 27 called for a 30-minute trading halt in stocks, stock options, and stock index futures if the DJIA declined 350 points from its previous day's closing value, and for a one-hour trading halt if the DJIA declined 550 points from its previous day's closing value. As discussed more fully below, on October 27 the DJIA declined 350 points (4.54%) to trigger the first circuit breaker trading halt at 2:36 p.m. After trading resumed at 3:06 p.m., prices fell rapidly to reach the 550-point circuit breaker at 3:30 p.m. Because the 550-point circuit breaker called for a one-hour trading halt, the circuit breaker closed the market for the remainder of the day, ending the trading session 30 minutes prior to the normal stock market close.

On October 29, 1997, the Senate Subcommittee on Securities asked the President's Working Group on Financial Markets ("Working Group") to undertake a study examining how well circuit breakers functioned on October 27, and whether they accomplished the goals for which they were created.<sup>2</sup> Although it is difficult to draw general conclusions from an isolated event, and although the market decline on October 27 was not of a magnitude to demonstrate how circuit breakers might operate during more severe declines, our analysis of trading on October 27 provides insights into the operation of circuit breakers and into changes that may enhance the effectiveness of the markets' circuit breaker procedures. As discussed more fully below, the securities and

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<sup>1</sup> Liquidity is the ability to buy or sell an asset quickly and in large volume without substantially affecting the asset's price.

<sup>2</sup> See Letter from Phil Gramm, Chairman, Subcommittee on Securities, Committee on Banking, Housing, and Urban Affairs, U.S. Senate, and Christopher J. Dodd, Ranking Member, Subcommittee on Securities, Committee on Banking, Housing, and Urban Affairs, U.S. Senate, dated October 29, 1997.

futures markets revised their circuit breaker procedures in April 1998 in light of their experience with the trading halts triggered on October 27 and in response to concerns raised by regulators.<sup>3</sup> The revised circuit breaker procedures adopted by the securities and futures markets are consistent with the Working Group's recommendations based on our analysis of trading on October 27.

First, the October 1997 experience demonstrated that the securities and futures markets needed to increase the thresholds for circuit breaker halts to take into account current market levels and the increased capacity of the U.S. markets to handle volume and price corrections of the type that occurred on October 27. The 350-point decline that triggered the first circuit breaker on October 27 represented a decrease of only 4.54%; the DJIA has experienced such declines on 11 previous days since 1945. Moreover, there was little evidence on October 27 of the types of systemic stress that would have justified cross-market trading halts. There was no prudential need for circuit breakers to be triggered on October 27. Circuit breaker halts should be reserved only for a historic market decline of a magnitude that raises concerns that the exhaustion of market liquidity might result in uncoordinated, ad hoc market closures.

Second, the markets needed to modify circuit breaker procedures to permit trading to resume for orderly market closings whenever feasible. Our review indicates that investor concerns that the second circuit breaker would close the market for the remainder of the trading day may have accelerated the price declines in the last 25 minutes of trading on October 27.

In light of the above, regulators and officials of the securities and futures markets met to assess the operation of circuit breakers on October 27 and to consider possible modifications to the circuit breaker procedures. As a result of these discussions, the securities and futures markets revised their circuit breaker procedures in April 1998. As discussed more fully below, the revised circuit breaker procedures provide for trading halts following one-day DJIA declines of 10%, 20%, and 30%. The revised procedures also require quarterly recalculations of the circuit breaker trigger levels.

In addition, in response to concerns raised by regulators<sup>4</sup> and the futures markets, the NYSE plans to review both NYSE Rule 80A(a) (the "sidecar" procedures) and NYSE Rule 80A(c) (the "collar rule"). In general, the NYSE's collar rule

<sup>3</sup> See Securities Exchange Act Release No. 39846 (April 9, 1998), 63 FR 18477 (April 15, 1998) (order approving proposals by the NYSE, AMEX, BSE, CHX, NASD, and PHLX) ("April 1998 Approval Order").

<sup>4</sup> See Letter from Robert E. Rubin, Secretary, Department of the Treasury, Brooksley Born, Chairperson, Commodity Futures Trading Commission ("CFTC"), Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System, and Arthur Levitt, Chairman, Securities and Exchange Commission ("SEC"), to Richard A. Grasso, Chairman and Chief Executive Officer, NYSE, dated May 7, 1998.

establishes conditions for effecting index arbitrage transactions when the DJIA advances or declines 50 points or more from its closing value on the previous trading day. Specifically, when the DJIA declines by 50 points or more from its previous trading day's closing value, all index arbitrage orders to sell component stocks of the S&P 500 Index must be entered with the instruction "sell plus."<sup>5</sup> Conversely, when the DJIA advances by 50 points or more from its previous trading day's closing value, all index arbitrage orders to buy component stocks of the S&P 500 Index must be entered with the instruction "buy minus."<sup>6</sup> These provisions apply to all index arbitrage orders in component S&P 500 stocks traded on the NYSE, regardless of whether they are routed through the NYSE's Designated Order Turnaround ("DOT") system.

Under the NYSE's sidecar procedures, all automated program trading orders<sup>7</sup> for NYSE stocks in the S&P 500 Index are routed into a separate sidecar electronic file for five minutes if, prior to 3:25 p.m., the price of the primary S&P 500 futures contract declines 12 points from its previous settlement price.<sup>8</sup> In the sidecar files for each stock, program buy orders are matched with program sell orders, and NYSE specialists are notified of any order imbalances. If a stock has an order imbalance requiring significant price changes, the specialist must institute a trading halt in the stock and disseminate price indications for a set period prior to reopening the stock. Although sidecar procedures have been triggered numerous times since their adoption (37 times in 1997 alone), the orders in the sidecar files have never presented imbalances sufficient to warrant a halt in the trading of a stock.

<sup>5</sup> "Sell plus" means that the order only can be executed on a plus or zero plus tick. A plus tick is a price above the price of the last preceding transaction. A zero plus tick is a price equal to the last preceding transaction if the most recent transaction at a different price was at a lower price.

<sup>6</sup> "Buy minus" means that the order only can be executed on a minus or zero minus tick. A minus tick is a price below the price of the last preceding transaction. A zero minus tick is a price equal to the last preceding transaction if the most recent transaction at a different price was at a higher price.

<sup>7</sup> For purposes of the sidecar procedures, program trading includes, but is not limited to, index arbitrage. Specifically, NYSE Rule 80A(e)(i) defines program trading for purposes of NYSE Rule 80A as "either (A) index arbitrage or (B) any trading strategy involving the related purchase or sale of a "basket" or group of 15 or more stocks having a total market value of \$1 million or more. Program trading includes the purchases or sales of stocks that are part of a coordinated trading strategy, even if the purchases or sales are neither entered or executed contemporaneously, nor part of a trading strategy involving options or futures contracts on an index stock group, options on any such futures contracts, or otherwise relating to a stock market index."

<sup>8</sup> The sidecar's trigger point of 12 points in the S&P 500 futures was established in October 1988, in coordination with the CME's 12-point initial intra-day price limit. Its approval was "conditioned on [the] approval of the CME's companion rule" and it was to apply "at the same trigger value." However, when the CME initial limit was expanded to 15 and then 25 points, the NYSE did not expand its NYSE Rule 80A(a) correspondingly.

## II. History and Overview of Circuit Breakers

### A. The October 1987 Market Break and the Adoption of Circuit Breakers

In October 1987, the U.S. securities markets experienced an extraordinary surge in price volatility and trading volumes. The DJIA declined 6% during the week of October 5, 1987, and an additional 9% during the week of October 12. On Monday, October 19, the DJIA experienced a record one-day percentage decline of 508 points (22.6%). By mid-day on October 20, the DJIA again declined sharply before share prices stabilized and rallied to close up 6% for the day. These historic price swings were accompanied by extraordinary increases in trading volumes, with the NYSE setting successive daily share volume records on Friday, October 16, Monday, October 19, and Tuesday, October 20.

The combination of historic price swings and unprecedented trading volumes during October 1987 overwhelmed the operational capacities and liquidity of the securities and futures markets. On October 19, there were frequent delays in reporting quotes and transactions, which contributed to the stress of a price decline of nearly 23%. By mid-day on October 20, heavy selling pressure had produced large order imbalances and numerous ad hoc trading halts in individual stocks. Liquidity and pricing difficulties also resulted in uncoordinated trading suspensions on major options exchanges and several large stock index futures exchanges. In addition, amid rumors that some clearinghouses and several major market participants were experiencing financial difficulties, a widespread credit breakdown appeared to be possible. While the subsequent rally in market prices in the afternoon averted more widespread financial problems, the near shutdown of the markets on October 20 became a central focus of several studies of the October 1987 market break that resulted in the adoption of circuit breaker procedures in 1988.

One of the studies, the report issued on January 8, 1988, by the Presidential Task Force on Market Mechanisms (the "Brady Report"),<sup>9</sup> recommended a number of initiatives to address future periods of extreme market volatility, including the implementation of circuit breaker mechanisms coordinated across the markets for stocks, stock options, and stock index futures. Noting that the market disorders of October 1987 "became, in effect, ad hoc circuit breakers," the Brady Report suggested that the markets design and implement coherent, coordinated circuit breaker mechanisms in advance rather than be left "at the mercy of the unavoidable circuit breakers of chaos and system failure."<sup>10</sup>

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<sup>9</sup> The report is named for the head of the task force, Nicholas Brady, who at the time was chairman of Dillon Read and later became Secretary of the Treasury.

<sup>10</sup> See Brady Report at 66.

The May 1988 Interim Report of the Working Group ("Interim Report") also contained a number of recommendations to assist the markets in coping with future periods of extraordinary price swings and volume surges. These initiatives included expansion of the operational capacity of the markets, streamlining of clearance and settlement operations, and the adoption of circuit breakers that would provide coordinated trading halts and reopenings for large, rapid market declines that threaten to create panic conditions. The Interim Report noted that circuit breakers were designed to substitute planned trading halts for ad hoc, destabilizing market closings, which were manifest during the October 1987 market break through systems breakdowns, reduced liquidity, and concerns over trading because of fears of counter-party and clearing corporation failure. The Working Group suggested that all U.S. markets for stocks, options, and futures halt trading for one hour if the DJIA declines 250 points from its previous day's closing level and provide for a second, two-hour trading halt if the DJIA declines 400 points from its previous day's closing level.<sup>11</sup> These levels represented approximately 12% and 20% of the value of the DJIA at that time. The Working Group anticipated quarterly reviews of the circuit breaker trigger levels to determine whether changes in index levels necessitated changes to the triggers in order to reflect percentage DJIA declines approximately equivalent to 12% and 20%.<sup>12</sup>

Both the Brady Report and the Working Group recommendations on circuit breakers must be viewed in the context of their times. The markets in October 1987 had experienced a one-day decline of historic proportions. A contributing factor to the chaos during that period was the inability of the markets to handle the surge in trading volume which overwhelmed the operational capacity of the markets. Since 1987, the markets have increased their systems capacity exponentially and can now handle substantially greater trading volume than that which swamped the markets in 1987. This was evident on October 27 and 28, 1997. In addition, a number of improvements in clearance and settlement operations since 1987 have improved the markets' ability to withstand future declines. Several initiatives have been adopted to reduce potential disruptions and settlement risks, including three-day settlements in stocks and same-day funds settlement, and cross-margining and cross-guarantee agreements among major securities and futures clearing agencies. In addition, clearing funds have been strengthened significantly since 1987 and systems have been established to allow clearing agencies to better monitor participants' risks and to share critical information with other securities and futures clearing organizations if problems are detected.

## B. Circuit Breakers Adopted in 1988

The U.S. securities and futures exchanges adopted circuit breakers in October 1988 in response to their experiences during the historic market declines of October 1987 and pursuant to recommendations contained in subsequent studies of the 1987

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<sup>11</sup> See Interim Report at 4.

<sup>12</sup> See Interim Report at Appendix A.

**Market Break.** The circuit breakers were designed to substitute orderly, pre-planned halts for the ad hoc halts that can occur when market liquidity is exhausted. The circuit breakers also provide opportunities for markets and market participants to assess market conditions and potential systemic stress during a historic market decline.

The circuit breakers adopted by the securities and futures markets in 1988 provided for a one-hour cross-market trading halt if the DJIA declined 250 points from its previous day's closing level and for a subsequent two-hour trading halt if the DJIA declined 400 points from its previous day's close. In addition, the original circuit breaker procedures allowed the markets to use abbreviated reopening procedures either to permit trading to reopen before the scheduled closing or to establish closing prices if the DJIA reached the 250-point trigger during the last hour, but before the last half-hour of trading, or if the DJIA reached the 400-point trigger during the last two hours, but before the last hour, of trading.

In approving the original circuit breakers proposed by the securities markets, the SEC noted that the circuit breakers were not an attempt to prevent markets from reaching new price levels, but an effort by the securities and futures markets to arrive at a coordinated means to address potentially destabilizing market volatility of the severity of the October 1987 market break.<sup>13</sup> While concurring in the rationale of the Brady Report and the Interim Report regarding the purpose of circuit breakers, the SEC also believed that circuit breakers would help promote stability in the equity and equity-related markets by providing for increased information flows and enhanced opportunity to assess information during times of extreme market movements. The SEC believed that circuit breakers would provide market participants with an opportunity to re-establish an equilibrium between buying and selling interest and ensure that market participants had a reasonable opportunity to become aware of and respond to significant price movements.

### C. Modifications to the Circuit Breakers in 1996 and 1997

By 1995, the SEC and the CFTC had become concerned that the markets' circuit breaker procedures needed to be adjusted to take into account changing market conditions since 1988, and the agencies began working with the markets in early 1996 to review the existing circuit breaker procedures. In July 1996, the SEC and the CFTC approved the first significant modifications to the circuit breakers, which included: (1) a 50% reduction in the length of the trading halts; and (2) elimination of the provisions allowing for abbreviated reopening procedures.<sup>14</sup>

<sup>13</sup> See Securities Exchange Act Release No. 26198 (October 19, 1988), 53 FR 41637 (October 24, 1998) (CBOE, NASD, NYSE, and AMEX).

<sup>14</sup> See Securities Exchange Act Release Nos. 37457 (July 19, 1996), 61 FR 39176 (NYSE); 37458 (July 19, 1996), 61 FR 39167 (AMEX); and 37459 (July 19, 1996), 61 FR 39176 (BSE, CBOE, CHX, and PHLX). See also Letter from Norman E. Mains, Senior Vice President, Chief Economist and Director of Research, CME, to Jean A. Webb, Secretary, CFTC, dated July 5, 1996.

In approving the 1996 amendments, the agencies also urged the markets to consider increasing the existing 250-point and 400-point circuit breaker trigger levels, noting that when the circuit breakers were adopted in 1988, the 250-point threshold represented a DJIA decline of 12% and the 400-point threshold represented a decline of 19%. By July 1996, the 250-point and 400-point triggers represented DJIA declines of 4.5% and 7%, respectively. Accordingly, the agencies encouraged the markets to increase the circuit breaker trigger levels to reflect their original design.<sup>15</sup>

Subsequently, in approving a six-month extension of the circuit breakers in October 1996, the agencies again strongly urged the markets to reach a consensus on the size of increases in the trigger levels required to ensure that cross-market trading halts would be imposed only during market declines of historic proportions.<sup>16</sup>

In response to the agencies' recommendations, the markets submitted proposals to increase the circuit breaker triggers to the levels of 350 and 550 points in the DJIA. Although the 350/550 trigger levels represented a substantial improvement over the existing 250/400 trigger levels, the SEC maintained that trigger levels should be further amended to reflect an extraordinary decline. Hence, the SEC and CFTC approved the revised limits and indicated that they would work with the markets to develop procedures for reevaluating the circuit breaker triggers on an annual basis.<sup>17</sup>

### III. Operation and Effect of Circuit Breakers on October 27

On October 27 and 28, 1997, the nation's securities markets experienced significant price volatility on record trading volume. On October 27, 1997, the DJIA declined 554.26 points (7.18%) to close at 7161.15; the decline represents the tenth largest percentage DJIA decline in the index since 1915. The October 27 DJIA decline activated cross-market circuit breaker trading halts for the first time since the securities and futures markets adopted circuit breaker procedures in 1988. Specifically, on

<sup>15</sup> Id.

<sup>16</sup> See Securities Exchange Act Release No. 37890 (October 29, 1996), 61 FR 56983 (AMEX, NYSE, and PHLX). The SEC approved the securities exchanges' rules for a temporary one-year program.

<sup>17</sup> See Securities Exchange Act Release No. 38221 (January 31, 1997), 62 FR 5872 (NYSE, AMEX, CBOE, CHX, BSE, and PHLX). See also Letter to Howard L. Kramer, Associate Director, Office of Market Supervision, Division of Market Regulation, SEC, from Stephen A. Sherrod, Chief, Financial Instruments Unit, CFTC, dated December 20, 1996; and Letters to Jean A. Webb, Secretary, CFTC, from Norman E. Mains, Senior Vice President, Chief Economist and Director of Research, CME, dated December 17, 1996; from Richard T. Pombonyo, Managing Director, New York Futures Exchange, Inc. ("NYFE"), dated December 16, 1996; and from Jeff C. Borchardt, Senior Vice President, Kansas City Board of Trade ("KCBT"), dated December 18, 1996.

October 27, the DJIA declined 350 points (4.54%) to trigger the first circuit breaker trading halt at 2:36 p.m. After trading resumed at 3:06 p.m., the DJIA declined rapidly to reach the 550-point circuit breaker at 3:30 p.m. Because the 550-point circuit breaker called for a one-hour trading halt, the circuit breaker closed the market for the remainder of the day, ending the trading session 30 minutes prior to the normal stock market close. On October 28, the DJIA initially declined 187.86 points (2.62%) by 10:06 a.m., before rallying to close up 337.17 points (4.71%) at 7498.32 on record share volumes of over a billion shares each on the NYSE and Nasdaq.

Subsequent to the triggering of the circuit breakers on October 27, the staff of the SEC and CFTC collected data to use in the Working Group report. The SEC collected data on the operation of the cross-market trading halts on October 27. That data and its analysis is contained in Appendix I. The CFTC reviewed data on the operation of the NYSE collar and sidecar rules from 1990 to the present. That data and its analysis is contained in Section VI of this report. From this data, discussions with market participants, and observations on the effect of cross-market trading halts, the staff of the Working Group was able to arrive at several conclusions regarding the operation of circuit breakers. These are presented below.

#### **A. The 30-Minute Trading Halt was Unnecessary**

As noted above, the U.S. markets were functioning relatively well on October 27, with no evidence of systemic stress. There was no dramatic reduction in market liquidity. Broker-dealers did not experience significant capital or cash flow difficulties, and there were no indications of systems backlogs or widespread panic selling. In addition, most firms experienced few delays or problems with order executions. Accordingly, most firms did not need to use the trading halt for systems checks, to assess market conditions or to respond to inquiries from institutional customers. Because none of the conditions justifying a cross-market halt was evident on October 27, the 30-minute circuit breaker halt was an unnecessary interruption to trading.

#### **B. No Clear "Magnet Effect" From the First Circuit Breaker**

Several factors mitigate against concluding that there was a magnet effect<sup>18</sup> from the first circuit breaker. First, the DJIA came within seven points of the 350-point trigger at 1:59 p.m., but prices stabilized and recovered approximately 70 points by 2:10 p.m. In addition, there is no clear pattern of an accelerating market decline from 2:10 p.m. to 2:36 p.m. Specifically, the largest one-minute percentage decline in the DJIA during this period occurred around 2:16 p.m. and the price decline abated for a few minutes shortly after 2:20 p.m. and again at 2:34 p.m. before the DJIA reached

<sup>18</sup> Commentators use the term "magnet effect" to describe the role circuit breakers may play in exacerbating a market decline. Specifically, the "magnet effect" refers to the idea that the approach of a circuit breaker may increase selling pressure during a market decline as market participants move to sell shares prior to a circuit breaker trading halt.

the 350-point threshold. Second, although the rate of the decline in S&P 500 stocks accelerated as the first circuit breaker approached, with S&P 500 stocks declining at a rate of .03% per minute between 1:03 p.m. and 2:35 p.m. (compared to .01% per minute between 9:30 a.m. and 1:03 p.m.), the increase in the rate of the decline is not as dramatic as the increase in the rate of the decline between 3:06 p.m. and 3:30 p.m., when S&P 500 stocks declined at a rate of .10% per minute. Third, there was no appreciable increase in trading volume on the NYSE in the period immediately prior to the first circuit breaker. Taken together, these factors suggest that there was no clear magnet effect from the first circuit breaker.

### C. The Market Reopenings at 3:06 p.m. Further Indicated the Unnecessary Nature of the First Halt

The market reopenings at 3:06 p.m. generally appeared to be orderly, with few significant "gaps" between stock prices before and after the halt. Stocks reopened more quickly following the conclusion of the first circuit breaker trading halt on October 27 than at the morning opening on the control day of October 23.<sup>19</sup> Specifically, 50% of all S&P 500 stocks traded on the NYSE had opened two minutes after the trading halt ended on October 27, 75% were open after four minutes, and 90% were open after seven minutes. Within 23 minutes after the conclusion of the trading halt, all of the S&P 500 stocks had reopened. On October 23, 50% of all S&P 500 stocks traded on the NYSE were open six minutes after the start of trading, 75% were open ten minutes after the start of trading, and 90% were open 14 minutes after the start of trading. The last stock opened 41 minutes after the start of trading on October 23.<sup>20</sup>

During the trading halt, most traders simply waited for trading to resume. Staff conversations with market participants found that there was little need for the participants to assess market conditions and no need to check credit lines. There was no huge influx of orders during the break. Consequently, the NYSE disseminated pre-opening indications in only a few stocks because most stocks had no sizable order imbalances prior to the 3:06 p.m. reopening.

<sup>19</sup> In order to assess the impact of circuit breakers on October 27, the SEC compared trading on October 27 to trading on a control day, October 23. The SEC selected October 23 as the control day because October 23 was relatively close in time to October 27 and because trading on October 23 displayed price trends similar to those of October 27, though of a lesser magnitude. The use of October 23 as the control day minimized changes in the characteristics of the sample (e.g., stock prices, trading activity, and volatility) that affect liquidity measures.

<sup>20</sup> On October 28, the morning opening (which also was the effective reopening after the second circuit breaker) was slower than both the morning opening on October 23 and the reopening on October 27 following the first circuit breaker trading halt. Specifically, on October 28, 50% of the S&P 500 stocks traded on the NYSE were open after 11 minutes, 75% were open after 18 minutes, and 90% were open after 26 minutes. All of the S&P 500 stocks were open after 55 minutes.

**D. The Second Circuit Breaker Appears to Have Had Some Magnet Effect**

During the period between the reopening of the markets at 3:06 p.m. and the triggering of the second circuit breaker at 3:30 p.m., the DJIA declined over 200 points.<sup>21</sup> The velocity of the price decline in S&P 500 stocks also increased significantly during that period, with S&P 500 stocks declining at a rate of .10% per minute (or 6% per hour) between 3:06 p.m. and 3:30 p.m., ten times more quickly than their decline at a rate of .01% per minute (or .6% per hour) between 9:30 a.m. and 1:03 p.m. The price decline during this interval also is more rapid than the decline between 1:03 p.m. and 2:35 p.m., when S&P 500 stocks declined at a rate of .03% per minute (or 1.8% per hour).<sup>22</sup>

The increase in quote spreads between 3:06 p.m. and 3:30 p.m. also suggests a possible magnet effect associated with the second circuit breaker. Between 3:06 p.m. and 3:30 p.m., mean relative spreads (the quoted dollar bid-ask spread divided by the spread mid-point) for S&P 500 stocks were approximately 46 basis points, a 50% increase over the mean relative spread of 30 basis points on October 23.<sup>23</sup>

Effective quote spreads (calculated by doubling the difference between the trade price and the midpoint of the bid-ask spread), which reflect the cost of trades executed inside the quoted spread, also increased throughout the day on October 27, but most significantly after the first circuit breaker. For S&P 500 stocks traded on the NYSE, the mean effective spread was 10.6 cents per share between 9:30 a.m. and 1:03 p.m., 12.9 cents per share between 1:03 p.m. and 2:35 p.m., and 18.1 cents per share between 3:06 p.m. and 3:30 p.m. Mean effective quote spreads for DJIA stocks also increased during these time periods, rising from 10.4 cents per share during the first period, to 14 cents per share during the second period, to 23.4 cents per share during the third period.<sup>24</sup>

<sup>21</sup> However, the DJIA did not accelerate in a clear pattern between 3:06 p.m. and 3:30 p.m. Specifically, the largest one-minute percentage declines between 3:06 p.m. and 3:30 p.m. occurred around 3:12 p.m. and 3:14 p.m. and again around 3:24 p.m. and 3:25 p.m., with the rate of the decline abating somewhat in the intervening period and again immediately prior to 3:30 p.m. The absence of a clear pattern in the price decline during this period is not entirely consistent with a magnet effect for the second circuit breaker.

<sup>22</sup> See Appendix I for a detailed discussion of trading on October 27.

<sup>23</sup> Id.

<sup>24</sup> Spreads typically exhibit an intra-day pattern characterized by wider spreads at the beginning and the end of the day and narrower spreads in the middle of the day. Spreads on the control day, October 23, follow this pattern. Specifically, on October 23, the mean effective quote spread for S&P 500 stocks was 11.5 cents per share from 9:30 a.m. to 1:03 p.m., 8.9 cents per share from 1:03 p.m. to 2:35 p.m., and 9.7 cents per share from 3:06 p.m. to 3:30 p.m. The

Finally, the ratio of bid depth to ask depth exhibited a similar pattern. The median bid depth to ask depth fell somewhat from the morning session to the first pre-halt period on October 27, then dropped substantially in the post halt period.<sup>25</sup>

Although the sharp increase in the rate of the S&P 500 stocks' decline between 3:06 p.m. and 3:30 p.m. is consistent with a magnet effect for the second circuit breaker, it is not possible to state definitively, on the basis of a single event, that the second circuit breaker produced a magnet effect. Given the increase in volatility prevailing at that time, it is impossible to place responsibility for the swiftness of the decline between 3:06 p.m. and 3:30 p.m. solely on the second circuit breaker.

**E. The 7% DJIA Decline on October 27 Should Not Have Closed the Markets Early**

Although quote spreads widened throughout the day on October 27, other measures of market quality suggest that, overall, the markets were functioning in an orderly manner with sufficient liquidity on October 27. Accordingly, the 7% DJIA decline on October 27 should not have closed the markets early.

For example, the number of transactions and shares traded at the bid before a downtick (i.e., a change in price downward) reflect the amount of liquidity at a bid quote and the markets' ability to absorb selling pressure.

On October 27, data in both S&P 500 stocks and DJIA stocks reveal a fair amount of liquidity at each quote and suggest that the markets were able to function in an orderly manner. The data in Appendix I do not indicate that there was chaotic pricing or destabilizing price moves as the market declined in the late afternoon of October 27. Although certain measures, such as the ratio of bid depth<sup>26</sup> to ask depth,<sup>27</sup> quoted spreads, and acceleration of price declines, show a deterioration after the first circuit breaker, they clearly do not indicate an impending systemic breakdown or failure to maintain an orderly market. Indeed, the decline in market measures may have been due not only to the increase in volatility, but also in part to the uncertainty caused by the prospect of a premature close of trading from the approach of the second circuit breaker.

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mean effective quote spread for DJIA shares during these three periods was 9.8 cents per share, 8.3 cents per share, and 9.2 cents per share. See Appendix I.

<sup>25</sup> See Appendix I.

<sup>26</sup> Bid depth is the number of shares available for purchase at the bid quote.

<sup>27</sup> Ask depth is the number of shares available for sale at the offer quote.

## **F. An Early Close Could Have Resulted in Derivative-Related Losses**

Because October 27 was not an expiration day for most exchange-traded derivatives, most firms did not experience significant losses due to derivative positions that they could not properly hedge, adjust or unwind because of the early market closure at 3:30 p.m. However, firms could have experienced severe derivative-related losses if the circuit breaker had closed the market early on an expiration Friday or on a quarter-end when a significant number of exchange-traded and over-the-counter options expire.

## **IV. Regulatory Initiatives Since October 27, 1997**

Immediately following the events of October 27, 1997, the markets and regulators began considering further revisions to the circuit breaker procedures. The SEC hosted discussions with market officials and the CFTC staff on November 21, 1997, that considered whether the trigger levels for circuit breaker halts should be increased substantially and what measures could be taken to permit normal market closings if the DJIA reaches a circuit breaker threshold late in the trading session. Participants at the meeting generally supported initiatives to modify the circuit breaker thresholds to percentage DJIA declines of 10% and 20% and to reset the trigger levels at least annually. The participants agreed to give further consideration to possible modifications designed to permit a normal closing if the DJIA triggers the circuit breakers late in the trading session.

As an interim measure, the markets adopted modest changes designed to reduce the likelihood that the current 350/550-point trigger levels would preclude normal market closes. Specifically, the SEC and CFTC approved changes effective through April 30, 1998, which provided that the markets would not implement the 30-minute circuit breaker halt if the DJIA reached the 350-point trigger on or after 3:00 p.m., and would halt trading for only 30 minutes (rather than one hour) if the DJIA reached the 550-point trigger on or after 2:00 p.m. but before 3:00 p.m. If the DJIA reached the 550-point threshold on or after 3:00 p.m., the markets would continue to use their existing one-hour halt, which would end the trading session early.<sup>28</sup>

In ongoing discussions with the securities and stock index futures markets aimed at achieving a consensus on expanded circuit breaker levels, the SEC has indicated its firm belief that the 10% and 20% circuit breakers should not close the markets prematurely during the trading day. In addition, at U.S. Senate hearing on January 29, 1998, the Working Group agencies and most senators indicated a strong preference for the markets to remain open whenever possible and a disinclination for circuit breakers to close the markets for the day.

<sup>28</sup> See Securities Exchange Act Release No. 39582 (January 26, 1998), 63 FR 5408 (February 2, 1998) (order approving File Nos. SR-Amex-98-03; SR-BSE-98-01; SR-CHX-98-02; and SR-PHLX-98-02).

In response to Congress's and the agencies' concerns, the securities and futures exchanges submitted proposals to revise their circuit breaker procedures. The SEC and CFTC approved the revised procedures and they became effective on April 15, 1998.<sup>29</sup> The circuit breakers adopted by the securities exchanges establish trading halts following one-day DJIA declines of 10%, 20%, and 30%. The NYSE will calculate the trigger levels at the beginning of each calendar quarter, using the average closing value of the DJIA for the previous month to establish specific point values for the quarter. Under the securities exchanges' revised circuit breaker procedures, trading will halt for one hour if the DJIA declines 10% prior to 2:00 p.m., and for one-half hour if the DJIA declines 10% between 2:00 p.m. and 2:30 p.m. If the DJIA declines by 10% at or after 2:30 p.m., trading will not halt at the 10% level. If the DJIA declines 20% prior to 1:00 p.m., trading will halt for two hours; trading will halt for one hour if the DJIA declines 20% between 1:00 p.m. and 2:00 p.m., and trading will halt for the remainder of the day if a 20% decline occurs at or after 2:00 p.m. If the DJIA declines 30% at any time, trading will halt for the remainder of the day.

The futures exchanges trading stock index futures have adopted substantively identical circuit breaker procedures. However, the CME's revised daily price limit for S&P 500 futures will permit a maximum daily downward price movement of 20%, while the securities exchanges' circuit breaker procedures will permit trading in the range of 20% to 30% down prior to 2:00 p.m. In addition, the CME's variation margin settlement values will be based on the 20% limit price, rather than on a price derived from the closing index value. While noting the disparities in the markets' procedures and with certain regulators recommending that the CME reconsider its 20% cap on variation margin, the regulators, in approving the revised procedures, concluded that the markets' rules are substantively identical for purposes of the effectiveness of the circuit breaker rules.<sup>30</sup>

In approving the securities markets' revised circuit breaker procedures, the SEC noted that the amended trigger levels reflect the type of severe one-day market declines that circuit breakers were intended to address. The SEC concluded that the revised trigger levels are consistent with the intended design and function of circuit breakers, and that they should not cause premature or unnecessary trading halts. In addition, the SEC found that the revised circuit breaker procedures sufficiently address the need for the markets to remain open or to reopen during the trading day to permit an orderly market close.<sup>31</sup>

<sup>29</sup> See April 1998 Approval Order, *supra* note 3; and Letters to Jean A. Webb, Secretary, CFTC, from Richard J. McDonald, Vice President, Research, CME, dated March 9, 1998; from Paul J. Draths, Vice President and Secretary, CBOT, dated March 13, 1998; from Jean Butler Furlan, Chief Economist, NYFE, dated March 12, 1998; and from Jeff C. Borchardt, Senior Vice President, KCBT, dated March 10, 1998.

<sup>30</sup> See April 1998 Approval Order, *supra* note 3.

<sup>31</sup> *Id.*

## V. Conclusion on Cross-Market Trading Halts

The nation's securities and futures markets should operate without unnecessary restraints. Accordingly, mechanisms like circuit breakers, which impact the natural functioning of markets, should be imposed only in the most extreme circumstances, when an abrupt market decline of historic proportions raises concerns that the exhaustion of market liquidity might result in uncoordinated, ad hoc market closures. In addition, circuit breaker procedures should be designed to halt trading in the U.S. financial markets only for the limited period necessary for regulators and market participants to assess market conditions and potential systemic stress.

The 4.5% and 7.18% market declines that triggered the circuit breaker trading halts on October 27 do not constitute the type of historic decline that circuit breakers were meant to address. Moreover, there was little evidence on October 27 of the types of systemic stress or exhaustion of market liquidity that would have justified cross-market trading halts. Broker-dealers did not experience significant capital or cash flow difficulties, and there were no indications of widespread panic selling. Although quote spreads widened during the afternoon of October 27, other measures of market quality indicate that the markets were functioning in an orderly manner and with sufficient liquidity and operational capacity. Because the circuit breakers were activated prematurely on October 27, when there were no signs of systemic stress or a potential breakdown of market mechanisms, the events of October 27 offer little evidence of how circuit breaker procedures might operate during a time of severe market stress. While the market decline on October 27 was not of a magnitude to offer a true test of how circuit breakers might function during severe declines, our review of trading on October 27 suggest that the following changes may enhance the effectiveness of circuit breaker procedures.

### A. Circuit Breaker Trigger Levels Needed to Be Raised

The events of October 27 clearly showed that the trigger points for circuit breaker halts needed to be raised significantly to take into account current market levels and the increased capacity of the U.S. markets to handle volume and price corrections of the type that occurred on October 27. On October 27, the 350-point trigger level represented a DJIA decline of only 4.54% and there was no evidence of the types of systemic stress that would have justified cross-market trading halts. The trigger levels for circuit breakers needed to be raised and maintained at levels that would minimize the likelihood that regulatory halts will needlessly interfere with the ability of investors to trade. This finding is consistent with the recent rule changes implemented by the securities and futures markets to increase the trigger levels to represent DJIA declines of 10%, 20%, and 30%, and to reset the trigger levels on a quarterly basis.

## B. Circuit Breaker Procedures Should Permit an Orderly Market Close Each Day

The trading dynamics on October 27 illustrate the need for circuit breakers to permit trading to resume at least for orderly market closings whenever feasible. The early market closing on October 27 was unnecessary, and investor concerns that the second circuit breaker would close the market may have accelerated the price declines in the last 25 minutes of trading on October 27. Moreover, normal business practices assume that trades at the close will be possible for managing market and credit risks and that these prices will be available for valuing portfolios. Some participants in the derivatives markets could be vulnerable to significant losses if an early market close leaves them unable to complete certain transactions and strategies (e.g., the unwinding of an arbitrage position). A normal close of the U.S. markets also lessens any disruptive impact on foreign markets. For these reasons, the securities and futures markets have revised their circuit breaker procedures to permit a conventional market close whenever possible.<sup>32</sup>

## C. Circuit Breaker Procedures Must be Reviewed Periodically

The recent changes to the circuit breaker procedures of the securities and futures markets reflect the need to revise circuit breakers periodically to ensure that trigger levels are maintained at levels that provide for cross-market trading halts only during market declines of historic proportions. In addition, markets and regulators should re-examine circuit breakers to make certain that they reflect technological advances that may enhance the capacities of financial markets and allow them to handle greater trading volumes while continuing to function in an orderly manner. As markets continue to grow and change, the regulatory agencies and the self-regulatory organizations must monitor and revise circuit breakers and other protective measures to ensure that they continue to function as intended and to achieve their goals with minimal market disruption.

## VI. NYSE Rule 80A

### A. Overview

#### 1. NYSE Rule 80A(c) Collar Provision

NYSE Rule 80A(c), known as the "collar" provision, in its current form limits stock index arbitrage orders whenever the DJIA increases or decreases by 50 points from its previous close. Specifically, when the DJIA declines by 50 points or more from the previous trading day's closing value, all index arbitrage orders to sell must be entered with

<sup>32</sup> We recognize that there might be extremely rare circumstances where the magnitude of a market decline is so overwhelming that the markets, as a practical matter, cannot continue to function. In this circumstance, the markets might effect a de facto halt for the day if a circuit breaker did not cause a close for the remainder of the day. For this reason, the securities markets have determined to close for the day if the DJIA declines 30% during the course of a trading day.

the instruction "sell plus." Conversely, when the DJIA advances by 50 points or more from its previous trading day's closing value, all index arbitrage orders to buy component stocks of the S&P 500 must be entered with the instruction "buy minus." The rule defines index arbitrage as "an arbitrage trading strategy involving the purchase or sale of a 'basket' or group of stocks in conjunction with the purchase or sale, or intended purchase or sale, of one or more cash-settled options or futures contracts on index stock groups, or options on any such futures contracts, in an attempt to profit from the price difference between the 'basket' or group of stocks and the derivative products."

Although Rule 80A(c) originally was intended to slow index arbitrage trading only on days of relatively large price movements, its trigger level has never been adjusted to reflect the threefold increase in the DJIA since 1988. Consequently, Rule 80A(c) is now triggered on average more than once per day.

## 2. NYSE Rule 80A(a) Sidecar Provision

In October 1988 the NYSE also implemented NYSE Rule 80A(a), known as the "sidecar" procedure. The sidecar procedure diverts program trading orders in S&P 500 stocks routed through the NYSE's Designated Order Turnaround ("DOT") system into a separate execution file for five minutes when the CME S&P 500 futures decline by 12 points. When Rule 80A(a) was implemented in 1988, the CME had an opening price limit of 5 points and an intra-day limit of 12 points.

Although Rule 80A(a) originally was intended to divert and temporarily delay program trading on days of relatively large price movements, its trigger level has never been adjusted. Although the CME has increased the first intra-day price limit from 12 points to 15 points as index values have increased, the NYSE has not modified Rule 80A(a). Consequently, Rule 80A(a) is now triggered more frequently as well.

### B. Background

Until 1988, no circuit breakers or price limits applied in U.S. equity markets. In response to the stock market volatility of October 1987, the NYSE on January 14, 1988, implemented a voluntary restriction against index arbitrage whereby member firms willingly refrained from executing index arbitrage transactions when the DJIA moved by 75 points.<sup>33</sup>

<sup>33</sup> Specifically, the NYSE asked its members to voluntarily refrain from using the NYSE's automated systems for index arbitrage on days when the DJIA moved 75 points or more. The NYSE changed the trigger to 50 DJIA points on February 4, 1988, in conjunction with its decision to file its initial Rule 80A proposal with the SEC. See Securities Exchange Act Release No. 25599 (April 19, 1988), 53 FR 13371 (April 22, 1988) (order approving File No. SR-NYSE-88-02).

On February 25, 1988, the NYSE submitted a proposed rule change to the SEC which formalized the voluntary restriction.<sup>34</sup>

In its initial filing, the NYSE proposed to prohibit members from entering into any NYSE automated order routing or trading system (such as the DOT system) any order or other trading interest involving index arbitrage once the DJIA reached a level 50 or more points above or below the previous day's close. When the NYSE filed its proposal with the SEC, the 50-point trigger represented a DJIA movement of approximately 2.5%. The NYSE's proposal contained provisions allowing the NYSE to adjust the trigger to maintain the 2.5% relationship.

The SEC approved NYSE Rule 80A, then known as the "DOT collar," in April 1988 on a six-month pilot basis. In approving the pilot program, the SEC stated that, in light of the need to increase investor confidence in the stability of the markets, it was appropriate for the self-regulatory organizations to implement measures intended to ameliorate extreme stock price volatility.

On February 9, 1990, the NYSE filed amendments with the SEC to modify the collar rule to require that all index arbitrage orders in component stocks of the S&P 500 be effected on stabilizing ticks when the DJIA moves 50 points or more from the previous day's closing value. The NYSE's proposal indicated that "program trading may create excess volatility" and that there was a need to "minimize excess market volatility and promote stabilization of the market" through provisions designed to "isolate one of the potential causes of market volatility, program trading."

On July 30, 1990, the SEC approved the rule amendments on a one-year pilot basis and Rule 80A(c) was put into effect.<sup>35</sup> In approving the pilot program, the SEC stated that it was concerned that the trigger level may have been too low. At that time, 50 points represented a 1.71% change in the DJIA.

On May 31, 1991, the NYSE provided the SEC with a report on the operation of Rule 80A(c), the "Rule 80A Arbitrage Tick Test." It stated that the rule had two purposes: "to prevent large price changes from gathering momentum by discouraging the submission of index arbitrage orders" and "to dampen large stock price swings." The NYSE concluded that Rule 80A(c) "dampened volatility," but did not eliminate it; slowed the execution of index arbitrage orders by increasing the execution risk; did not result in a "significant increase in mispricing" on "down days," but "increased significantly" the

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<sup>34</sup> See Securities Exchange Act Release No. 34-25400 (February 26, 1988), 53 FR 7273 (March 7, 1988) (notice of filing of File No. SR-NYSE-88-02).

<sup>35</sup> See Securities Exchange Act Release No. 28282 (July 30, 1990), 55 FR 31468 (August 2, 1990) (order approving File Nos. SR-NYSE-90-05 and SR-NYSE-90-11).

mispricing on "up days;"<sup>36</sup> appeared to curb price momentum during price declines, but failed to restrain momentum on upward moves; did not produce a magnet effect, although short-term volatility increased as the trigger point was approached; did not delink the futures and cash markets; and did not widen quotes or deter price continuity and depth.

Because Rule 80A(c) had been approved on a one-year pilot basis expiring July 31, 1991, the NYSE filed for permanent approval of Rule 80A(c) on June 10, 1991. The NYSE's proposal indicated that the NYSE thought that the rule had "been helpful in promoting market stability by minimizing excess volatility" and that "the 50 point level appears to be high enough that it is not triggered too frequently, yet low enough to act as a meaningful check on excess market volatility which might be associated with index arbitrage activity.... Since January 1, 1991, the rule has been applied to date eight times over five months. This latter pattern (about twice a month) appears to be representative of a more 'normal' instance of the rule's invocation."<sup>37</sup>

On July 19, 1991, the NYSE filed for accelerated approval of a rule to extend the pilot program until the earlier of November 1, 1991, or the date on which the SEC permanently approved Rule 80A.<sup>38</sup> Subsequently, the SEC approved the index arbitrage collar provisions on a permanent basis on October 24, 1991,<sup>39</sup> citing the need to "address excessive market volatility." In approving the index arbitrage collar provisions, the SEC stated again that the 50-point level was "high enough that it was not triggered too frequently" and the "frequency of triggerings ... about twice a month ... [did] not seem unreasonably intrusive to normal marketplace operations."

### C. Recent Experience with NYSE Rules 80A(a) and (c)

As the levels of equity indexes have increased over the past few years, NYSE Rule 80A has generated complaints. Some market participants argue that the absolute point limits have become too restrictive in relation to the escalation of the levels of stock indexes. These absolute point limits now represent a much smaller percentage move than they did when they were established. The following table shows over time the ranges of percentage moves in index value represented by absolute 50 point changes in the DJIA and 12 point

<sup>36</sup> The increase in mispricing on up days solely was attributed to January 17, 1991, when the DJIA rose 114 points during the Persian Gulf conflict.

<sup>37</sup> See Securities Exchange Act Release No. 29308 (June 14, 1991), 56 FR 28428 (June 20, 1991) (notice of filing of File No. SR-NYSE-91-21).

<sup>38</sup> See Securities Exchange Act Release No. 29498 (July 30, 1991), 56 FR 37377 (August 6, 1991) (order approving File No. SR-NYSE-91-24).

<sup>39</sup> See Securities Exchange Act Release No. 29854 (October 24, 1991), 56 FR 55963 (October 30, 1991) (order approving File No. SR-NYSE-91-21).

changes in CME S&P 500 futures, as well as the point moves corresponding to the 2.50% and 5.00% original standards for Rules 80A(c) and (a), respectively.

YEAR	RULE 80A(c) COLLAR				RULE 80A(a) SIDECAR			
	50 POINT MOVE		2.50 PERCENT		12 POINT MOVE		5.00 PERCENT	
1988	2.29%	2.70%	46	55	4.20%	5.01%	12	14
1989	1.79%	2.35%	53	70	3.29%	4.35%	14	18
1990	1.66%	2.12%	59	75	3.21%	4.06%	15	19
1991	1.57%	2.03%	61	80	2.86%	3.87%	15	21
1992	1.46%	1.62%	77	86	2.70%	3.08%	20	22
1993	1.32%	1.55%	81	95	2.54%	2.81%	21	24
1994	1.25%	1.41%	89	100	2.48%	2.76%	22	24
1995	0.95%	1.31%	95	131	1.92%	2.61%	23	31
1996	0.76%	1.00%	125	165	1.56%	2.01%	30	38
1997	0.60%	0.79%	159	207	1.21%	1.64%	37	50
1998 <sup>40</sup>	0.60%	0.67%	186	208	1.16%	1.31%	46	52

As is evident from the table, when the NYSE Rule 80A(c) collar was proposed in 1988, a 50-point move in the DJIA would have ranged from about 2.29% to 2.70%, using the high and low values for the year. Now it is less than one percent. If the original 2.50% standard were implemented, Rule 80A(c) would be triggered at levels ranging from 186 to 208 points. When the NYSE Rule 80A(a) sidecar was proposed in 1988, a 12 point move in the S&P 500 futures contract was 4.20% to 5.01%. Now it is a little more than one percent. If the original 5.00% level had been adhered to, Rule 80A(a) would be in effect at declines of 46 to 52 points in the S&P 500.

Rule 80A(c) has been activated with increasing frequency, particularly in 1996 and 1997, as shown in the following table of the annual history of Rule 80A(c) activation. In the earlier years, the collar was activated about once or twice a month. As the percentage change represented by a 50 point move declined markedly, activations increased to an average of more than once per trading session.

<sup>40</sup> Data through February 17, 1998.

YEAR	TOTAL 80 A(c) ACTIVATIONS	UPSIDE COLLARS	DOWNSIDE COLLARS
1990 <sup>41</sup>	23	7	16
1991	20	12	8
1992	16	8	8
1993	9	4	5
1994	30	9	21
1995	29	14	15
1996	119	56	63
1997	304	152	152
TOTALS	550	262	288

#### D. Studies of Rule 80A(c)

Four econometric studies that examined the impact of Rule 80A(c) on the stock and futures markets have failed to establish substantial empirical evidence justifying continuation of the rule in its current form.<sup>42</sup> The studies by Overdahl and McMillan and Goldstein *et al.*, which use the most extensive data available, find only weak to moderate effects of Rule 80A(c) on price volatility. Among other things, Overdahl and McMillan conclude that: (1) Rule 80A(c) significantly curtails index arbitrage, reducing volume by as much as two-thirds; (2) the cash and futures markets nonetheless remain linked, although the price adjustment process between the two markets takes longer when Rule 80A(c) is in effect than when index arbitrage is unconstrained; and (3) trading costs, as measured primarily by bid-ask spreads for S&P 500 stocks, are not tangibly affected under Rule 80A(c), although cash index volatility (which they view as an underlying element of trading cost) declines after a triggering of the rule.

<sup>41</sup> NYSE Rule 80A(c) became effective in late July 1990.

<sup>42</sup> The studies are: M.A. Goldstein, J.E. Evans, & J.M. Mahoney, *Circuit Breakers, Volatility, and the U.S. Equity Markets: Evidence from NYSE Rule 80A* (January 1998) (unpublished working paper); G.J. Kuserk, P.R. Locke, and C.L. Sayers, *The Effects of Amendments to Rule 80A on Liquidity, Volatility, and Price Efficiency in the S&P 500 Futures*, 12 J. FUTURES MARKETS 383 (1992); J. Overdahl & H. McMillan, *Another Day, Another Collar: An Evaluation of the Effects of NYSE Rule 80A on Trading Costs and Intermarket Arbitrage*, Economics Working Paper 97-8 (Office of the Comptroller of the Currency, May 1997); and G.J. Santoni & T. Liu, *Circuit Breakers and Stock Market Volatility*, 13 J. FUTURES MARKETS 261 (1993).

Goldstein *et al.* found evidence that volatility was lower when Rule 80A(c) was in effect than when it was not in effect, and, in contrast to Overdahl and McMillan, found that Rule 80A(c)'s impact on lowering volatility was greater in rising markets than in falling markets. Goldstein *et al.* also found that volatility was lower than it would have been if Rule 80A(c) did not exist. Although their findings were statistically significant, the effects observed were small in magnitude.

The earlier studies, by Santoni and Liu and Kuserk *et al.*, suffer from problems associated with their small sample sizes. Santoni and Liu reached mixed conclusions but found, overall, that volatility on 50-point days was higher since the adoption of Rule 80A(c). Kuserk *et al.* concluded that Rule 80A(c) does not unduly constrain index arbitrage and slightly increases price volatility, although the authors suspect that their model overstates this effect.

Taken together, the studies do not offer strong justification for maintaining the 50-point collar employed by Rule 80A(c).

#### **E. Conclusion Regarding NYSE Rules 80A(a) and 80A(c)**

The Working Group staff believes that the data presented in Section VI.C demonstrate that Rules 80A(a) and 80A(c) have become outdated and no longer reflect their original purpose. Consequently, the NYSE should at the least significantly increase Rule 80A's trigger levels to reflect the increase in the equity prices since 1988. Indeed, there are reasons for eliminating Rule 80A entirely. The markets have changed significantly since 1988. For example, the NYSE has substantially increased its systems capacity so that it can handle five times the trading volumes experienced in October 1987. Moreover, the variety of derivative products have grown, as have the array of derivative related equity trading strategies. It may make little sense to single out index arbitrage, which ensures that markets are aligned economically, from all other types of derivative trading for restrictive treatment. Indeed, Rule 80A may tend artificially to disconnect the securities and futures markets and impose unnecessary costs on market participants. The NYSE should address this matter promptly. The members of the Working Group submitted a letter to the NYSE, dated May 7, 1998, that addressed the need for further revisions to these rules, a copy of which is provided as Appendix II.