SEC HISTORICAL SOCIETY

Keeping the Markets Open: Lessons Learned from the 1987 Market Break
Thursday, November 1, 2007

BRANDON BECKER: Good afternoon. I am Brandon Becker of Wilmer Hale, a former Associate Director of the Division of Market Regulation and moderator for the Securities and Exchange Commission Historical Society's program today - Keeping the Markets Open: Lessons Learned from the 1987 Market Break.

I would like to set the table with a few preliminary remarks and then turn it over to Chairman Ruder. I would like to welcome those in attendance here in the SEC Auditorium and all those listening to the live broadcast on www.sechistorical.org. The SEC Historical Society, which is independent of the Securities and Exchange Commission and receives no government funding, preserves and shares SEC and securities industry information through its virtual museum and archive, also located at www.sechistorical.org. The museum is free and accessible worldwide at all times. Today's program will be preserved in the virtual museum in audio, podcast and transcript formats after the broadcast and I commend to everyone the website. It is a wealth of information.

Keeping the Markets Open is the first of many educational and celebratory activities that the SEC Historical Society will conduct to commemorate the upcoming 75th anniversary of the founding of the U.S. Securities and Exchange Commission.

Before we begin, I would like to thank the members of Market Regulation Committee - Herb Brooks, Gordon Fuller, Alton Harvey and Jim Yong - for working with me to plan this program. I would like to extend special thanks to Carla Rosati and the staff of the SEC Historical Society as well as Christie Oberg of Wilmer Hale.

I would also like to acknowledge the contributions of John Phelan, former Chairman and CEO of the New York Stock Exchange, and Alton for their remembrances of the 1987 market break to the virtual museum and archive. Alton also has shared a copy of the SEC's report of the market break and John has contributed video of the New York Stock Exchange press conferences held during the week of the break. All of these materials are permanently placed in the museum and I encourage you to access them after the program. Indeed I think that both Alton and John's remarks and papers are instructive, entertaining and very well written.

Joining me today for the panel discussion are people who have valuable insights into not just what happened in 1987 but what those events mean for us today and what are the fundamental truisms are of the marketplace. To my far right is Andrea Corcoran, now with Promontory Financial Group LLC, who was with the Commodity Futures Trading Commission in 1987. To her left is Richard Ketchum, now with the New York Stock Exchange Regulation Inc., who was director of the SEC Division of Market Regulation during the break. To his left is David Ruder, who was SEC Chairman during the market break. To my left is William "Billy" Johnston who was at the New York Stock Exchange at that time and to his left is Erik Sirri, the current director of the SEC's Division of Market

Regulation. Chairman Cox will join us at a later time. Before we begin, I would note that our comments are not reflective of the SEC Historical Society, of the members of the SEC, of anyone who hopes to work for the SEC, or anyone affiliated with the federal government.

Let me start by setting a few highlights from history and then turn it over to Chairman Ruder. On August 25, 1987, the Dow hit a high of 2722.42, up 43% year to date, a remarkable growth pattern between January and August. During the week of October 5th through 9th, it fell about 159 points, then had relatively quiet days on the 12th and 13th. However, on Wednesday, October 14th, a trade deficit was announced that was $1.5 billion higher than expected. Foreign exchange markets began to sell dollars, the 30 year bond traded above 10% yield for the first time in two years, and the dollar began to weaken. If any of this sounds familiar, just ignore those analogies for the moment.

In addition, the House Ways and Means Committee proposed legislation to end tax benefits in connection with financing of corporate takeovers, stimulating risk arbitrageurs to sell the stock of takeover candidates. The S&P 500 futures contract fell sharply through the day. Eventually the Dow ended down 95 points, then a record point loss of 3.18% on volume of 207 million shares. Thursday saw London and Tokyo markets follow the downward trends and then the US market opened with heavy selling by portfolio insurers. The Dow itself had another down day, closing down 57 points or 2.93%. In the later portion of the day, Chemical Bank announced that it was increasing its prime lending rate and then-Treasury Secretary James Baker stated that the US could, quote, “accommodate further adjustments” in the value of the dollar.

On October 16th a freak hurricane closed the London markets and the expiration of various options on several stock indices occurred. There was heavy selling throughout the day and the Dow ultimately closed down 108 points, or 4.6%, to set a new record for a one day close. For the week, the Dow was down 235 points, or 9.49%, representing a drop of 17.5% from the August 25th high. Over the weekend, mutual funds faced an overhang of additional redemption requests. Secretary Baker, on “Meet the Press,” continued to discuss whether or not the United States will sit back and watch surplus countries jack up their interest rates and squeeze growth worldwide on the expectation that the United States somehow will follow by raising its interest rates. There were also discussions of possible air strikes and developments in the Middle East and on that cheery note, Chairman Ruder came to work on Monday morning, October 19th.

DAVID RUDER: I came to work that morning knowing that the market had declined. We had talked throughout the prior week at the Commission about what to do. I may say that much of what I say today reflects the great wisdom of both Rick and Brandon who were at the Division of Market Regulation then. On October 19th the market knew that the Nikkei Index had declined by 2.35% and it knew that the London FTSI Index was declining. Indeed, the FTSI index declined by 10.84% by the time it closed that morning. At the start of the day, we began to see a strong selling pressure. In technical terms there were imbalances on the sell side. There was tremendous institutional pressure to sell and by 10 o’clock in the morning there were 95 Standard and Poor stocks not opened. At 10:30 a.m. 11 of the 30 Dow Jones stocks were not open. That morning I was giving a speech at a hotel here in Washington at a conference sponsored by the American Stock Exchange. I found that people were not paying much attention to me. I thought it was because my speech was bad, but when I finished the speech at about 11 o’clock, I found that the market had been declining. I think it had declined by about 200 points at that point. I went back to the office to try to find out what was happening and the staff gave me the news that the market was declining dramatically. It was a very bewildering time because I had come in with some experience about the markets because of work I had done with Milton Cohen in Chicago. I kept asking what we could do, and I think the answer was, not much. During the day there wasn't much to do to stem a decline. At one point I discovered that there was no terminal on the sixth floor of the Commission where my office was which showed the stock quotes. So I went down to the fifth floor where the Division of Market Regulation had one. Was it one terminal?

BRANDON BECKER: I think we had two, which I gladly shared with you.

DAVID RUDER: I was down there to look at what was called the Bridge Data system and I discovered that there was a very simple code that if stocks were down, the stock was in red, and if stocks were up, the stocks were in green. But by the time I got down there everything was red. By the end of the day the Dow had declined 508 points to 1738.7 which was a decline of 22.61%. We asked ourselves later on what had happened and of course a great many things had.

The selling pressure came from institutional investors. Some of it came from index arbitrage between the futures exchange and the stock exchange. By that time the derivative index products at the futures exchange were creating what we called a bulletin board on the Bridge system which showed what the futures markets were anticipating in terms of declines. The difference between the futures predictions and stock market prices were, I think, close to 100 points during most of that day. We found out that institutions were selling using computer programs. At least one large institution sold a million shares that day. These were large numbers the. The institution sold its positions in 100,000 share units. The people on the exchange floor later told me that it was like a wave, it was like a bombshell. Every hour these large sales would come in. So there was institutional pressure.

So-called portfolio insurance was used. That was a system by which, instead of selling short, institutions thought they could sell during the day to get out of the markets. The problem was that a great many people had these portfolio systems and they didn't work very well. They couldn't get their trades off. There was queuing and clogging in the order routing systems. The New York Stock Exchange was having trouble executing its trades. The printers weren't working very well. At the Nasdaq market, some of the market makers simply closed up shop for the day.

There was an absence of buying support. The specialists at the New York Stock Exchange had virtually exhausted their capital and weren't able to step up. So by the end of the day we really had experienced this tremendous decline and we didn't know what was going to happen the next day. Rick, would you just for a minute tell them what you did about calling the brokerage firms? I thought that was a very interesting event that occurred during that day.

RICHARD KETCHUM: None of this is going to sound surprising either to Erik or Chairman Cox in dealing with the liquidity challenges in the last few months. In order to put October 19th in context, you have to step back and understand the ways that David described how the markets worked versus how the markets work today. The equity markets were fundamentally manual. The vast majority of orders executed in the New York Stock Exchange, albeit there were electronic systems, were executed manually –

not only those resulting from verbal interaction with the floor brokers but even with respect to the large number of electronic orders had become steadily more important as a result of interactions with the futures markets with index arbitrage orders and program orders. Those orders printed out behind the booth to be torn off and Billy Johnston can talk some more about the impact of that and the almost inevitable queuing that occurred. The Nasdaq market was fundamentally a telephone market. To the extent that it had electronic executions they were for small orders and the firms didn't have the type of electronic capabilities to protect themselves from taking large and exposed positions. As the amount of volume coming through that electronic execution systems built market makers dropped out of SOES and that led them to become less and less accessible. So you had an environment first in which there was increased fear resulting from inaccessibility, which is probably critical to the anatomy of most crashes, along with exuberance.

As David accurately says, regulators can't do a hell of a lot about what markets do as they fall. In fact it would be a really bad idea for them to try. Our primary focus, not very different from what Andrea was doing that night at the CFTC, was to understand where the exposures were. And it is something that we had done as a drill on a variety of situations with much smaller movements, although remembering that 3.81% and 4.6% is more of a percent movement than we presently have seen in the markets for years. The effort that day was basically to canvass and understand where the worst exposures were in the marketplace. And where they were, were a variety of places. One was with respect to the largest clearing firm on the option side, at that time an area where they were basically handling a large percentage of the options market maker activity that was particularly exposed given the accessibility issues and the huge volatility on that day. Second, there were concerns with respect to specialist capital, again Billy can talk a good deal more about this afterwards. Specialist firms were highly profitable at that point but there were a large number on the New York Stock Exchange and they were effectively partnerships and while they had a significant amount of capital, they were not designed to be the sole entity standing in front of a virtually indescribable rush of orders. And then there were a variety of things that came from these types of situations as you create panic from a lack of transparency. Concerns of credit with respect to major players, difficulties in initial delays with respect to handling mark to market changes from the Chicago Merc Clearing Corporation gave the impression of a potential exposure and possible serious problems on the Merc. While those rumors turned out to be incorrect, they spread to the other side with respect to major firms who again had the impression for a period of time that they were going to absolutely run out of liquidity from the absence of large payments. Problems were also occurring in foreign markets, many of which had basically ceased to function by Tuesday morning. So our focus really on that night with other regulators, I think in reasonably effective co-ordination, was really trying to find out where those risks were, working with the New York Fed, working with the CFTC and also looking for potential areas where we might encourage liquidity and might eliminate unnecessary restrictions on liquidity.

BRANDON BECKER: Could I interrupt your flow just to give Andrea and Billy a chance to talk about the 19th and the night of the 19th? If you could just sort of give a sense of what you folks were taking a look at?

ANDREA CORCORCAN: The CFTC typically has a surveillance meeting every Friday. Every Friday, exposed markets are reviewed using our large trader reports, which show the largest counter parties in the markets, especially those whose positions are on the wrong side of a market move in markets experiencing unusual volatility. We had a surveillance meeting on that Friday before the crash. It's my recollection that we had for some reason invited staff from the Department of the Treasury to that Friday's meeting, possibly because of the discussions about interest rates that were going on in Europe and in the United States. Over the weekend, we at the CFTC, being in a very global market were watching, as was everyone else, the developments in the overseas financial community. The news was so bad that Kalo Hineman decided that we should have another surveillance meeting the morning of the 19th.

BRANDON BECKER: He was then the acting Chairman of the CFTC?

ANDREA CORCORAN: Yes, he was then the acting Chairman of the CFTC. We were in frequent communication with the SEC during the day and I would say that we more or less heaved a sigh of relief at the end of the day. Somehow we had, by devising ad hoc communication approaches, muddled through. Everyone in a position of responsibility at the CFTC had to find out where the system was within the building that had all the timely information on what was going on in the market. In our case, it was the economics division. As of the close of the 19th, I think we felt relatively confident that we'd weathered a rather difficult storm - so far, so good.

WILLIAM JOHNSTON: Stepping back to what Brandon's introduction started with, the market is down about 20% from the August 25th high, it's down 8.5/9% the week prior to October 19th and Brandon makes the wonderful comment about London being closed. I was in London for the first release ever of Glaxo's earnings in dollar terms and in fact enjoyed that storm Thursday night the 15th in London as windows were popping out of apartment buildings and trying to get out of London on Friday. I get back to find out that our inventories are about two times as large as they normally were and Chairman Ruder and Rick both mentioned inventories. That is a scholastic part of the problem of the perfect storm, if you will, that you already have dealers both upstairs and down that are lugging more inventory than they normally lug. So coming in to Monday morning and we go to the construct of the floor of the exchange, in those there were about 50 small firms, the largest of which was Spear Leeds and Kellogg, who was the market maker perhaps in the 150/200 stocks at the time, most of us were 4,5,6 partner firms making markets in 35/40/45 stocks so we did not have the significant capital that firms have today and we did not have the wherewithal to go find capital because we were partnerships.

So here we are, to say frightened would be a mild exaggeration, knowing that the market is going down, seeing the absence of buyers, noting that any bids that we had from the prior day Friday or the week before have suddenly disappeared and there are nothing but sellers. The day the 19th went as smoothly as it could. Rick mentioned technology; we were at that time in the second iteration of a display book. We were one of two firms that had all of our stocks on the display books, so for us it was mildly better if I can use that term, than it might have been for other firms and in fact after the close several people asked why it seemed to be a little easier and that will lead into a discussion as we talk about things that we have learned from the 19th and 20th as to how the technology has proceeded and the good things that came from technology in terms of the floor of the exchange.

DAVID RUDER: I am going to re-sieze the microphone, thank you. On the evening of the 19th as I was asking Rick what I should do, Rick said "go home." I hung around for a little bit and the telephone rang. Senator Riegle, the Democratic Chairman of the Senate

Banking Committee, called me at about 6:30. He said, “Chairman Ruder, I want you to call the President of the United States and tell him to make a statement calming the markets.” I had met the President when I was sworn in on August 7th but I hadn’t heard from him since. I thought it would be presumptuous of me to call the President to tell him what to do. So I called the White House and talked to the person I knew best there and I said, as cautiously as I could, “I have had a call from Senator Riegle of the Senate Banking Committee and he suggests that I call the White House to ask the President to make a calming statement about the markets.” I thought that way I wasn’t demanding that the President make the statement. Lo and behold he did make a statement the next day. So it was to me a little blip on the way Washington works to have that call to me from a Senator and then from me to the White House.

That led us to October 20th and in the morning we were all pretty happy because the Dow rose 196 points. We thought we are getting a rebound. Then at about 10 o’clock the market began to decline and by 12:30 it had declined to 1707, which was below the Monday close. At about noon, I received a call from John Phelan, the Chairman of the New York Stock Exchange saying, “We think we are going to close the markets.” There is some dispute about whether he said, “We are going to close the markets” or “We think we are going to close the markets.” He then said, “I am going to call the White House and tell them our plans.” He said, “Will you support us?” I again relied upon Rick, asking him whether we should support the Exchange. Rick’s answer was that the markets know what’s going on. “We are in Washington, they are in New York and we have to accept their judgment.” So I said to John Phelan, “Yes, we will support you.” As soon as he hung up, Rick and his staff called the CFTC and said that New York was planning to close. We also called all of the exchanges that were under our jurisdiction and told them that. The Chicago Merc derivative stock index closed at 12:13 and did not reopen until 1:05. The CBOT major market index did not close at all and rallied at 12:30.

RICHARD KETCHUM: And the New York Stock Exchange did not close.

DAVID RUDER: And the New York Stock Exchange did not close. I may say that from my point of view that time from about 12:00 to 1:00 on the 20th was by far the scariest point in that entire market crash experience. We might have had the New York Stock Exchange closing on a random basis, not in a planned pre-closing procedure as we now have with circuit breakers, but on a random basis because there was no buying support on the floor. For me, that experience really re-enforces the need for planning among our markets, at the SEC, with the Fed and the Treasury about what might happen if we have a dramatic down day in the volume we had in 1987. We have not had a panic decline of that kind since. We have had some declines but it seems to me that we need to look at our systems and our financial support for the markets in ways that would prevent the kind of possible close that we almost had on that day. I know that in John Phelan’s paper, prepared for this event, he says New York will never close but it came close to closing, and that’s where my fears are in this point.

RICHARD KETCHUM: I certainly agree with David that the most terrifying day was Tuesday and not Monday. To place yourself in it - and many of you sitting in the crowd as ex-regulators or existing regulators - it is important to understand that on that day from a variety of different perspectives, whether you are operating in the industry, an investor or a regulator, basically most of your conceptions of the infrastructure of markets, how they worked, and why they were likely to work had been stripped away. If you looked at the things regulators could do, obviously the Fed did a great deal from a standpoint of both pronouncements and actual actions to encourage liquidity. The SEC worked with the New York Stock Exchange to get out clarifying indications that made it a little easier for issuers to be comfortable about engaging in repurchases outside of the safe harbor, something the SEC now does consistently when there are troubling days. But you had a situation that day where people had lost their bearings as to where the market could end up, how much it could go down, whether another 20% break was perfectly possible. You had a situation like this summer where credit quality was unclear, where rumors were rampant, where it was clear that many market participants down on the floor of exchanges were out of capital, where from the standpoint of specialists and again, looking at a different marketplace, the New York Stock Exchange at that point was extremely dependent on the specialist as the buyer of last resort, not to go over a cliff but to steadily address and deal with volatility concerns. Yet the large number of those specialists not only had blown through their capital but, as Billy indicated, did not have the effective lines of credit to back them up. Even the major firms did not have the effective locked-in lines of credit, the flexibility and diversity of business that exists today. And so you were in an environment at that time where if the buying had not come in at 12 o'clock, who knows what would have occurred. While undoubtedly we on this panel believe that it is a terrible idea ever to shut down markets. you do have to understand looking into these situations that regulators are dealing on an ad hoc basis with practical situations and on October 20th, there was a lack of confidence to buy stock across the board and there was a very real risk if buyers hadn't come in at 12:30, that the markets would not have been able to continue to operate for the rest of the day.

BRANDON BECKER: Chairman Cox, we have been talking inside the agency and the markets. You had a different perspective and what were your observations on the 19th and the 20th?

CHAIRMAN COX: Well, I was at *Casa Blanca* – the White House, at the other end of the telephone call that David was talking about. Twenty years ago is long time ago. In the case of my involvement, the final chapter - at least the epilogue - wasn't written until earlier this year when a writer of financial fiction name Paul Erdman died in the wine country of California, to little public notice. Years ago he had started his first book from a Swiss jail cell where he was locked up on charges of illegal speculation in the futures markets. As a novelist he became eventually one of the world's great doomsday forecasters, and in one of those quirks of history that turn out to be consequential, his bestseller, "The Crash of '79," became vacation reading for the then-recently retired Senate Majority Leader, Howard Baker.

Just over two years into his retirement at that time, Howard Baker got a call from President Reagan asking him to replace Don Regan as Chief of Staff. As you know, he said yes, and as a part of the package he brought with him to the White House A. B. Culvahouse, his trusted lawyer, who became the new Counsel to the President and my new boss. Shortly after Senator Baker came on board, he met with me to talk about what I was working on and some of the issues that he would like me to address. In particular, he told me that he had recently read a novel about how the President used his emergency powers in an effort to save the world from global financial collapse. He wanted to know whether, in real life, the President had these powers and was there a White House contingency plan to deal with worldwide market crisis? Well, that turned into a project and I was asked to write a detailed memo describing the emergency powers that the President might exercise in a market crisis.

That was in February of 1987. Fast forward to October of that year, when the stock market began what would become the largest one day percentage drop in history. And the market problems didn't end on Monday. Tuesday the 20th, the market dropped again and there was an emergency meeting in the Chief of Staff's office. I was summoned there because of the memo I had written. The meeting was notable not only for its urgency and importance, but also for who wasn't there. This is of course at a time when physical presence mattered even more, because everyone wasn't carrying around sophisticated telecommunications and computer equipment in their pockets, so you had to be there in person in order to participate. The new Press Secretary, Marlin Fitzwater, was there, but we were missing some of the obvious financial heavyweights that you'd expect to see at a time like this – for example, Beryl Sprinkel, who was President Reagan's chief economist.

In the midst of this White House strategy session in the Chief of Staff's office, the phone rang. Senator Baker got up from the table and answered it, but he said so little that you couldn't tell from the White House end of the phone conversation to whom he was speaking or what had been discussed. When he came back to the table, he told us that he had just spoken with John Phelan, the head of the New York Stock Exchange. Phelan was making a courtesy call to let us know that he was going to close the New York Stock Exchange. That news hung over the table like a clammy fog, but no one said anything. At this point in my career, I had practiced law for 10 years and had been a securities partner in a major firm, and I was used to giving advice. But this seemed like it should be someone else's portfolio. Still, nobody said anything. So finally, even though I was the lawyer in the group, not the economist, I said to Senator Baker, "You are not going to let them do that, are you?"

He asked what I thought would happen in consequence of closing the market. I ticked off the most important reasons not to do it: that closing the market would be seen as a threat to the liquidity of equities, that it would cause even more panic selling in other markets, that it would eliminate the opportunity for the market to self-correct and for people to come in and buy what they considered to be bargains on the cheap, and that it would raise dicey and novel questions such as at what price trading in a particular security should reopen. He asked me on what authority he could insist that the markets stay open. I said, "Just call them and tell them that the President of the United States wants to keep the market open." So Senator Baker went back to the phone and did that. We now know that the White House wasn't the only source dispensing that advice and we know that the market stayed open.

There was a further ironic connection between Senator Baker's coming aboard in the White House in 1987 and what we are talking about here today. A.B. Culvahouse, the lawyer that Senator Baker brought with him, was a securities lawyer like me. Today he is the chair of O'Melveny & Myers. Shortly after the two of them came aboard, there was a vacancy in the Chairmanship of the Securities and Exchange Commission. Senator Baker naturally looked to A.B. for advice and in turn A.B. assigned the project to me, because I had the finance portfolio in the Counsel's Office. I offered up a suggestion of a securities law scholar who I was very much impressed with when as a law review editor, I was writing about Rule 10b-5 - and that was of course Professor David Ruder, who was not only selected by President Reagan to be Chairman, but also was in the captain's chair during these market events in 1987. The nation couldn't have had a finer leader at that time.

Just as was the case for many of today's panelists, October 19th was for me just the beginning of my work. President Reagan decided to create a task force to investigate the causes of the market collapse, and to make recommendations. He decided upon former Senator Nick Brady as Chairman, and selected an executive director whom I had known very well before because he was my Department Chairman when I was on the faculty at Harvard Business School, Bob Glauber. Bob chose as his deputy David Mullins, another of my Finance Department colleagues from the HBS faculty. When I brought the task force members along with Bob and David in to meet the President, I started on a new project of serving as lawyer to the Brady Commission, beginning with writing Executive Order 12614, which established the Presidential Task Force on Market Mechanisms.

The Presidential Task Force started its work on November 5th and spent two months studying what happened. Their recommendations led to, among other things, the now-familiar circuit breakers. They also included some valuable advice that I took with me to Congress. They highlighted, of course, index arbitrage and other structural flaws and anomalies as the real culprits, but in the same way that the Great Chicago Fire is blamed on Mrs. O'Leary's cow, the Brady Commission traced the events of Black Monday to selling pressure that started during the period between October 14th and October 16th, when the Dow fell by over 250 points - significant at the time. That selling, they said, was triggered primarily by two proximate causes: disappointingly poor merchandise trade figures, and the filing of anti-takeover tax legislation, which caused risk arbitragers to sell stocks of takeover candidates, resulting in their precipitate decline and a general ripple effect throughout the market. Whenever my colleagues in Congress would tell me - as Dan Rostenkowski once did - that the markets don't pay attention to the bills that we introduce, I remind them of this story.

DAVID RUDER: I just want to put a footnote on this. One of the agencies that did do really well during the crash was the Federal Reserve Board. Alan Greenspan had been flying to Texas that afternoon, planning to give a speech. He reversed his trip and returned to Washington after he found out how bad the market had declined. The next morning, he made an announcement which effectively said that the Federal Reserve Board would make credit available to the money-center banks. Then, as we later understood, Jerry Corrigan, who was the President of the New York Fed, called the money-center banks and said the Federal Reserve Board was making money available to them to borrow. He urged them to lend money to the brokerage firms who were going to be calling asking for credit.

I think those two events were extremely important in providing liquidity for the market. If you look back on what has been happening this summer, you see something of that similar nature going on in an effort to provide credit in uneasy markets.

BRANDON BECKER: There is a nice description of that in Chairman Greenspan's recent book "The Age Of Turbulence." Andrea, you want to talk about the CFTC on the 20th.

ANDREA CORCORAN: On the 20th, the futures markets closed; some pundits felt they should have closed on the 19th. Typically, futures markets products have price limits. This means that at some price level – up or down – the market in the product automatically shuts down. This tends to damp down volatility and permit contrarian interest to form. Futures price limits don't totally close the market because if the price moves off the price limit, trading automatically resumes. These types of symmetric limits do not raise the same issues as closing markets on the securities side. I think that because of the experience of the 19th, where the futures led the cash for so long and where there were such large imbalances on the cash side, much of the market was really closed *de facto*. There were no cash prices in large numbers of the securities forming the indexes or underlying to discipline the futures, so that you don't really have reliable prices on which the futures markets could operate.

We heard that it was likely that the stock market would close. The CME closed the market in advance of the expected NYSE announcement, because what they didn't want was all that spillover selling interest coming immediately to the futures if the stock markets shut down. This experience during the "crash," ad-hoc closing of the markets, was one of the reasons that the circuit-breaker idea was such an important idea. It was thought that at some point the markets would no longer function properly, and that would be a point at which all the markets should close together. The pricing of futures and cash wouldn't come apart then merely because they weren't functioning properly which is really what happened on the 19th. As importantly, you wouldn't have to close the markets in extremis and inject a whole lot of hysteria into the marketplace by the mere fact of taking that emergency action.

The second thing that happened on the 20th is that that was the day that highlighted to regulators and the industry the issues with what I would call the plumbing behind the markets or the clearing systems - maybe not so much as to how they actually worked, but as to how they were understood to work. Participants had to settle in cash their futures losses, and this created extreme nervousness among firms that sent large sums of money across the Fed wire. Now, because futures is a zero-sum system, and the losses in futures will always equal the gains, once clearing members respond affirmatively to their closing – that is, their clearing instructions or their settlement instructions - the market should ultimately clear once the money is moved over the wires. But there were a lot of problems with money moving. The delays led to uncertainty in the market and fear that the market wouldn't settle. This aspect of the crash became one of the major focuses of the President's Working Group on the crash. The PWG determined to look very closely at issues with the clearing and settlement systems and see what needed to be and could be fixed.

Another interesting recollection was that The Wall Street Journal won a Pulitzer Prize for an article it wrote about the activities that occurred on the Chicago Board of Trade on October 20th. The article claimed that the floor traders, who were trading a clone of the Dow Jones Industrial Average (because, then, Dow Jones would not permit CBOT to trade or buy the Dow Jones Industrial Average or license it) saved the market. The premise was that the index, known as the MMI (Major Market Index) went from a discount of 60 points to a premium of 12 points within 5 or 6 minutes during the middle of the day, pushing the market up, and "saving the day."

The authors claimed that these futures traders were the savior of the market. Well on researching this very point on the Internet - because that's where we all do our Googling, to see what had been said about this crisis, - I was quite interested to see that a much later pundit cited the CBOT rally as a conspiracy that represented the covert activities of the PPT or Plunge Protection Team, an alleged shadow private sector savior group, linked to the government, which has intervened in multiple emergencies, to support the marketplace.

BRANDON BECKER: On that note let me just turn to Billy one more time to see whether you would like to add thoughts on the 20th before we go into conspiracy land.

WILLIAM JOHNSTON: Let's start back with the night of the 19th. As Chairman Ruder alluded to, the savior for all of us was the fact that the Fed did come in and free up capital. When we got back to our offices Monday night, we were all figuring it out how we could pay for this 5-6-7 times normal inventory that we had accumulated during the day of the 19th. Chairman Ruder with your good work at the SEC and with the great work of the Fed, that eased some of the tension that Rick commented on. Tuesday was by far the worst of the two days. The free-fall in the market from 10.30 to noon, after we got that 100+ point rally, was the most frightening part of the two days because as we made new lows and Chairman Ruder gave you that statistic, there was a distinct feeling that we were going to make lower lows, than even the 1708 which I think was the number.

So there was concern about inventory once again and whoever Andrea is responsible for that rally, God bless them, because it probably saved any number of firms.

BRANDON BECKER: Erik, you've been left off the hook thus far, because of your different status at that time but I do want to come to you now to say do you hear any echoes? I mean we understand and wouldn't ask you to discuss the details of the Commission's involvement in the events of this summer and going forward but as you listened to this, are there echoes in current events as we try and turn to some of the lessons going forward?

ERIK SIRRI: I think it's fair to say that there are some echoes, some of the things that were important at that time I think remain important today. On the other hand some things are different. Technology is probably the single thing that has changed the most. The change is both positive and negative, I think, the idea of carrying a Blackberry, having that kind of communications obviously very positive. We also carry little wallet cards that have the name of all the critical staffers around Washington and in the Fed in case you need to get in touch with them. So inside my wallet at all times I've kept that card. Rick, did you guys carry cards like that at that time?

RICHARD KETCHUM: Occasionally.

ERIK SIRRI: I think we have come to expect and prepare for these things so there was some learning that went on. I think there are some internal lessons that come out, pricing would be one that I pick. If you ask the question why do you keep a market open and we may talk more about decisions to shut markets. One of the most important reasons to keep a market open is that it produces a price, and with the price you know the value of your holdings. You may want to buy, you may want to sell, you may not be able to do either but knowing the price has a remarkably salutary effect. If you think about what's been going on recently, speaking just in terms of generalities, one of the things that have been very difficult about some of the credit events and we have had a credit sort of issues facing us, people didn't know the price of what they held.

I think there is a terrific parallel; think back between '87 and think back to where we are today. In both circumstances, people had doubts about the price. Some of it was because the New York Stock Exchange prices were asynchronous, you didn't know whether those were valid or not. Today there is a different reason, the securities, the credit contracts are in fact just very difficult to value because there already is some credit. But for that same reason people don't know inherent values, today the securities that we are interested in, that we are talking about the credit instruments don't trade on the exchange, they are over the counter instruments.

And so the exercise of what it takes to get the prices is, in fact, much more difficult. You need a model, you need a procedure, to get a price. And in fact stepping back from that I think that's one of the generalizations for what's different today. The OTC market especially through the use of continued claims and derivatives is much more developed today than where it was. I would never want to go so far as to say we couldn't see a substantial break in the equity markets. Who knows what we might see? But I think what I would say is proportionately, we are more focused on non-equity markets today and I think we put a lot of energy into the facility and the integrity of our non-equity markets, the OTC markets of various kinds, derivatives fixed income, all these sorts of things. You pay a great deal of attention to you know some things you can't do anything about, pricing, because it's an over the counter market.

But we can do things about infrastructure; so for example the New York Fed has been putting together a group. It has spent considerable amount of time working on settlement issues for over-the-counter instruments. Settlement being the core issue having to do with money and securities trading hands, getting that right, becomes critically important.

BRANDON BECKER: Chairman Cox you had a very different catbird seat this summer than as a senior staff member of the White House. Any observations you can share with us that differ in perspectives and experience?

CHAIRMAN COX: What happened in July was very different from, and not nearly as serious or significant as, what happened back in 1987. The Dow is not adjusted for inflation; it's just a naked number, so a 100-point drop, or a 200-point drop, or a 300-point drop, is very different depending on what time period you are talking about. Whereas we had in one day an over 22% drop on October 19, 1987, none of the days this past summer was there a drop of more than 3%. It is just apples and oranges in terms of the respective magnitudes of the market events that we are talking about.

I think we really have learned lessons from 1987. In fact, we've learned lessons, I would hope, from every market disruption and worse that has occurred in modern history. But in particular what we learned from 1987 is, as Erik says, that markets are the answer, not the problem. So when it comes to questions of keeping markets open or closing them, what you want to look at is not whether or the market should be open in terms of whether it will contribute to the panic or not, but rather in terms of whether there is something mechanically wrong with the market. Is there some reason that price discovery isn't working? Because as long as it is, that's the way out. And I think that's probably the most important lesson that we can keep in mind in the very different circumstances that we will probably find ourselves when we face the next crisis.

Something else that has happened since 1987, that was not technically a market event but it so deeply affected the markets, is 9/11. The terrorist attack in New York on September 11, 2001 was an attack on the financial sector and on Wall Street. In consequence of that, this agency, having lived through it, and financial firms having lived through it, we have all done a whole lot of contingency planning that otherwise probably none of us would have been motivated to do. Any time you do this kind of fire drill, it's got to have a cost justification, and so getting people's attention and getting their focus was very difficult. But 9/11 was a great aid in that and a whole lot of planning for market crises has now been routinized.

We have a Department of Homeland Security that takes into account our critical infrastructure in the financial sector, and the SEC along with DHS and other parts of the government now routinely participate in planning sessions. These planning sessions aren't limited to the United States; we do them with our overseas counterparts and recently did one with the Financial Services Agency in the UK with the FSA. I am absolutely certain that if you go back 20 years and beyond in American history there is just no precedent for that. So we are far better prepared in that way than we have ever been before.

ERIK SIRRI: Let me add one thing that has also changed. We talked about automation and technology. One of the ways we at the Commission have dealt with this is that we actually have an Automation Group now; we have a group of folks within Market Reg that deal exclusively with issues of automation at the SROs. We have a lab of computers, switchers, routers that run the same technology as the exchanges. We look for issues about robustness, durability and hackability; we have hired a specialized group of people to deal with exactly that. I think it's a recognition of where the pressure points and the stress points are.

BRANDON BECKER: Without trying to press you too much on details, has the evolution of your consolidated supervised oversight mechanism changed your ability to make the phone calls that Rick and David were making the 19th to gather information?

ERIK SIRRI: I think it's had a pronounced effect. For those of you who don't know, up until recently broker dealers that were in parts of large holding companies did not have a consolidated supervisor. That changed in 2004. The SEC is now the consolidated supervisor of very large investment banks like Goldman, Bear Stearns, Merrill Lynch, Lehman Brothers, Morgan Stanley. As such we can see into firms in ways we couldn't see before. Prior to 2004, we could look into the broker dealers but we couldn't look into the non-regulated entities.

As a matter of practice, instruments such as derivatives of various types are not held or struck with the broker dealers, they are struck outside of them for a variety of reasons not the least of which is capital in those sorts of situations. The result of course was that we as a supervisor could not see those contracts; we could not see how they were being managed. Once the consolidated supervision program came into effect, we could look at the totality of the large firms. It has helped a great deal in dealing with the risk management issues. The point of our consolidated supervision is to look at financial and risk controls at the holding company level, to preserve the health of the regulated entity, but also we have within that a kind of systemic risk mission, that is to minimize the demise of one of these firms, the probability of the demise of one of these firms, which let's face it, these firms are big enough, that if one should be seriously impaired, it could have an effect on the financial system so it's had a remarkably large effect.

BRANDON BECKER: Chairman Ruder, as you can pull your thoughts together, what do you see on a continuing basis?

DAVID RUDER: What's been happening in our markets has been the development of the electronic communication networks. The markets now have the ability to trade in one second or less, to have buy orders cancelled very quickly, to have the trades done by algorithms and programs in which there is no human intervention, to trade very large amounts of securities using those algorithms, and to have large stock trades shredded into small amounts.

You also have in the market a very opaque group of players. These are the people who are using derivative instruments of various kinds, not only exchange traded equity derivatives, but other kinds of derivative instruments about which no regulator has adequate information.

Jerry Corrigan has been in charge of a group that's been looking at counter-party risk, but that group has not been able to reach the non-regulated players. So we have a group of people who are in the market for derivatives and other instruments, not necessarily equities. We have positions that we don't know about and we don't know what the risks are in these positions. So we have an unregulated group of risk-takers, difficulty with counter-party analysis, automated trading, large program positions and then the possibility that the pressure from other markets, such as the credit markets, may be such that participants with poor credit positions may have to sell their good assets, such as stocks, with resulting pressures on the equity markets.

During the first few years after leaving the Chairmanship, I made a point of going to the New York Stock Exchange and talking to Dick Grasso. I told him that although I was no longer Chairman, I was very concerned about how the New York Stock Exchange system was coping with demand. I learned then that it isn't volume that's important, but the number of messages. Really my question today is whether there are sufficient unknowns and risks out there that may clog our securities markets. I am concerned about the nature of the risks, possible high message volume, and threats to system capacity in this new electronic era. This needs to be addressed. Erik, I'm delighted to learn that you are addressing some of my concerns.

ERIK SIRRI: You are right. I think as part of our automation review, capacities are always one of the questions we ask about. Rick you probably will be able to gauge us. I think capacities are up roughly by a factor of a 1000 compared to what it was in '87 in terms of messages at the New York Stock Exchange. I don't know where you are today. I think data have it, theory of 1000 times the capacity quite literally?

RICHARD KETCHUM: I think it's a very good estimate. There have been enormous achievements in technology capacity, but we not should kid ourselves that we don't have more work to be done. First, creating capacity through the simpler system architectures existing now is far cheaper, and we have far greater ability to deliver it quickly to respond to a change in events. The marketplaces also are more diverse in providing access to liquidity. So there's a lot of reasons to feel very good from a technology capacity standpoint. On the other hand the participants in the market today generate almost unfathomable amounts of message traffic, and the increase of that message traffic is also pretty daunting.

The equity markets held up in very difficult times this summer but we shouldn't kid ourselves. Technology capacity is a continuing battle for market places that will justify Market Reg's attention for years to come.

BRANDON BECKER: Can I ask you to talk about some of those issues a little further? One of the theories of ’87 in part was that people didn’t fully anticipate the degree of sustained selling that would be triggered by various portfolio insurance strategies because those were essentially upstairs strategies that weren’t priced into the market, because people didn’t know the size or nature of those. The echo I thought I read in some of the papers over this summer was various kinds of quantitative trading strategies turned out to seemingly act in parallel to one another, generating sustained selling effort and a directional bias. And again, people didn’t seem to know how much inchoate selling pressure might come into the market if certain triggers were reached. Is that still with us? How do we get our arms around it? How do regulators think about that? Do regulators think about it or is it something that just happens when it happens? Or am I chasing ghosts?

RICHARD KETCHUM: I don’t think you are chasing ghosts. I think as always in this story, there is lots to feel good about and lots to still suggest we have work to do. We talked about it from the standpoint of technology. If you want to tick through the issues, and Andrea did a good job just before, that really created uncertainty in the markets in ’87, technology capacity and lack of access stands out first, firm capital issues, and oversight surprises from a governmental standpoint, were real and clearing, the lack of effective offsets and risk management was not nearly as realistic as should exist, versus an environment way improved from both a cross-margining standpoint and risk. But you go down the list and you see three of those things and they are still challenges. We talked about the improved technology capacity - that is as good as anyone should feel about that.

With respect to the firm exposure to risk, there is the question of what happens with exuberance and the likelihood that people will depend on new automated programs. Now we have algorithmic running. Decisions are made on a probabilistic basis, but you have to think outside of the statistics in order to deal with the unusual, exceptional, extraordinary event and the basic fact that liquidity disappears disproportionately as volatility increases. It becomes very difficult to statistically describe how to react and to maintain a risk-balanced profile in those exceptional circumstances. That’s a long way of saying that we solved a lot from the standpoint of firm controls, and have vastly more effective risk management. I saw that at Citigroup for the year I was there. Still, all firms demonstrated this summer that they struggle with dealing with market break situations where the statistics didn’t work any more and you have to evaluate what is likely to happen in areas where the scenario has never occurred before. And that I think is the balance between art and science. It is not helped by the fact that, with respect to well paid people in the securities or financial industry generally, the upside of being successful substantially exceeds the downsides of blowing out, getting fired because you missed one. And there are no simple reactions to any of those things except hoping for clones of Jerry Corrigan everywhere in the securities industry. The real challenges of risk management are how to deal with extreme market movements, where estimating value moves from science to art with respect to the very unique situations which result from a lack of transparency, access, et cetera. Markets don’t move the way you predict.

BRANDON BECKER: Andrea, you were nodding your head. You said one of the things you are trying to understand about ’87 is where the exposures were and if you think back a few months to where we are now, I think that was a question we asked ourselves very much about over the counter instruments; we wanted to know where the exposures were. Technology hasn't helped at all with that. In fact technology has made it worse because the footings of these firms, their positions, you may know them with perfection, not that you ever know but you may know them with perfection at some point in time. With technology the way that it is they are trading more, they are moving their positions much more fluidly. You can swap out of the big oil exposure and be into gold exposure within half an hour or faster. So of course our ability to know the footings of these firms has changed. Accordingly, we may know less today, on a minute-by-minute basis, about a firm's position than we did in 1987.

ERIK SIRRI: I would like to comment that technology does a lot of things but often for exchanges technology is reactive. The original standard for designated order turnaround was for the purpose of getting the 100-share order to buy or sell stocks on the New York Stock Exchange or trade it in NASDAQ to get it there quickly. To get it priced and to get it turned around and sent back to the ultimate customer. It was not designed in those days for some strategies that took advantage of it and obviously gummed up the system to some degree. But I think changing gears a little here, from the exchanges's viewpoint and this was happening within the industry as well. I mentioned that we had about 50 firms on the floor of the New York Stock Exchange in 1987. Today there are seven firms. They are parts of significantly larger member firms. You know the names, Goldman Sachs, Bank of America, there is a Dutch firm, Van der Moolen, that owns a specialist on the floor, Bear Stearns owns a specialist on the floor of the New York Stock Exchange and there is a firm that is a public entity and it has gotten permanent capital by going into the market and selling its stock to individual shareholders. That change is the most significant change from the standpoint of exchanges that came out of the '87 crash. The fact that they had this permanence of capital, the fact that they had the ability to get lines of credits from banks, that they weren't reliant upon grumpy old men's capital supporting the firm and would I ever be able to get my capital out of my firm if something untoward should happen, if October 19th had turned into the 20th and the 21st with similar days of decline 22.6% which is highly unlikely, but possible.

DAVID RUDER: Another change that exists now is the growth of overseas stock markets. In 1987 it was basically Tokyo and London that we looked at as markets with volume, but today we have markets in China and South America and much greater markets in Europe than we ever had. One of the questions that I think needs some thinking about is what possibilities are there that market calamities will be transferred from a foreign market to our market. I don't have any answers to that, I just raise it.

BRANDON BECKER: Andrea, did you want to talk a little bit about the present?

ANDREA CORCORAN: We know in the futures markets that you have to expect a flight to quality in a crisis. I would call it a flight to transparency. So, our markets expect to have exposure from business that's being done upstairs or over-the-counter or in the less transparent market moving to the more transparent market. I think you have a flight to quality on the cash side that is similar and, for example, can lead to unusual numbers of redemptions of collective investments. Such a flight pushes sales of certain products. That was an issue in 1987 and 1997. But today, we have something new, that we do not have a lot of experience managing, what I would call the dis-intermediation of the execution function. Because of the perceived need by market participants to assure the speed of transacting, increasingly the electronic connection to the market is being given directly to large, institutional customers, at least on the futures side. Even though the customer actually inputs the trade, the broker is still performing a credit enhancement function. The scope of broker and market accountability was actually the subject of a Supreme Court case, just the beginning of this week. I think that even market experts aren't really sure how best to manage direct customer executions. They know that they have good risk management at the broker itself. But now what they are worried about is how good is the risk management of their customer. They can demand that their client have controls because as Chairman Cox mentioned, people, when they are making money, are really not thinking about controls. It's very hard for the compliance guy or the math guy or the economist who designs the controls, who makes a few $100,000 a year, to go to a $9 million a year income trader and tell him he has to stop doing what he's doing.

I also agree emphatically with Rick that the issue is also what do you do about the unusual outlier ("fat tail") event. I think everyone is relatively confident that the markets have the capacity to address the day-to-day - that the modeling that we have for that is really good. But I go back to the event of the market crash and I read an article about the hurricane that occurred on the 15th, that closed the City of London on the 16th. The meteorologists were all fired because they had failed to predict whether the storm on October 15th that closed London's markets on the 16th, would be a 30-year type storm or a 300-year type storm. It seems to me that, that's where our expertise is weak. It's the black swan event that we're rightly worrying about and by the way they don't happen every 100 years. So therefore, what we really are doing, when we do risk management in financial markets is we are trying to contain the damage from the outliers without impinging unnecessarily on the ability to take the kinds of risks that make a vibrant, innovative, effective, efficient market. In my view, financial risk management is really the art of managing the unpredictable not the predictable. And so I'm sure that there is much more to learn in this area. Hopefully, we will continue to demonstrate a lot of flexibility and artistry in the development of our system. I think it's our markets' flexibility that's broadly envied around the world.

BRANDON BECKER: Erik, I don't want to put you on the spot but it's just too nice to say we're not going to invite you and Chairman Cox to talk a little bit about the difficulties. Chairman Cox mentioned scenario-planning, post 9/11. The question of how do you plan for the unpredictable always strikes me as, at one level oxymoronic and at another level, very sensible and understandable question. That it's the things we don't know that are the most difficult to try and anticipate. We get to kibitz; you get to live with it and deal with the consequences.

CHAIRMAN COX: It really is a worthwhile effort to try and anticipate what normally you just wouldn't think of. One of the things that we lean on very heavily today, is in fact an outgrowth of the 1987 market events and that's the President's Working Group on Financial Markets. It's an institutional way of coordinating policy making and the exchange of information among the leading parts of the Federal Government with responsibility in this area, starting with the Department of the Treasury. The Secretary of the Treasury chairs it. The Fed Chairman is a member of it, the CFTC Chairman is a member of it, and I'm a member of it as Chairman of the Securities and Exchange Commission. The President's Working Group has been very active over this year in response to what's been going on in the market. We've addressed ourselves systematically to issues such as credit rating agencies, the deterioration in the subprime mortgage market, counterparty credit risk, hedge funds and private pools of capital. We have a communications system that starts with staff and then escalates depending on what's going on. We also have routine formal meetings of the principals. I think it's a great way to address what we have to always focus on and that's what's coming next - not what happened last time. And one of the things that the PWG has done is exercises. When John Snow was Secretary, I participated as Chairman in the first of those. We've done one with the FSA. Planning these scenarios is itself instructive. The quality of the exercise really makes all the difference in the world for the participants; by contributing our expertise into writing the scenarios, we also awaken ourselves to possibilities that we might not have imagined. There's just a lot more in the way of resources focused on this than there ever used to be. We'll never be good enough to know whether it's going to hit us as a 30-year or a 100-year or a 300-year storm. But the more attention, the more resources, and the more coordination devoted to contingency planning, the more likely that you're going to do your level best to be prepared.

ERIK SIRRI: Let me follow up with a slightly more granular level here and this is this question of risk management and how we deal with issues of risk management. Largely for us, we focus on the systemically important firms. Most of our effort is in fact spent with risk management questions and they become first order because our concern is the preservation of the regulative entity in minimizing a problem of systemic proportions. This program is very different for us because it is in fact prudential in nature; it's very different from a traditional SEC program in the sense of the Market Reg staff that deals with it. It is a staff of economists, statisticians, auditors. We go in and work with the staffs of these large banks looking at their models, auditing their models, looking at the applications of their models, challenging their assumptions and there's a lot of give and take, there's a lot of push back. There's been a lot more opportunity for questioning the assumptions of these models and the way they are implemented. But the pressures are exactly what they are. The people sitting at the business desk want to take all the risk because the maximum downside they have is getting fired. The maximum upside they have is a nine-digit paycheck and it's pretty clear to predict what they are going to do. The firm understands that as well, so any sensible firm has risk controls put in place. That said, there is externality that's produced by these firms that we internalize as the regulator, that they as the firm do not re-internalize them as someone who just runs the firm. By having a program the way we do we are able to link risk management practices firm to firm to firm. That doesn't mean we go up to firm one and say, let me tell you what the guys in firm two are doing. No. We just understand what they are doing. We're able through our own expertise to get some idea where good practices are and if we see a firm that's lagging in a particular place then we have a basis for encouraging them to bring up their standards. Sometimes they may not bring up their standards, but we have an adequate tool kit available to provide some pretty sold encouragement in that way and I think frankly it's been a terrific give and take. Problems have escalated and at times I've called CEO's of those firms and said look we're not happy with what you're doing. You need to make a change here and that was about their risk controls.

BRANDON BECKER: As we begin to get close to the end, I thought we might just take one minute to see if anyone wants to volunteer what they might have done differently in hindsight. I know what I would have done differently. I would have made more phone calls that weekend. I would have gotten up earlier on Monday and spent more time talking to people in London, to get a sense of what was happening in the London market because it became such a marked predictor of what was going to hit the New York open and I think in hindsight I would have anticipated that more directly.

ANDREA CORCORAN: I have a very esoteric thing. I should have realized that when the futures exchanges collected intra day variation settlement from losing positions that they didn't pay - they collected losses but they didn't pay the winning side of the market. They held the collects overnight and that exaggerated the potential gridlock in the system. I think that this means of paying and collecting was a practice intended to address certain issues related to batch clearing. It wasn't a rule, but it was something that we at the CFTC should have known was happening and paid more attention to. I am sure that no one prior to 1987 would have believed that this practice was of concern at the time. In fact they might even have affirmatively supported it as – how would you call it? – a conservative measure and a means of avoiding unnecessary multiplicitous transfers, should the market change overnight. That's why CME handled intra-day variation the way they did it. But I think that the way they did it at the time may have exaggerated the problems on the 20th, and they don't do it that way anymore – they pay and collect.

ERIK SIRRI: I think my answer would be very similar to Andrea's. I think we at the SEC spend a great deal of time trying to understand the interaction of markets and the additional volatility and that was good. I don't think we spend enough time looking at risk issues. I think in '87 we didn't understand those needs and nearly the way, same way we were very much in an ad hoc reacting to situations than understanding it. And certainly I would have known more about the risks involved in the risk management processes from the standpoint of options clearing firms and they are right I think. But the basic focus on risk management that Chairman Cox so eloquently described now just wasn't a part of really where the Commission was at those times. I think we had a good job beginning to starting understanding and defining that risk but not nearly enough. The other thing and probably the thing I regret the most was, that shortly after that and our demonstrating that we did have international connections at the time. In talking with a Japanese securities administrator before they had an SEC-like vehicle. I can remember him asking me that they wanted to improve their communication any time there was volatility and would it be all right if they would call me any time that their markets moved a certain percent. I said well of course. So that then moved to a year-long fallout of the Japanese markets in which these guys called me at 5:00 o'clock in the morning literally day after day for 120 days until I said, please, it's okay. I understand your markets are going down some. That would be the other thing that I would probably do different.

DAVID RUDER: I did not understand how much power I had when I came in as Chairman. At the time of the market crash, I had only been Chairman for two and a half months. Rick and his staff had described to me the possible problems in our markets, the possible cascade scenario, and the fact that the markets were in some sort of scary way interconnected. I didn't really realize that I had the power to try to do something in advance. What I would have done had I really been with it would have been to increase the coordination between the exchanges and the regulatory agencies in a very dramatic way. During the crash, I don't think that there were people at the New York Stock Exchange that had the telephone numbers of the people at the Merc. I had gotten to know Kalo Hineman a little bit and I was very glad I had because I could call him and talk about market matters. But I didn't have a ready telephone number for him. I really think that what's happened since 1987 has been a very great enhancement of inter-market and inter-regulatory cooperation. The increased information exchange and regulatory cooperation has been a tremendous thing.

WILLIAM JOHNSTON: In 20/20 hindsight, there is no doubt that we would have had more capital in our firm. We would have had the ability to reach out to the banks. We would have not had that silence on Monday afternoon the 19th from a bank that no longer is in existence saying what's your name again? And you really think you need to borrow this amount of money. That’s hindsight.

BRANDON BECKER: I think I’m with Chairman Cox and Erik also on this one. I think all that’s left for me however is to thank Andrea, Chairman Cox, Billy, Rick, Chairman Ruder and Erik. I would like to also remind you that the program is now preserved in the SEC Historical Society’s virtual museum and invite you all to visit it. For those of you listening to the live broadcast, thank you for being with us today. For those of you in the SEC auditorium, I invite you to join Chairman Cox and Herb Janick, President of the Society board upstairs in the Visitors Center for the presentation of the Society’s historic photo display. I would like to make a special thank you to Billy who sacrificed time from his family in Florida to make himself available today and it was very kind of him to be here. And thank you all for your attendance and look forward to seeing those of you here, upstairs. Thank you.

CHAIRMAN COX: Brandon you have done a very complete job of wrapping up, with one exception. There is one person left to thank: you. And so sitting here on the end I want to do that and tell you what a fabulous job you've done as moderator today. And once again thank Andrea, Rick, David, Billy and Erik for being such wonderful panelists. As your host, the Securities and Exchange Commission is very pleased that all of you could be here with us today. In particular, thanks to the SEC Historical Society for arranging for all of this and putting on this event. As to your final question, Brandon, we need look no further than the formal program that the Historical Society has printed and distributed to all of us to learn the answer - because the title of this entire session is “Keeping the Markets Open.” That is certainly a priority that, that had we known everything we know now, we would have done even better in upholding at the time. The other lesson we’ve learned is captured in the picture that appears in the program, of the front page of the New York Daily News. It’s got an enormous headline of just one word: Panic! And I suppose in hindsight we would know not to do that. Thank you.