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The Flash Crash Aftermath

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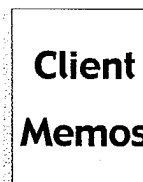
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SECURITIES MARKET

The Flash Crash Aftermath: Responses to the Trading Events of May 6, 2010

The trading events of May 6th have resulted in immediate attention from the regulators and securities markets. The SEC and CFTC already have issued their preliminary findings on the flash crash and taken some immediate actions. Additional responses from the regulators and securities markets are underway.

by **Robert L.D. Colby, David L. Portilla,
and Christopher Robertson**

On the afternoon of May 6, 2010, securities regulators, lawyers, and compliance professionals were discussing equity market issues at a conference on the banks of the Potomac River outside of Washington, D.C. Around 2:50 in the afternoon, instead of vigorously discussing the latest market structure regulatory proposals, the panelists and audience began frantically thumbing their BlackBerries:

The Dow Jones Industrial Average had fallen an unprecedented 573.27 points, or 5.49 percent, in the five minutes between 2:42 p.m. and 2:47 p.m.¹

Nearly as swiftly, a clamor arose among the press, Congress, and regulators to pinpoint the

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causes of what became known as the “flash crash” and to prevent its reoccurrence.

This article discusses the preliminary findings on the nature of the flash crash, the immediate actions that were taken by the regulators and the further proposals by both regulators and industry participants to address the problems revealed by the flash crash.

Background

On May 6, the equity markets had been trending down throughout the morning and afternoon, with the Dow Jones Industrial Average falling 1.5 percent from the opening bell to 2:00 p.m.² U.S. investors were concerned about the Greek debt crisis and the response of the European stock markets.³ The Chicago Board Options Exchange Volatility Index rose sharply from the opening bell onward, revealing the uncertainty felt by investors about the state of the global markets that day.⁴

Shortly after 2:30 p.m. the market decline accelerated, and by 2:42 p.m. the Dow Industrial Index had lost 3.9 percent of its value.⁵ At that point, stocks began the dramatic plunge that has come to be known as the “flash crash.” At the bottom, the Dow reached a 9.16 percent decline from its opening level.⁶ If the Dow was not calculated using prices of stocks on the New York Stock Exchange (NYSE), the decline could have been even steeper, as NYSE prices did not fall as steeply due to the NYSE’s use of “liquidity replenishment points,” which is discussed below. The market then rapidly reversed course, gaining 543 points over the next minute and a half. By 3:00 p.m., the Dow was down just 4.26 percent on the day, and it closed down just 3.20 percent.⁷ Other major indexes, including the S&P 500 and the NASDAQ 100, experienced similar trading patterns.⁸

Although the Dow's movements illustrate that May 6 was an anomalous trading day, they do not paint the whole picture. Not all of the stocks that compose the Dow, for instance, experienced the same fall and subsequent rise, although all 30 Dow components reached their intraday lows between 2:45 p.m. and 2:48 p.m.⁹ The Proctor and Gamble Company, which suffered the largest percentage drop of any Dow component, was down 36.14 percent at its lowest point.¹⁰ 3M, Hewlett-Packard, and General Electric, each temporarily lost more than 10 percent of their value.¹¹ Other securities faced even more dramatic price movements. Approximately 200 securities briefly appeared to lose almost all of their value as trades took place at \$0.05 a share or less.¹²

A disproportionate number of the securities that lost substantially all of their value were Exchange Traded Funds (ETFs). Indeed, of the U.S.-listed securities that lost 60 percent or more of their value relative to their 2:40 p.m. price, 70 percent were equity ETFs.¹³

The futures markets also were rattled. Notably, the E-Mini S&P 500 futures contract fell by 5 percent between 2:40 p.m. and 2:45 p.m.¹⁴ At that point, the "Stop-Logic" feature of the Chicago Mercantile Exchange's Globex electronic trading platform was triggered.¹⁵ This feature institutes a five-second trading pause.¹⁶ This five-second pause appears to have bought enough time for liquidity to improve for the futures contract, as no larger price cascade occurred and E-Mini recovered soon thereafter.¹⁷ As discussed more fully below, the E-Mini's decline led, and may have triggered, the equity market flash crash.¹⁸

The SEC/CFTC Joint Report

The Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC) were quick to respond to this event. On May 18, 2010, they published a 151-page joint report of preliminary findings.

The joint report found no evidence that computer hacking, a terrorist attack, or a "fat finger" trading error was the cause of the trading problems on May 6.¹⁹ Many market participants believed that a trader entered a large, erroneous order to sell E-Mini contracts. However, the joint report states that the safeguards in the futures trading market should have prevented a fat-finger E-Mini trade.²⁰ The joint report discusses various potential reasons that could have been causes of the flash crash.

Futures and Cash Market Linkages

The E-Mini S&P 500 future accounted for 78.2 percent of the total volume of trading in the

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12 most actively traded broad-based stock index futures contracts on May 6,²¹ and it accounts for more than 80 percent of the notional value of stock index futures open interest on U.S. exchanges.²² As a result, the E-Mini gained the attention of the SEC and CFTC in the aftermath of the flash crash. May 6 was a busy trading day even before the crash, and volume on the E-Mini S&P 500 future was about 2.6 times greater than normal during the day.²³ However, during the 30-minute period from 2:30 p.m. to 3:00 p.m., volume spiked to about 10 times the daily average.²⁴ At the same time, liquidity was drying up in the market, causing the bid/ask spread for these instruments to widen dramatically.²⁵

The spike in trading volumes coincided with a withdrawal of liquidity.

The E-Mini S&P 500 futures trade on the Globex electronic limit order market, which does not require any trader to provide continuous liquidity. The joint report concluded that “The decline in the participation of liquidity providers in executed transactions can be interpreted as a partial withdrawal of [such liquidity providers] during a period of significant price movement.”²⁶ For purposes of its inquiry, the CFTC classified liquidity providers as accounts that were both one of the 10 largest long gross volume accounts and 10 largest short gross volume accounts and that had a net position change of no more than 150 contracts during the time period 2:30 p.m. to 2:45 p.m. Six accounts qualified as liquidity providers, while 4,573 accounts were defined as liquidity takers.²⁷ The liquidity providers participated in 50 percent of all transaction sides from 2:30 p.m. and 2:34 p.m. Between 2:35 p.m. and 2:45 p.m., that number fell to 46 percent, and it further declined to 41 percent by 3:00 p.m.²⁸

Thus, the spike in trading volumes coincided with a withdrawal of liquidity. To make matters worse, the heightened trading volume consisted

of predominantly sell orders,²⁹ with one of the top ten trading accounts only entering sell orders. That account, which was identified by Reuters as the brokerage and mutual-fund firm Waddell & Reed, accounted for about 9 percent of the volume in the E-Mini futures during the critical period.³⁰ CFTC Chairman Gary Gensler has said that this trading represented a “bona fide hedging strategy,” as opposed to a trading error.³¹ The combination of high trading volume and a lack of liquidity likely caused sell orders to be executed deep in the already thin buy limit order book, thereby accelerating the futures’ fall.³²

About 86 percent of all U.S.-listed securities experienced a decline of less than 10 percent away from their 2:40 p.m. price.³³ These declines tended to mirror the drop in the E-Mini S&P 500 future. The joint report theorizes that traders sold securities in response to the downward movement in the futures market.³⁴ The futures market was viewed as the price leader, and the underlying securities moved to reflect information contained in the future price and associated hedging.³⁵ Thus, an exaggerated fall in the future caused by a temporary lack of liquidity could cause a corresponding overreaction in the equities markets.

Withdrawal of Liquidity in the Equity Markets

The theory that the equity markets followed an abnormally large decline in the futures markets may explain why many stocks rapidly fell by about 5 percent after 2:40 p.m. on May 6. However, as noted above, many stocks declined by amounts much greater than 5 percent.

The much larger declines of 14 percent of all U.S.-listed equities, which fell more than 10 percent from their 2:40 p.m. price, may be explained by momentary, near-total gaps in buy liquidity with respect to those particular stocks.³⁶ A key question for regulators as they consider actions in response to the flash crash is the appropriate response to these momentary gaps in buy liquidity.

Traditionally, specialists or market makers were required by rules of their exchanges to quote continuous two-sided quotes in the securities in which they made markets. These obligations have been reduced in recent years as exchanges have sought to attract new sources of market making liquidity, and quotes were not necessarily required to be close to the market. If these market makers functionally withdrew from the market on May 6, the resulting lack of liquidity may have contributed to the market's plunge.³⁷

Moreover, in today's market, high frequency trading firms provide much of the market's liquidity.³⁸ Many of these institutions are not registered market makers and thus do not have any obligation to remain in the market when the market behaves abnormally, even if liquidity is desperately needed. The extent to which market makers failed to maintain continuous quotes at fair market prices, and the extent to which high frequency traders withdrew from the market was not detailed with any precision in the joint report. The joint report only went so far as to say that "anecdotal evidence . . . indicates that at least some large electronic liquidity providers and other liquidity providers did withdraw from the market during this time."³⁹

In today's market, high frequency trading firms provide much of the market's liquidity.

On May 17, the *New York Times* reported that some high frequency traders shut down on the afternoon of the crash, worried that they would be left holding stocks that they did not want as a result of trade cancellations.⁴⁰ The same report, however, notes that other high frequency trading firms had one of their most successful trading days ever.⁴¹

If buy liquidity at reasonable prices was lacking, then an abundance of stop-loss market orders

could wreak havoc on the markets. Under this theory, once the price of stocks fell below a certain point, stop-loss thresholds would be triggered. These sales pushed the stock price lower, thereby triggering more stop-loss orders with lower price thresholds. As the process cascaded, sell orders were automatically executed against buy orders that were deeper and deeper in the limit order books. Eventually, the only outstanding offers to buy or sell were at absurdly low prices.⁴²

Lack of a Uniform, Market-Wide Response

Some have argued that a feature of the NYSE that slows trading under certain circumstances may have contributed to the aberrant trading on May 6, although it is not clear whether this feature mitigated or contributed to the flash crash on the whole.⁴³ On the NYSE, once a particular stock experiences specified price moves, the market for that stock is converted from an electronic to a manual one. This price mechanism on the NYSE is known as Liquidity Replenishment Points (LRPs). LRPs are intended to allow human traders to create a market for the security and thereby prevent the sort of irrational prices that can occur with automated quotations and market orders that operate continuously without manual adjustment for abnormal circumstances. Between 2:30 p.m. and 3:00 p.m., falling share prices triggered LRPs in over 1,000 separate securities. Fewer than 20 stocks experience such events during a similar period on a normal trading day.⁴⁴

The LRPs seemed to achieve their purpose on the NYSE, as no trades were broken on that exchange and trades on the NYSE did not execute at the extreme levels seen on other markets.⁴⁵ However, once a stock goes slow on the NYSE, under Regulation NMS other trading venues are permitted to bypass the quotes of the NYSE for that stock. The NYSE continued to trade actively, but many electronic orders shifted to other exchanges, which may have overwhelmed their liquidity and led to trades at aberrational prices on those markets.⁴⁶

An analogous problem may have resulted from bypassing NYSE Arca, NYSE Euronext's fully electronic exchange. Under Regulation NMS, in most circumstances trading centers are required to route a trade to the exchange that offers the best price for that stock before trading at an inferior price. However, trading centers can declare "self-help" with respect to another exchange if the second exchange repeatedly fails to provide a response to incoming orders within one second.⁴⁷ Once self-help is declared, orders do not need be routed to the slow exchange. For reasons that remain obscure, NASDAQ declared self-help against NYSE Arca at 2:37 p.m., and NASDAQ OMX BX declared self-help against NYSE Arca a minute later.⁴⁸ As was the case with the NYSE, bypassing NYSE Arca may have led to heightened liquidity mismatches on other exchanges. ETFs were particularly affected, as many ETFs have their primary listing on NYSE Arca. As ETF trades were routed away from NYSE Arca to other markets, the depth in the order books of these other markets appeared unable to maintain reasonable continuous prices.⁴⁹

Stub Quotes

Most markets require market makers to maintain a two-sided quote throughout the trading day for any security for which they are a market maker. To meet this requirement, market makers often enter "stub quotes," which are wildly low or high quotes that are never intended to be executed. For example, a market maker might enter a stub bid quote at \$.01 a share and a stub offer quote at \$10,000 a share.⁵⁰ During the flash crash, momentary gaps in liquidity may have resulted in a quote to buy at \$0.01 becoming the best available bid and in sell orders being executed at that quote by automatic trading systems.⁵¹

Regulatory Responses

In the aftermath of the flash crash, the SEC and CFTC suggested a number of potential regulatory actions in the joint report report. One, a uniform,

market-wide "circuit breaker," already has been enacted on a pilot basis. Revised procedures for clearly erroneous orders have been proposed at the time of this writing. The other potential responses, to varying degrees, remain possibilities.

Uniform, Market-Wide Circuit Breakers

The equity markets had marketwide circuit breakers in place prior to the flash crash that would have been triggered had the Dow fallen more than 10 percent on the day. As the Dow fell "only" about 9.2 percent at its lowest point, this safeguard was never activated.⁵² In the wake of the crash, the SEC coordinated with the exchanges and the Financial Industry Regulatory Authority (FINRA) to implement uniform, market-wide circuit breakers for individual stocks. Under the terms of the new rules, the circuit breaker is triggered if a stock moves up or down by 10 percent or more in a five-minute period. If a security moves outside of that range, trading in the stock would cease on all U.S. exchanges and over-the-counter for five minutes. After the pause, trading would be reopened by the stock's primary listing exchange. If that exchange does not reopen trading within 10 minutes of a trading pause, other markets may resume trading the stock.⁵³ The rules apply from 9:45 a.m. to 3:35 p.m. Eastern Time.

One common comment was that the pilot program should be expanded to encompass securities that are not included in the S&P 500, in particular in light of the fact that just 12 of the 326 broken trades that occurred on May 6 were S&P 500 stocks.⁵⁴ These commenters argue that large-capitalization stocks that are not in the S&P 500, small-capitalization stocks and ETFs are all in need of protection.

Although the first iteration of the pilot that was adopted on June 10, 2010, only applies to stocks in the S&P 500 index, on June 30, 2010, the markets filed to expand the pilot to include stocks included in the Russell 1000 index and over 300 ETFs, including ETFs that represent the S&P 500

index, the Russell 1000 index, the Nasdaq 100 index, and the Dow Jones Industrial Average.⁵⁵

The new circuit breaker rules are designed to provide market participants an opportunity to reinsert orders providing liquidity and thus to avoid a further decline in the stock price. Most of the comments received by the SEC supported individual circuit breakers.⁵⁶ However, a trading pause is not necessarily the best solution to aberrant trading if the trading is caused by momentary gaps in liquidity, as opposed to a more general absence of orders. To address both possibilities, many have argued that a futures-style limit down should be considered by regulators.⁵⁷

These commenters argue that circuit breakers are an improvement over the status quo, but they create additional problems. For example, one commenter stated that the existence of the circuit breaker encourages traders to advance trades in time when prices near the circuit breaker cutoff, thereby increasing volatility.⁵⁸ Another problem cited is that institutional traders can gain an advantage over retail investors when circuit breakers are in place, as institutional traders are able to exploit uncertainties and inefficiencies that might arise once circuit breakers are triggered and once the stock resumes trading.⁵⁹ Also, commenters noted that the market-wide circuit breaker will not take effect immediately. Before the circuit breaker takes effect, one exchange must notify the Securities Industry Processor, which then must alert the other exchanges. Hundreds or thousands of trades might be executed below the circuit breaker price in the interim, and those trades might have to be cancelled.⁶⁰

These commenters argue that that a futures-style limit down would prevent trades from executing below the limit price, but it would allow trading to continue above that price. The result would be no broken trades, limited opportunities for high frequency traders to exploit market inefficiencies, and a reduced incentive to accelerate trades to get them in before trading halts.

Some commenters cautioned the SEC to not make changes to the pilot program in response to market events. These comments stress that the exchanges need to take the time to gather and analyze data so that the ultimate rule is the most rational and effective one possible.⁶¹ This position is more conservative than the SEC's own stance, given the SEC's stated desire to expand the program in short order.

Revised Procedures for Breaking Clearly Erroneous Trades

After the dust settled on May 6, the exchanges and FINRA cancelled all trades in which a security was sold at a price that was more than 60 percent away from that security's last trade at or before 2:40 p.m.⁶² Many market participants have said that this arbitrary threshold for cancelling these "clearly erroneous" trades was inequitable.

To increase consistency and predictability, the national securities exchanges and FINRA have proposed rules to clarify the process for breaking clearly erroneous trades. Under the rules, if a circuit breaker is triggered in a single stock, then trades will be cancelled if they execute a certain percentage below the price that would trip the circuit breaker, with the percentages decreasing for higher priced stocks.⁶³ Where circuit breakers are not yet applicable, the rules look to the broader market in order to determine the price at which trades should be cancelled. In those cases, the range in which a trade is allowed to stand is widened as the number of stocks affected by the same market event increases.⁶⁴

The joint report stressed that a rule for breaking clearly erroneous trades was necessary to "provide clarity and certainty as to whether . . . trades will stand in the event the market becomes particularly volatile."⁶⁵ While the threshold levels might change between now and the enactment of the rules, the SEC has made the first step towards providing a solution. This system also would eliminate the incentive to enter extremely low

bids in an attempt to take advantage of a liquidity crisis.

Regulation of Market Orders

After May 6, industry participants and regulators began to discuss the role of market orders in the trading markets. In order to prevent future cascading events that cause extreme volatility, regulators have considered requiring market order "collars," which would effectively convert market orders to limit orders in extreme market moves.⁶⁶ Industry participants have even suggested prohibiting the use of market orders, either altogether or in certain situations, which would effectively force investors to enter limit orders in the first instance.⁶⁷

In addition, the joint report suggests requiring broker-dealers "to specifically warn retail customers about the risks of market orders . . ."⁶⁸ and pursuing investor education so that investors understand the risks involved. However, it seems highly unlikely, to say the least, that the events of May 6 were precipitated by thousands of standing market orders belonging to individual investors, and no amount of disclosure or education aimed at retail investors is going to change the strategies that a sophisticated firm programs into its high frequency trading algorithm.

Market Making Obligations and Stub Quotes

The SEC and CFTC have mentioned two alternative plans to prevent trades from being executed against stub quotes. The first is to require market makers to maintain bona fide quotes that are "reasonably related to the market" at all times.⁶⁹ It is noteworthy, however, that Nasdaq's former requirement that market maker quotes must be within a prescribed range of the best quote was criticized by the SEC as anticompetitive and accordingly withdrawn.⁷⁰ Thus, it is unlikely that the markets will require market maker quotes to be at the best bid and offer. An alternative proposal is to do away with the requirement that a

two-sided quote be entered at all times.⁷¹ Without a two-sided quote, there may be times when a trade cannot execute because there is no counterparty, but that would presumably be better than executing against a stub quote. Of course, this proposal only addresses market makers that have an obligation to remain in the market. Major liquidity providers such as high frequency trading firms would still be under no obligation to remain active during a crisis, and those firms could still presumably post extremely wide quotes.

Regulation of Short-Term Trading Strategies

The joint report did not suggest any specific regulation of high frequency trading firms. However, the report does state that the flash crash implicated a number of issues that were raised in the SEC's Market Structure Concept Release.⁷² This concept release asked whether the current market structure creates too much short-term volatility at the expense of long-term investors. It also noted that high frequency traders play a "dominant" role in today's market structure and that they have "largely replaced the role of specialists and market makers with affirmative and negative obligations for market liquidity and market quality."⁷³ The lack of affirmative obligations means that high frequency traders are now major liquidity providers but do not have any obligation to remain in the market during abnormal events. The lack of negative obligations, meanwhile, means that high frequency traders can use certain directional trading strategies that traditional market makers were forbidden from employing.⁷⁴ The joint report concluded that "it is too early to know whether short-term professional trading strategies played any role in the events of May 6," but it did warn that, if those strategies were to blame, regulatory action would be forthcoming.⁷⁵

Uniformity of Trading Rules

SEC Chairman Mary Schapiro recently stated that the SEC is considering whether to curtail

trading halts or slowdowns that do not reach across all markets simultaneously, such as the NYSE's LRP function.⁷⁶ The likelihood of the SEC barring a market from limiting volatility in its system is hard to estimate.

Market Structure Proposals

Over the last year, the SEC has proposed a number of market structure rules, three of which were discussed in the joint report. The joint report noted that the SEC's market access proposal is intended to protect against erroneous orders or other negative trading that enters the market through a sponsored access arrangement.⁷⁷ The SEC also has proposed a large trader reporter system, which if adopted, would allow the SEC to more easily track trading activity when abnormal market events occur.⁷⁸ Most recently, the SEC has proposed a consolidated audit trail, which would generate the data needed for the SEC to reconstruct market disturbances like the flash crash both quickly and comprehensively.⁷⁹ The events of May 6 are likely only to add to the urgency that the SEC feels to act upon these and other market structure proposals.

Conclusion

Many of the details of the flash crash are unknown, and we may never be able to fully reconstruct the trading events of that day, beyond what the SEC and CFTC's joint preliminary report has made known. On the regulatory front, we are likely to see proposals specifically in response to the flash crash and also are likely to see the SEC act with increased urgency upon proposals that preceded May 6. Of course, it would be impossible for any set of regulations to completely reduce the risk of another day of aberrant trading in the future, as trading strategies and technologies are constantly changing, leading to an ever shifting possibility of causes for market disruptions.

NOTES

1. Statement of Mary Schapiro, Chairman, Securities and Exchange Commission, Before the United States Senate Committee on Banking,

Housing, and Urban Affairs, Subcommittee on Securities, Insurance, and Investment, May 20, 2010, available at <http://sec.gov/news/testimony/2010/ts052010mls.htm>.

2. Staffs of the U.S. Commodities Future Trading Commission and the U.S. Securities and Exchange Commission, Preliminary Findings Regarding the Market Events of May 6, 2010, at 11, (May 18, 2010) [hereinafter Joint Report], available at <http://www.sec.gov/sec-cftc-prelimreport.pdf>.

3. Schapiro, *supra* note 1.

4. Joint Report, *supra* note 2.

5. Schapiro, *supra* note 1.

6. *Id.*

7. *Id.*

8. *Id.*

9. Joint Report, *supra* note 2, at 16, 21 (The Joint Report states on page 16 that all 30 reached their intraday minima between 2:45 p.m. and 2:47 p.m., but this statement might be misleading, as the last stock to reach its daily low, Kraft Foods, Inc., reached it at 2:47:59, as illustrated in the chart on page 21 of the Joint Report.).

10. *Id.* at 21.

11. *Id.*

12. *Id.* at 19, 34.

13. *Id.* at 5.

14. *Id.* at 61.

15. *Id.*

16. *Id.*

17. *Id.* at 69.

18. *Id.* at 4.

19. *Id.* at 3.

20. Those safeguards include mechanisms to cancel orders that are placed outside ranges of reasonability or that exceed a predetermined maximum quantity. Statement of Gary Gensler, Chairman, Commodity Futures Trading Commission, Before the United States Senate Committee on Banking, Housing, and Urban Affairs, Subcommittee on Securities, Insurance, and Investment, May 20, 2010, available at <http://www.cftc.gov/PressRoom/SpeechesTestimony/ChairmanGaryGensler/opagensler-45.html>.

21. Joint Report, *supra* note 2, at 59.

22. Gensler, *supra* note 20.

23. Joint Report, *supra* note 2, at 59.

24. *Id.* at 64.

25. *Id.* at 65.

26. *Id.* at 67.

27. *Id.*

28. *Id.*

29. *Id.* at 4.

30. Herbert Lash and Jonathan Spicer, *Exclusive: Waddell is Mystery Trader in Market Plunge*, Reuters, May 14, 2010, available at <http://www.reuters.com/article/idUSTRE64D42W20100514>.
31. Gensler, *supra* note 20.
32. Joint Report, *supra* note 2, at 63-64.
33. *Id.* at 4.
34. *Id.*
35. *Id.* 3, 4; Schapiro, *supra* note 1.
36. *Id.* at 4.
37. *Id.* at 76.
38. *Id.* at 77.
39. *Id.* at 28.
40. Julie Creswell, *Speedy New Traders Make Waves Far From Wall Street*, The New York Times, May 17, 2010, available at <http://www.nytimes.com/2010/05/17/business/17trade.html?dbk>.
41. *Id.*
42. Joint Report, *supra* note 2, at 58.
43. *Id.* at 4.
44. *Id.* at 22.
45. *Id.* at 30.
46. *Id.* at 58.
47. *Id.* at 5.
48. *Id.* at 25.
49. *Id.* at 25, 26.
50. *Id.* at 76.
51. *Id.* at App. A-15.
52. Schapiro, *supra* note 1.
53. Press Release, SEC, SEC to Publish for Public Comment Stock-by-Stock Circuit Breaker Rule Proposals (May 18, 2010), available at <http://www.sec.gov/news/press/2010/2010-80.htm>.
54. Joint Report, *supra* note 2, at 29.
55. See, e.g., Exchange Act Release No. 62411 (June 30, 2010) (New York Stock Exchange filing); Exchange Act Release 62413 (June 30, 2010) (NYSE Arca filing); See also SEC Press Release 2010-117, SEC to Publish for Public Comment Proposed Rules Expanding Stock-by-Stock Circuit Breakers, available at <http://www.sec.gov/news/press/2010/2010-117.htm>.
56. See, e.g., Letter from John A. McCarthy, Global Electronic Trading Company (GETCO), to Elizabeth M. Murphy, SEC, June 9, 2009, available at <http://www.sec.gov/comments/sr-bats-2010-014/bats2010014-22.pdf>.
57. *Id.* at 4.
58. *Id.* at 3.
59. *Id.*
60. *Id.*
61. See, e.g., Letter from Stuart J. Kaswell, Managed Funds Association (MFA), to Elizabeth M. Murphy, SEC, June 9, 2010, available at <http://www.sec.gov/comments/sr-bats-2010-014/bats2010014-21.pdf>.
62. Joint Report, *supra* note 2, at 5.
63. Press Release, SEC, SEC to Publish for Public Comment Proposed Rules for Clearly Erroneous Trades (June 17, 2010), available at <http://www.sec.gov/news/press/2010/2010-104.htm>.
64. *Id.*
65. Joint Report, *supra* note 2, at 76.
66. *Id.*
67. See, e.g., Dan Mathisson, *Commentary: Market Madness, Why the core of the problem is an old-fashioned order type*, Traders Magazine, May 19, 2010, available at <http://www.tradersmagazine.com/news/flash-crash-opinion-mathisson-105736-1.html>
68. *Id.*
69. *Id.*
70. See SEC 'Report Pursuant to §21(a) of the Exchange Act Regarding the NASD and Nasdaq Market' (August 1996), available at <http://www.sec.gov/litigation/investreport/nasdaq21a>.
71. *Id.*
72. Concept Release on Equity Market Structure, SEC Release No. 34-61358 (June 14, 2010).
73. *Id.* at 77.
74. *Id.*
75. *Id.*
76. Nina Mehta, *SEC Studying More Coordination in Stock Markets, Schapiro Says*, Bloomberg Businessweek, June 15, 2010, available at <http://www.businessweek.com/news/2010-06-15/sec-studying-more-coordination-in-stock-markets-schapiro-says.html>.
77. Large Trader Reporting System, SEC Release No. 34-61908 (April 14, 2010).
78. Consolidated Audit Trail, SEC Release No. 34-62174 (May 26, 2010).
79. Joint Report, *supra* note 2, at 78, 79.