Price Limits: A Return to Patience and Rationality in U.S. Markets

Paul Tudor Jones to the CME Global Financial Leadership Conference, October 18, 2010

Thank you to the CME for inviting me here to beautiful Naples. You have no idea how good it feels. Back home, the press has been ruthless on us Wall Street guys, talking about how slimy we are. But down here in the Gulf, no matter how slimy the press may say we are, we're still cleaner than the beaches.

I'd like to talk today about price limits and how we went from a time when virtually all futures markets were highly regulated with tight, effective price limits to a time when they were considered undesirable or even un-American by many in the industry. And most importantly I'd like to share with you this market participant's view as to the effectiveness and necessity of limits for the successful recovery of confidence in all our markets and the ongoing viability of capital markets globally.

My first exposure to price limits came when I was barely out of college and clerking on the floor of the New York Cotton Exchange in the World Trade Center. It was a hot summer morning in 1976, and I was a completely confounded newcomer to the cotton pit. I had only started to get used to the frenetic activity of my new workplace when lo and behold I walked into work on a Monday morning to find everyone just standing around, rather than running around in a frenzied crush of buying and selling and the occasional maybe moments of sheer panic. Literally, no one was doing anything; Heck, I thought they had gone union. The cotton market was due to open up beyond the limit because of overly wet conditions in the southern cotton belt and no contracts were expected to trade. The opening bell sounded at 10:30 AM and all the brokers shouted limit bid but nothing traded since there were hardly any contracts on offer. As was often the case in the 70's, the rest of the day was spent by most brokers downing more than just a few martinis down at the Market Bar. But it was more than just an opportunity for spinning good yarns (pun intended). It seemed a rather gentlemanly, considered, and deliberate way to approach what was in reality a very chaotic moment. Conflicting reports about the extent of the damage were still being digested by merchants, mills, speculators, and producers alike and so it really was a useful time to soberly assess the situation. Back in the 70's, it was probably the only thing being done soberly on the Cotton Exchange. The following day the market opened a bit higher and settled into a new trading range that reflected the diminished size of the crop. And we moved on.

Those early days of what I consider to be an uber rational approach to the markets are long gone. Now, limits are looked at as an obstruction to commerce, a threat to the free market, and an obstacle to price discovery. And yet we wonder why there are such high risk premiums in so many markets today. And we wonder why the implied volatility recently priced in stock index options implied a level of explosive activity in stock prices not seen since the late 1930's.

Up until the 1970's, virtually all the commodity exchanges were dominated by a variety of trade and commercial interests who were primarily engaged in the physical activity associated with the trading of real commodities in the agricultural, livestock, soft food, and precious and industrial metal categories. While financial futures were just starting their explosion in both volume and prominence, the exchanges of the 70's and early 80's were still dominated by physical commodity stakeholders.

This is an incredibly important point to make. The influence and power of these commercial interests was forcefully on display in the writing and enforcement of all rules both at the CFTC and at the exchanges themselves. And nowhere was there more evidence of this than in the determination and implementation of price limits. And almost uniformly, these commercial interests were in favor of what today would be considered draconian price limits. Now why was this?

It was not as if commercial commodity traders were not used to this type of volatility—quite the contrary! Whether it was a dramatically out of consensus crop report, a changed weather forecast on a Monday morning after a long holiday weekend in the summer, a crop ending freeze threat in Florida citrus groves, or the announcement of Russian purchases of U.S. grain for the first time ever, one could not trade commodities without constantly experiencing two and three standard deviation price events.

But it was for this very reason that trade interests were so set on having strict price limits. Imagine a situation where all of a sudden new critical information that was going to have a profound price impact was introduced to the market place. As important as the information itself was the reliability of that information. Was it totally accurate, only 80% accurate or 50% accurate? Or was the market hysterically overreacting to something that turned out to be totally false? Any experienced commodity trader has seen the entire range of outcomes I just listed happen literally hundreds of times in his career. I cannot tell you how many thousands of times I have traded on information that 24 hours later proved to be at least partially inaccurate or irrelevant. I also cannot tell you how many times when I was single that I had regrettable blind dates because of information that was also at least partially inaccurate or irrelevant. And it is for that very reason that there was general unanimity that relatively severe price limits were in the best interest of the marketplace, as it forced all participants to take a more deliberate approach to external shocks that can only be accurately assessed with more time to gather information.

This was a neat and cozy world until the volume in fixed income, foreign exchange, and stock index futures trading literally exploded in the early 1980's. The attendant revenue streams that the financial futures brought to the exchanges also brought a shift in the power of how these exchanges, as well as the CFTC, managed futures trading.

Financial futures brought with them a whole new host of stakeholders. And they were decidedly different in nature than the commercial interests that dominated the commodity pits. Much of this trading, primarily through market making, was done by second and third tier Wall Street firms and boutique market-making derivatives shops. They had vastly different vested interests in the functioning of these markets from the historical commodity trade interests who promulgated the rules on the exchanges. To them, extraordinary volatility, huge tail risk, and periodic jump risk in prices in the underlying futures they traded were the fuel that provided them more opportunity.

And as market makers in the financial futures market, running enormous cash-futures arbitrage positions, they wanted to have the futures market open on virtually a 24 hour basis. You see, their business thrived and survived on making markets to a variety of customers including the ever-growing hedge fund industry. These firms pushed for extended trading hours and lobbied for the advent of night trading for the first time in the history of the United States because more business was good business. And of course the exchanges were compliant, as it was good for their bottom line also.

Price limits were the scourge of this group of financial arbitrageurs. How could they lay off their risk if the futures markets were closed for any reason? And since many of them were operating on a shoestring capital basis, if the futures markets were closed while the cash markets were open and there was a significant discrepancy in the settlement prices of both, then they found themselves having to post huge margins to counterparties. It was this group of stakeholders who pushed for the abolition of price limits. They heralded the efficiency of free markets and the need for the U.S. to preserve market share in a growing, globally competitive environment for trading derivatives. And price limits stood in the way. For if markets closed for periods of time, then with that went their opportunity for profit. And they succeeded.

In 1982, futures contracts on stock indexes were introduced without price limits. After all, individual stocks had no price limits. But what all participants failed to understand was the impact from the introduction of a futures contract with 90% leverage and how it would come to drive the underlying cash markets. In late 1984, price limits were also dropped for all International Monetary Market contracts for foreign exchange. Of course this took us was to a world without limits which, from where I was sitting, culminated in a very predictable end.

You may be familiar with what's called "The Marshmallow Study" out of Stanford, not to be confused with "The Moon Pie" study out of Mississippi State. Researchers offered hungry 4-year-olds a marshmallow, but told them that if they could wait for the experimenter to return after running an errand, they could have two marshmallows. Those who could wait the fifteen or twenty minutes for the experimenter to return would be demonstrating the ability to delay gratification and control impulse. When studied years later, those children who demonstrated the ability to delay gratification were markedly more successful than those who couldn't. The latter group was described as "more troubled, stubborn and indecisive, mistrustful, less self-confident…they still had trouble subordinating immediate impulses to achieve long-range goals." I think this is a remarkably apt description of our markets today and the qualities that plague it. Incidentally, many of the children from that latter group are currently serving in our Congress.

A recent paper by Andrew Haldane called “Patience and Finance” takes a similar view of patience and its impact on prosperity, paying specific attention to the role of regulations and slowing mechanisms on the long term prosperity of individuals, markets and nations; it also explores the destructive and contagious impacts of impatience. In short, Haldane concludes that, “efficient financial intermediation increases the returns to patience, thereby encouraging thrift and promoting growth.” On the contrary, “an impatient world is found, under stress, to be an uncertain and fragile one.” Again, an accurate way to describe what we see in the markets today.

Probably the most egregious example of what happens in a limitless world is the Crash of 1987 where the S&P 500 December futures contract declined 34%, yes 34%, in one day! I actually wrote about it one month before it happened because the possibility of it was so obvious to me at that time. Given the hedging needs of the so-called portfolio insurers of the time, this was an accident waiting to happen. If we had in place 8% price limits for the S&P 500 futures contract that day and following days, my guess is the overall decline that was suffered could have been reduced by at least 50%. Monday, October 19, 1987, was just an old fashioned lynching with crowd hysteria and mob chaos ruling the day. It was avoidable and preventable had we simply employed price limits to allow market participants time to digest incoming information and make rational rather than panicked decisions.

An example of what happens when people are given a chance to reflect during panicky times is what happened on the next day, Tuesday, October 20, 1987, during that same chaotic period. Having closed on the lows that fateful Monday, it opened an incredible 20% higher on Tuesday morning only to proceed to sell off in a straight line approximately 30% in 2 ½ hours. Yes, these numbers are accurate. I remember it well as I was really concerned about whether a variety of Wall Street institutions were going to survive this incredible financial blow. Everyone was concerned about the solvency of the Chicago Mercantile Exchange because we all assumed that there were a variety of counterparties that were not going to be able to meet their margin calls given the incredible move of the prior day. Futures went to an unbelievable 15% discount to the S&P 500 cash index as the arbitrage between futures and cash was completely broken. The market was in a free fall well into midday that Tuesday the 20th until the Chicago Mercantile Exchange finally threw in the towel and halted trading. It was no different than a referee stopping a lopsided boxing match and giving a fighter a standing eight count. I remember instantaneously at the announcement of the suspension of trading, wishing that I was long at that moment. For this temporary bout of insanity had finally just been halted. And with futures at an incredible 15% discount to cash, it was only a matter of time before value buyers began to emerge and recognize how irrational these prices were. **Chart 1** shows the S&P futures around the crash in 1987, and **Chart 1A** shows the 5-minute price action on October 20th. Notice how in **Chart 1A**, a scant one hour after the trading halt and with no new information, the market opened an incredible 15% higher. The low of that day, when the CME closed the market intraday, was the lowest price ever recorded since then and is an excellent testament to how peoples' perception of price changes when not under a state of duress. Panics are not good for any market for any period of time. They cause people to make irrational decisions that they would not make given more opportunity to deliberate in a considered fashion.

CHART 1 – S&P futures in late 1987

Source: Chicago Mercantile Exchange

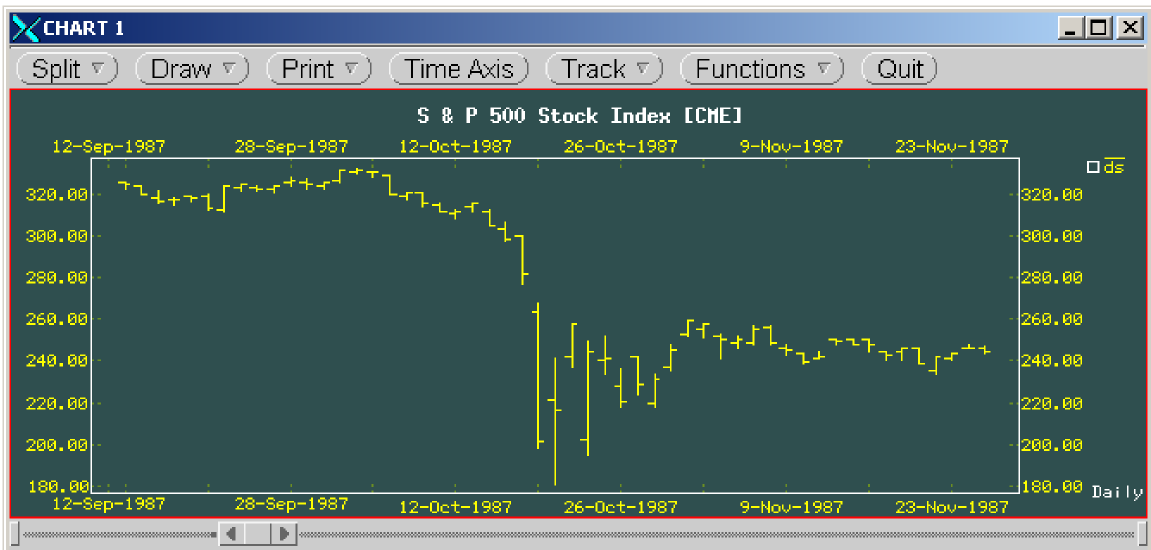
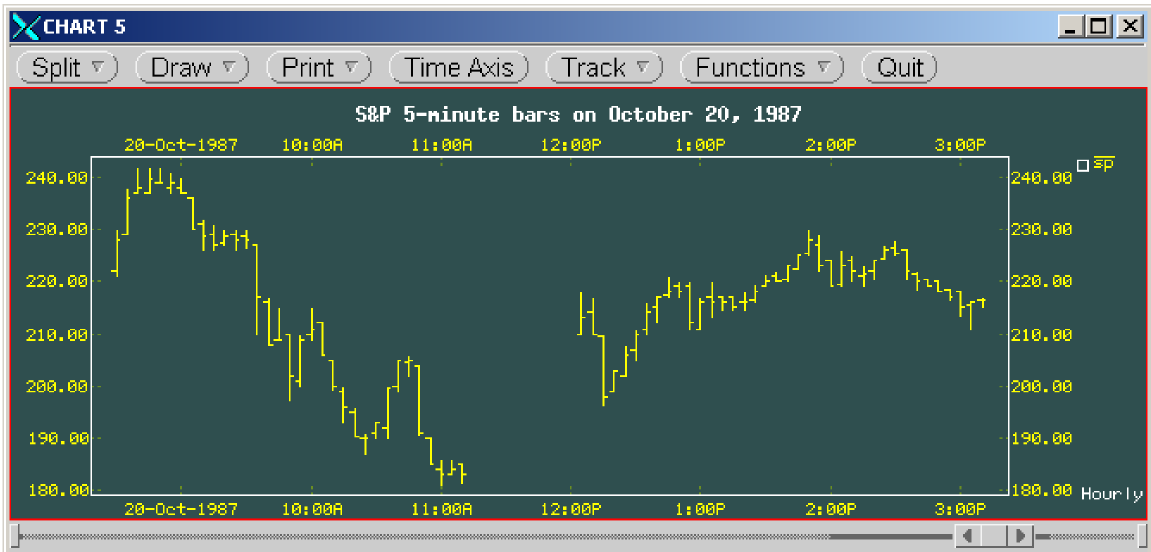


CHART 1A – S&P 5-minute bars on October 20th, 1987

Source: Chicago Mercantile Exchange



Another glaring example of the destruction that can be caused when markets trade without limits occurred in the cotton pit on March 5th, 2008. Much the same way the stock market of '87 ultimately became the crash victim of huge downward price momentum, the cotton market in '08 got trapped in an upward price spiral caused primarily by fears of huge institutional related index investments in commodities. Though I cut my teeth trading cotton, I really have not traded it in many years, and in researching this speech, I found it fascinating that on that infamous day, the futures market closed up the limit of four cents. Of course, this was double the two cent limit that I traded for the first fifteen years of my career, but then again, I guess the way God grows cotton, or we spin it or merchandise it, must have changed which necessitated a doubling of the allowable volatility since my days there. How silly of me to think otherwise.

These expanded limits were necessary to some I guess, but who could have foreseen the new wrinkle that was ushered in with the introduction of options on cotton futures in 1984? And that unforeseen wrinkle was that synthetic futures could effectively trade in the options market, via deep in the money calls, with no limits. They could trade at any price even though the underlying futures market on which the option was based was closed! Now this set up a very interesting situation in that when one extraordinarily leveraged avenue for trading was closed, such as the futures market, all the remaining trading was forced into an even more highly-leveraged vehicle—the options market. If there ever was an accident or disaster waiting to happen, it was this apparent lack of harmonization between futures and options that provided fertile ground.

On that fateful day, March 4th, 2008, the graves were dug and the tombstones were carved for many century old cotton merchants all across the South. A sentimental chapter of American history was about to be put to the sword in the pursuit of uncontrolled price discovery action. Though futures came in locked limit up at 88.46 cents, the synthetic option on the May futures continued to trade as can be seen in

Chart 2 (daily futures OHLC with synthetic futures prices) and **Chart 2A** (intraday futures and synthetic futures prices). On this day, without any new news and with the breakdown between cash and futures complete, much the same way it was in 1987 in stock index futures, once again there was a lynching on an exchange floor. This time it was all of the shorts, primarily consisting of merchants who were running long cash/short futures positions, as many of them had sold futures contracts forward against cash crops they had bought from farmers. But as futures prices rose, so did the financial demands these merchants put on their banks to help them meet margin calls until the banks reached a point where they would no longer extend credit. Many of the banks began to tell their old and storied borrowers that they needed to cover their short positions as they would no longer extend margin money to them. And since futures were not available to them and prices were continuing to rise, the only alternative was to synthetically trade in the May options arena. The price of the synthetic May futures traded via deep in the money calls in the options pit by opening that day over $1.00 and trading up to $1.10 before coming all the way back to 90 cents—all the time with the actual May futures contract locked limit up at 88.46! Looking at **Chart 2A**, you can see that price activity and all trading above the red line represents prices options traded that were never ever matched in the futures pit. I know a number of merchants that day whose banks forced them to cover when the price breached a dollar because the banks no longer wanted to post the collateral in the face of what appeared to be an exploding commodity bubble that the regulators at the time had little appetite for stopping.

CHART 2 – Daily cotton prices in March 2008

Source: ICE Futures U.S.

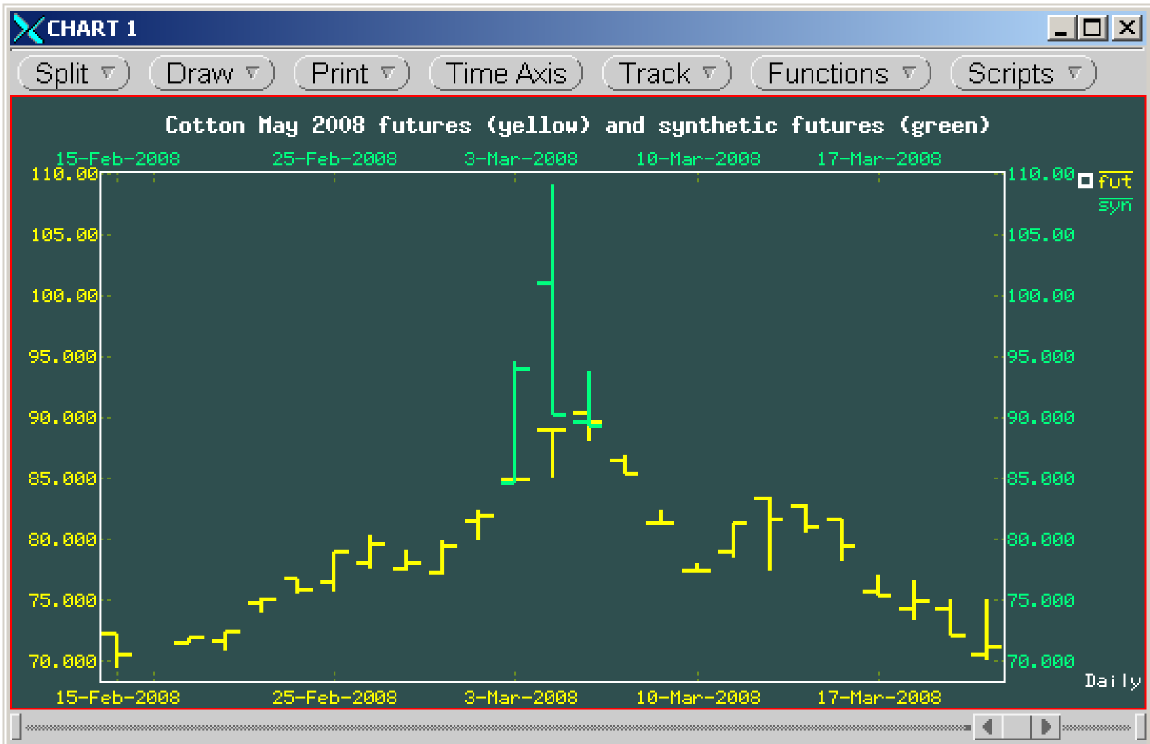
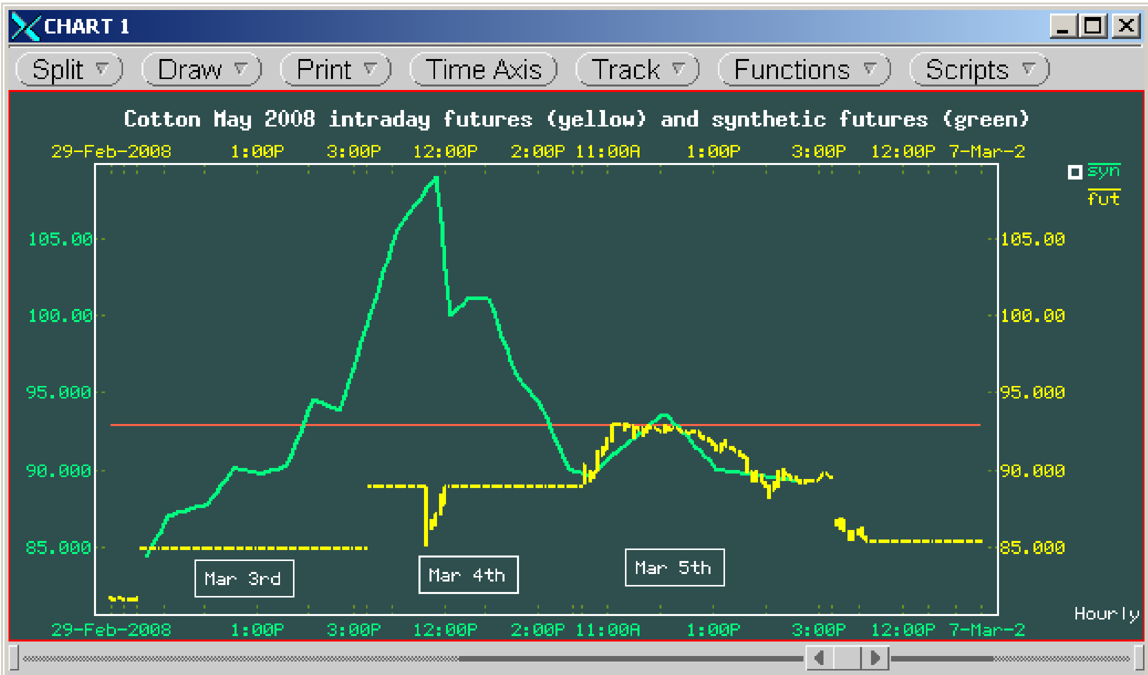


CHART 2A – Intraday and synthetic cotton futures prices in March 2008

Source: ICE Futures U.S.



Within two weeks, May cotton traded down to 69 cents again, yes 69 cents, without any new input or really new news as the market regained equilibrium, and the normal basis that prevailed between cash and futures reasserted itself.

That particular incident caused major changes in the cotton industry. It caused extreme consolidation and concentration as a result of the demise of a host of small, medium, and even large merchants. Mark Twain rolled over in his grave. Then he remembered he wasn't invested in cotton, so he rolled back to his original position. This lack of depth is not good as it narrows the pricing competition to both consumers and farmers. And I directly attribute that to the perverse operation of the futures and options markets during that timeframe by acting in exact opposite fashion for which they were created.

Finally, what more pertinent example that underscores the importance and need of price limits than the flash crash of May 6th of this year. As the joint report from the CFTC and SEC stated, the 10% slide in the S&P was finally stopped when "the Chicago Mercantile Exchange stop logic functionality was triggered in order to prevent a cascade of further price declines." In that short period of time, sell side pressure in the S&P E-mini was partly alleviated and buy side interest increased. When trading resumed, prices stabilized and shortly thereafter the S&P 500 began to recover. The question I have is why was the first limit down nearly 10%? But other more incredible events were taking place at the same time, and I'm not talking about Brett Favre's text messages. Again let me quote from the report, "Over 20,000 trades across more than 300 securities were executed at prices more than 60% away from their values just moments before. Moreover, many of these trades were executed at prices of a penny or less, or as high as $100,000, before prices of those securities returned to their pre-crash levels. By the end of the day, major futures and equity indices "recovered" to close at losses of about 3% from the prior day." And of course individual investors immediately began one of the biggest selling sprees of recent history of both individual stocks and mutual funds as confidence was completely shattered.

There are easy policy prescriptions to prevent this type of abhorrent behavior which is extraordinarily damaging to the confidence of the marketplace. Remember, in

1987 it took investors nearly four years before they began to reinvest in stock mutual funds after the1987 crash. Again, this all would have been prevented had we had reasonable limits. So let me propose some broad guiding principles.

1. Every exchange traded instrument including all securities, futures, options and any other form of derivatives should have some form of a price limit. And this is all the more urgently needed now that electronic execution dominates trading. The possibility of a fat finger mistake can only be completely negated with the introduction of protective limits. This unequivocally applies to individual stocks as we simply can never have a repeat of the flash crash of May 6, 2010 or October 19, 1987. Clearly, this type of episode, if repeated, will drive all prospective investors away from our securities markets.
2. Existing price limits on all derivatives, futures and options should be reviewed with the intention of narrowing many of them. This must be done on a case by case basis but let me provide one example of which I would be in favor. All stock index futures and options should have an 8% daily limit both up and down, consisting of a 5% move with a one hour timeout, and a further 3% limit before that price move is exhausted for the day. Since the start of the S&P 500 index in 1928, this means that trading would have at some point been halted for the rest of the day only 29 days out of almost 22,000, or about once every three years. Anything greater than an 8% move in stocks in one day is probably because of something either so fantastic or so bad that taking more than another day to think about it is a good thing. Hell, most guys spend more than one day picking their fantasy football team. If the rest of the world wants to make markets on U.S.

exchange traded products off the exchange and off hours, then it will be to their peril. More often than not, the decisions investors will be making will be poor ones much the same way the cotton options market completely mispriced the panic of March 4th when the futures were locked limit up. In the case of individual stocks, Japan has instituted price limits of approximately 15% and that seems to work fine. This rule would have prevented the Crash of ’87 and severely mitigated the Flash Crash the past May.

3. Third and finally, we must harmonize cash, futures, and options markets so that we are not forcing liquidity into one arena because another arena is shut. It defies imagination that our regulatory agencies have not yet insisted on harmonization when history is repeated with examples that scream for this easy fix.

Traders, speculators, liquidity providers, brokers, and even exchange officials quite often forget that the existence of futures markets and securities markets were not designed to serve them. Rather, the purpose of this august body of which I am a member, is to instead serve and facilitate the mission of markets—in the case of capital markets, this is to provide capital for businesses and to provide investment opportunities for tens of millions of investors who look to preserve and grow capital. In the case of futures and options markets, their twofold purpose is to provide a hedging mechanism for consumers and producers or to provide price discovery to the general public.

This will not be accomplished by implementing and promoting the rules that intentionally or unintentionally lead to excess volatility. It will be accomplished by reducing volatility in a reasonable fashion towards a more predictable outcome which benefits everyone.

When I was 21 years old, I was working for one of the greatest cotton speculators in history, Eli Tullis in New Orleans. After but 4 months of immersion in the business, I was desperate to open a personal trading account. When I approached him, he looked at me and said, "No, son you are rushing things." Weirdly enough, it was the same thing my girlfriend at the time had told me the night before. I persisted—and he then said, "Listen, son I know you are in a hurry but let me just tell you this. The markets will be here in 30 years but the real question is will you?" Those were wise words then. And they are particularly apropos for all of us in this room as we decide whether we are going to manage for the moment or manage for the health and integrity of capital markets thirty years from now.

I'd be happy to take some questions now if you have any.