

Statement of  
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Before the  
Joint CFTC-SEC Committee on Emerging Regulatory Issues

June 22, 2010

I am Craig S. Donohue, Chief Executive Officer of CME Group Inc. Thank you Chairman Gensler and Chairman Schapiro for allowing us to present our observations today. You have asked us to discuss the conduct of our markets on Thursday, May 6, 2010 as well as to provide our observations of what was occurring generally in the markets on that date.

CME Group is the world's largest and most diverse derivatives marketplace. We are the parent of four separate regulated exchanges, including Chicago Mercantile Exchange Inc. ("CME"), the Board of Trade of the City of Chicago, Inc. ("CBOT"), the New York Mercantile Exchange, Inc. ("NYMEX") and the Commodity Exchange, Inc. ("COMEX"). The CME Group Exchanges offer the widest range of benchmark products available across all major asset classes, including futures and options on futures based on interest rates, equity indexes, foreign exchange, energy, metals, agricultural commodities, and alternative investment products. The CME Group Exchanges serve the hedging, risk management and trading needs of our global customer base by facilitating transactions through the CME Globex® electronic trading platform, our open outcry trading facilities in New York and Chicago, as well as through privately negotiated CME ClearPort transactions.

**I. Introduction**

Since May 6, 2010, CME Group has engaged in a detailed analysis regarding trading activity in its markets on that day. Our review indicates that our markets functioned properly. We have identified no trading activity that appeared to be erroneous or that caused the break in the cash equity markets during this period. Moreover, no market participant in our markets reported that trades were executed in error nor did the CME Exchanges cancel ("bust") or re-price any transactions as a result of the activity on May 6th. Moreover, the CME markets provided an important price discovery and risk transfer function on that day and served as a moderating influence on the markets.

In the following sections, we discuss: (1) the functioning of and the role played by our markets on May 6, 2010, (2) the existing circuit breaker rules, the need for consistent and transparent rules across markets, and our comments on recent circuit breaker rules implemented subsequent to May 6, and (3) CME electronic functionality, particularly CME Stop Logic functionality and price banding, among others, which serve to protect our markets. Finally, we have also included certain recommendations as to changes that could avoid a recurrence of this type of event in the future.

## **II. The CME Markets Functioned Properly on May 6, 2010**

### **a. CME Has Conducted a Review of Detailed Trading Records**

CME Group analyzed trading volume and activity throughout May 6 and focused particularly on the activity taking place during the period of 1pm to 2pm Central Time. Total volume in the June E-mini S&P futures on May 6<sup>th</sup> was 5.7 million contracts, with approximately 1.6 million or 28% transacted during the period from 1pm to 2pm Central Time. During that hour, the market traded in a range of 1143.75 to 1056, or 87.75 points - beginning the hour at approximately 1142 and ending the hour at approximately 1113. More than 250 CME Globex execution firms, 8,300 accounts and 9,000 User IDs were active in the market during this period of time.

During most of that hour, the bid/ask spread in the E-mini futures was a tick wide (.25 points) and the market traded in a largely orderly manner despite the significant sell off and subsequent rally. At approximately 1:45:28, the market declined 12.75 points over a period of approximately 500 milliseconds on the sale of 1100 contracts by multiple market participants. The last 6 points of that move occurred in 5 millisecond on the sale of approximately 400 contracts for stop orders. Following those sales, the bid/ask spread widened to 6.5 points, or 26 ticks for a fraction of a millisecond.

At that moment, one of CME Group's risk management functionalities, CME Globex Stop Logic, which is discussed in more detail below, was triggered. As a result, the market was automatically paused for five seconds to allow liquidity to come into the market. The market subsequently reopened three ticks higher at 1056.75, and thereafter rallied more than 40 points to 1097 in the following three minutes.

The Market Regulation Department reviewed a significant amount of activity during this one-hour period, a period that included more than 3 million system messages, and, in particular, examined the activity of participants whose trading activity was significant or otherwise warranted further review. The review conducted by Market Regulation staff to date has not identified any evidence of improper or illegal activity by market participants.

### **b. CME Markets Provided an Important Price Discovery and Risk Transfer Function on May 6**

From a broader perspective, the cumulative record of May 6 trading activity underscores the fact that CME's futures markets, due to their high level of liquidity, provided an important price discovery and risk transfer mechanism for all market participants on that day.

The equity index futures contracts traded on CME Group designated contract markets provide an essential risk management function, allowing investors to hedge their exposure against a portfolio of shares or equity options. The most significant equity index futures contract traded on the CME Group Exchanges is the E-mini S&P 500 futures contract. In 2009, the E-mini contract traded over 556 million contracts, which represents an average daily volume in excess of 2.2 million contracts, making the E-mini S&P futures contract the most liquid equity index futures contract worldwide. Throughout the challenging market conditions on May 6<sup>th</sup>, market

participants utilized the liquidity and efficiency of the E-mini S&P 500 futures contracts to meet their risk management needs; the contract effectively facilitated customer demand to hedge exposure to a declining broader market and, as will be shown below, represented a moderating factor during the day's trading session.

The primary purposes of futures markets are to provide efficient price discovery and an effective risk management mechanism. In particular, the academic literature underscores the efficacy of futures markets as a tool of price discovery. According to one study, “[e]mpirical results confirm that futures market plays a price discovery role, implying that futures prices contain useful information about spot prices.”<sup>1</sup> As such, stock index futures frequently represent the venue in which price information is revealed first, generally followed closely by spot markets. In fact, most researchers find that “futures lead the cash index returns, by responding more rapidly to economic events than stock prices.”<sup>2</sup>

Futures contracts, by design, provide an indication of the market's view of the value of the underlying stock index. Casual observation may lead to the conclusion that the E-mini S&P futures prices appeared to lead the decline in the cash market. However, the decline was consistent with declines in the most complementary equity derivative products, ETFs based on the same index, trading in the cash market. Unlike the cash market, the decline in the futures market was then mitigated by the operation of our risk management technology which halted the market for a short period to enable additional liquidity to enter into the futures market. Attached as Exhibit 1 is a chart which illustrates the comparative value of the E-mini, traded on the futures market, as compared to the equities markets. The ETF most comparable to the E-mini S&P 500 futures is the SPDR S&P 500 ETF Trust (SPY). The chart demonstrates that the E-mini S&P moved virtually in tandem with the comparable cash instrument until the moment when our Stop Logic was triggered which caused our matching engine to pause for 5 seconds while continuing to allow new orders to be entered. At the time the Stop Logic was triggered, the E-mini S&P ceased its drop, while certain individual stocks in the cash market continued their steep decline. Following the halt, the E-mini S&P then rallied sharply. We believe this recovery was positively influenced by our Stop Logic functionality which stabilized market activity. This type of functionality is not available in the securities market. Consequently, even while the broad based index markets – SPYs and CME E-mini S&P – were substantially recovering, there were continued price declines in individual stocks which persisted for minutes (not seconds).

More specifically, to illustrate this point, we reviewed the period from 13:30 to 14:00 (CT) during which the market activity occurred as depicted in Exhibit 2. E-mini S&P 500 futures were declining after 13:30 (CT) followed by spot equity markets including Proctor & Gamble (PG), 3M (MMM) and Accenture (ACN). The June 2010 E-mini S&P 500 futures traded at its low of 1,056.00 at 13:45:28 (CT), at which point the Stop Logic functionality was triggered halting the decline, and the market rallied following the 5-second halt. PG, MMM and ACN continued to

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<sup>1</sup> See Floros, C. and Vougas, D. V. (2007) Lead-Lag Relationship between Futures and Spot Markets in Greece: 1999-2001, *International Research Journal of Finance and Economics*, 7, 168-174.

<sup>2</sup> Kavussanos, Manolis G., Visvikis, Ilias and Alexakis, Panayotis, The Lead-Lag Relationship between Cash and Stock Index Futures in a New Market. *European Financial Management*, Vol. 14, Issue 5, pp. 1007-1025, November 2008.

slide even after futures hit their low and began to recover. Those stocks were put into a reserve mode by the New York Stock Exchange (NYSE) per its Rule 1000(a), Liquidity Replenishment Points, at 13:45:52, 13:50:36, 13:46:10 (CT), respectively; however, these stocks continued to decline. We believe that this decline continued because orders were re-routed to possibly less liquid security trading venues which were not coordinated with NYSE Rule 1000(a). PG printed a low of \$39.37 at 13:47:15 (CT); MMM printed a low of \$67.98 at 13:45:47 while ACN printed a low of \$0.01 at 13:47:54 (CT). Thus, the E-mini S&P 500 futures were rallying while PG, MMM and ACN continued to decline.

As stated above, we believe that this temporary de-linkage between the futures and stock markets may be attributed to inconsistent rules across the equity markets which enabled the stocks to decline even further.

The trading activity during this time period also evidences that the futures markets provided an important source of liquidity which served as a moderating influence in the markets. There is strong evidence that the E-mini S&P futures contract was much more liquid than the fragmented underlying stock market on May 6. During the period between 1:40 and 2:00 CST, the volume of E-mini S&P futures (notionally adjusted) was 3 to 4 times greater than the SPY volume and, at the peak of the market's volatility, was to 8 to 10 times greater. As noted above, E-mini S&P 500 futures slightly lead SPYs during the downturn. Both E-mini S&P 500 futures and SPDRs turned around near 13:45:28. But, as shown in Exhibit 1, the rally in futures was relatively consistent and orderly in contrast to the rally in SPYs which was very uneven and was highlighted by a significant increase in cash equity market spreads.

The second-by-second trading range, which is an indicator of the liquidity in the market, was much tighter in E-mini S&P 500 futures than in the comparable equity product, the SPYs. In examining the ratio of the futures trading range relative to the SPYs (SPDR) trading range in one-minute intervals between 13:30 and 14:00 (CT), the respective trading ranges were very similar at the beginning of the period. By the height of the incident near 13:45-13:50, however, the ratio had fallen to as low as 20% that of the SPDR range. While all the markets were less liquid than in normal times, the liquidity in the futures market degraded much less than in the SPY market (which, in turn, degraded much less than the individual stocks, especially those stocks that are thinly traded.) This suggests that the futures order book was much deeper and more resilient than the SPDRs order book. In other words, the E-mini S&P 500 futures market continued to absorb trading volume and trade in an orderly fashion even in the face of apparent crisis in spot equity markets when liquidity was most sorely needed. As such, futures represented a moderating factor throughout the incident.

If the futures market had not been available as an alternative, the selling would have manifested itself through another venue, potentially in a less liquid market, such as the underlying stock market or the OTC derivatives market. The relative tightness of the spread in the futures market underscores the fact that a concentration of liquidity supported the important price discovery and risk transfer role of the futures market.

### **III. Circuit Breaker Levels Should be Reviewed and Rules Should be Consistent Across Markets.**

#### **a. CME Group Circuit Breaker Rules In Effect Were Consistent With Equity Markets**

One of the mechanisms that exchanges have implemented to curb market volatility are “circuit breaker” rules. Circuit breaker rules require an automatic halt in trading when pre-determined price thresholds are reached. CME Group Exchanges currently have circuit breaker rules in effect for equity index products which are consistent with the 10%, 20% and 30% market-wide circuit breaker rules in the underlying equity markets. CME Group also implements an unconditional trading halt in an equity index futures contract which the primary stock market is halted, regardless of whether a particular index product has hit a limit or not.

Circuit breaker rules were originally introduced following the September 1987 market crash. The circuit breakers were implemented uniformly across all equities and options exchanges and were set at a fixed price level tied to the DJIA. This rule was embodied in NYSE Rule 80B.

On October 27, 1997, the circuit breakers were triggered for the first time and the circuit breaker rules were subsequently modified to employ percentage declines of 10, 20 and 30% in the DJIA established at the start of each calendar quarter in lieu of the fixed point triggers previously used. That rule remains in effect.

In addition to the coordinated circuit breakers, CME adopted price limit rules for its equity index contracts. The price limit structure and levels changed several times as the Exchange acquired more experience and as the trading halt rules in the equity market were modified.

In January 2008, however, CME harmonized its price limit percentage thresholds to be fully consistent with the percentage thresholds reflected in NYSE Rule 80B (and also consistent with the methodology employed by the CBOT with respect to the DJIA futures). CME Group did, however, retain the references to the specific stock index that is the subject of the futures contract rather than tying these limits to movements in the DJIA, meaning, for example, that the E-mini S&P 500 price limits are tied to price movements in the related index.

CME Group also enforces a 5% upside and downside price limit policy during overnight electronic trading hours (between 3:30 p.m. and 8:30 a.m. Central Time (“CT”)) which allows participants to trade continuously within the bands of the designated price limits; further, if an equity index futures contract is locked limit at 8:15 a.m. CT and remains so at 8:25 a.m. CT in the lead month futures contract, a trading halt is implemented until 8:30 a.m., the commencement of regular trading hours (floor and electronic trading). During the trading halt, the Exchange provides an Indicative Opening Price of the re-opening of trading on CME Globex, if applicable. If the lead month futures contract is no longer locked limit at 8:25 a.m. CT, trading will continue with the 5 percent limit in effect. At 8:30 a.m. CT, the 5 percent limit is replaced by the broader limits applicable to regular trading hours.

On May 6<sup>th</sup>, the declines in the DJIA were just short of 10% at a time of day when the 20% trigger was in effect. As a result, the circuit breakers in the primary and the futures markets were

not triggered. Accordingly, we believe that the current circuit breaker levels of 10, 20 and 30 percent, the duration of the halt and the time of day at which such triggers are applicable should be reevaluated to determine whether any changes are warranted.

**b. Lack of Consistent Rules Across All Markets Contributed to Market Events**

After May 6, CME Group staff reviewed the relevant processes and rules across its exchanges and the equities exchanges to determine what protections existed in the operating rules of the various equities platforms in the event of a market disruption. This review confirmed that the equity markets are highly fragmented with disparate rules and functionality, and it appears to us that this lack of consistency across the equity markets likely contributed to or exacerbated the problems experienced on May 6.

For instance, as noted above, we believe that the lack of consistency and coordination among equity platforms in the establishment of circuit breakers for individual stocks led to extreme market disruptions; when the NYSE rule circuit breaker rule was invoked with respect to trading in individual stocks, order flow circumvented the NYSE market and trading continued on other platforms which did not have comparable protections. Consequently, as a result of the lack of liquidity on these other platforms, trading in those individual stocks suffered significantly.

We also note that in the aftermath of the May 6 incident, there was significant confusion in the equity markets with respect to the cancellation or “busting” of trades. The standards for cancellation of trades are not consistent or transparent across the equity markets as a whole. At the CME Group, we have clear standards regarding the handling of error trades, including specified “no bust” ranges for each product (i.e., ranges within which trades may not be cancelled) and these standards are clearly set forth in our rulebook and are posted on our website.

We acknowledge and welcome the recent efforts of the SEC and the equity exchanges to address these issues, including the June 10, 2010 circuit breaker pilot program as well as the June 17 announcement of the proposed implementation of rules surrounding clearly erroneous trades; we believe, however, as described below, that further action is necessary in the short term to be fully responsive to the events of May 6. These efforts are essential to ensure the integrity of the market and to promote market confidence among users.

**c. Recent Proposals Do Not Fully Address the May 6 Market Events and May Have Unintended Consequences for Index Products and ETFs**

On June 10, 2010, the SEC adopted rule changes submitted by the primary listing stock exchanges and FINRA implementing coordinated single security circuit breakers. These actions were taken in coordination with the SEC in response to the events occurring on May 6, 2010. Under the new rules, the listing exchanges will implement a five-minute trading pause on an individual security that is a component of the Standard & Poor’s 500 Index (S&P 500) in the event the transaction price of the security moves ten percent or more in a five-minute period. Under corresponding rules adopted by FINRA, trading in any such halted symbols would also be paused in the over-the-counter markets.

Primary listing markets that initiate a trading pause are required to immediately notify the single plan processor responsible for the consolidation of market information. All other markets that trade the symbol are obligated to pause trading on their markets when that information is disseminated over the consolidated tape. At the end of any five-minute trading pause, a primary listing market may reopen trading unless it determines there is a “significant imbalance” in which case it may delay reopening. If a primary listing market has not reopened within ten minutes from the initiation of the trading pause, however, the other exchanges may resume trading in the stock.

The circuit breaker rules were adopted on a pilot basis until December 10, 2010. It is our understanding that the implementation of this pilot program is the first phase of a three-phased approach to address the circuit breaker issue. Phase II, when implemented, would expand this program to include ETF markets and a broader spectrum of securities and Phase III would encompass market-wide circuit breakers; this last phase would not be addressed until late summer.

We believe that the individual security circuit breakers, without immediate additional action, are not fully responsive to the market events of May 6, and that the industry as a whole must do more as quickly as possible to avoid the negative consequences of the lack of coordination across markets that contributed to the events of May 6. A comprehensive and effective course of action would include the implementation of newly-calibrated and coordinated market-wide circuit breakers as soon as possible. We believe this is the most effective preventative measure to address concerns regarding the type of market-wide volatility witnessed on May 6. Additional necessary action should include prompt elimination of stub quoting practices and the implementation of measures to mitigate the impact of isolated liquidity gaps (or errant order entry) in individual products in ways that will not disrupt the broader market. For example, all orders, including market and stop orders, should have associated limits that preclude orders from being executed at unreasonable levels when there is a temporary absence of liquidity in the market or erroneous entry of an order. CME Group has successfully employed market and stop order protection points and limit order price banding to achieve these ends, substantially reducing the incidence of canceled or adjusted trades and mitigating volatility. Similarly, trading venues should employ automated means, similar to the CME Group’s Stop Logic functionality, to briefly pause the market in the event that cascading stop orders would precipitate a material market decline; this type of functionality mitigates the impact of a momentary liquidity gap and allows an opportunity for liquidity to be replenished. In a highly automated marketplace, this pause can reasonably be calibrated in seconds without substantive impacts on the broader market.

The new rules implementing individual security circuit breakers, while well intentioned, create the potential for disruptions in the trading of broad-based market index and index-based products. Under the pilot program recently established for S&P 500 stocks, it is possible that individual components of an index, or multiple constituent stocks, could be halted without market-wide circuit breakers being triggered. The impact of these halts on the index will be a function of which and how many securities are halted. Currently, the largest stock in the S&P 500 by weight is Exxon at approximately 3% and the top 50 components of the S&P 500 comprise roughly 50% the total market capitalization of the index. Index providers have not yet developed the policies and procedures that would be employed should trading in component

stocks be halted. Index providers will have to subjectively evaluate market conditions and possibly issue statements highlighting the number of securities and the collective index weight of the halted securities. Clearly, in a market disruption event, stocks may be halting and opening on staggered timelines, which has the potential to create complexity and/or confusion in understanding the index calculation. In any event, market participants will have to determine the relevance of the index values that are being calculated and disseminated based upon the prices of the components that continue to actively trade.

The halting of high capitalization, highly liquid index components potentially creates the following situations that could be disruptive to the market:

- The number of halted issues may impact whether the index triggers a market-wide circuit breaker
- The intra-day index values published and used for risk management purposes may not be reflective of the true value of the underlying market
- The risk management capabilities of large liquidity providers in E-mini index futures and equity index ETFs who use these products to hedge market-making activity would be adversely affected and this may result in less liquidity being provided to the market

As noted above, Index providers do not yet have written policies and procedures with respect to how they will deal with intra-day security-specific halts, which only increases the uncertainty in the marketplace. Consequently, we believe that relevant rules need to take into consideration how these trading pauses impact market-wide circuit breakers and other index products as well as risk management practices.

In addition, we believe that circuit breakers applied to equity index ETFs, which are comprised of baskets of securities, should be different than those applied to individual stocks and should be consistent with comparable products across markets. In addition, the indexes underlying the most active ETFs are also the same indexes underlying the most active cash index options, index futures, and options on ETFs. The fact that ETFs and ETF options could have a different circuit breaker mechanism than the overall market-wide circuit breakers, as well as a different mechanism than index futures and index options, creates inconsistencies across comparable markets. Inconsistent treatment of the same underlying exposure is likely to add further stress to the markets during periods of turbulence and exacerbate risk management challenges as risk and margin offsets will not be functional.

We recognize ETF sponsors' desire on behalf of the retail community to prevent a repeat of May 6<sup>th</sup> when a large proportion of the cancelled trades involved ETFs. Analysis shows that activity is highly concentrated in a small number of US large cap index products; specifically, the SPY (based on the S&P 500), DIA (based on the DJIA) and the QQQ (based on the NASDAQ 100). Thus, we understand and appreciate that circuit breakers for ETFs may need to be differentiated based upon their underlying liquidity and different percentage thresholds may be appropriate. However, given the scope of inter-market linkages, we believe that circuit breakers on equity-index ETFs, including the market-wide benchmark products based upon the S&P 500, the Dow Jones Industrial Average, and the NASDAQ 100, should employ a consistent methodology and should be consistently applied across all venues and across all exchange-traded and OTC



products, including Equity Index Futures, Equity Index Options, ETFs and options on ETFs, inclusive of leveraged and inverse products.<sup>3</sup>

Today, the CME employs market-wide circuit breakers, but it also employs index-specific price limits for each index product. In each equity index product, a 10 percent limit is initiated if the lead month futures contract is limit offered. Once this has occurred, the limit remains in effect for 10 minutes, during which time market participants are precluded from trading below the limit, but can continue to trade at or above the limit. If the lead month futures contract is no longer limit offered after 10 minutes, trading continues with a 20 percent limit in effect. If the lead month futures contract remains limit offered after 10 minutes, trading is halted for two minutes, after which trading resumes with a 20 percent limit in effect.

#### **IV. CME Group Has Risk Management Controls to Mitigate the Potential for Disruption of its Markets**

In addition to the circuit breaker and price limit rules described above, CME Group has in place numerous risk management processes, procedures and systems to preserve the integrity of its market in light of the many risks associated with maintaining a primarily electronic market. For example, the CME Group Exchanges are the only exchanges in the world that require pre-execution credit controls which become mandatory in June 2010. Appended as Exhibit 3 is a detailed list and description of the multitude of controls that the CME Group employs on its CME Globex system, including credit controls, messaging volume controls and risk protection policies and procedures.

There are certain risk protection tools employed by the CME which are important to note individually and which are relevant to today's discussion. One of these tools, CME Globex Stop Logic functionality, was employed on May 6 – its operation and effect are also described below. In addition, CME Group Exchanges have a number of other policies and procedures that provide us with the tools to monitor and maintain orderly administration of the electronic markets and provide real time surveillance and oversight of trading activity.

##### **a. Stop Logic Functionality**

The CME Globex system has a Stop Logic functionality which serves to mitigate artificial market spikes that can occur because of the continuous triggering, election and trading of stop orders due to insufficient liquidity. If elected stop orders would result in execution prices that exceed pre-defined thresholds, the market automatically enters a brief reserved state for a predetermined time period, ranging from 5 – 20 seconds. During this period, no orders are matched but new orders other than market orders may be entered and orders may be modified and cancelled. The momentary pause that occurs when Stop Logic is triggered allows market

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<sup>3</sup> This would not include products that have the same constituent components but a different construction methodology than the benchmark index. For example, the DJIA is a price weighted index so any product based upon either equal weighting or cap weighting would not be subject to the same circuit breakers.

participants the opportunity to provide liquidity and allows the market to regain equilibrium, thereby mitigating the potential for disruptive market moves.

The stop price logic parameters in the E-mini S&P futures are 6 index points (approximately one-half of one percent of the S&P 500 index value) and 5 seconds (10 seconds outside of regular trading hours).

The Stop Logic functionality was triggered on May 6<sup>th</sup> in the E-mini S&P 500 equity index. At 1:45:27, one second prior to going into reserve state, the front month E-mini S&P 500 equity index futures contract was trading just under the 1070.00 level. Multiple parties entered the market selling and taking the market down to 1062.00. There was a stop order to sell 150 contracts at 1062.00 which moved the markets to 1060.25, and elected additional stops that were filled down to 1059. The trades at 1059 triggered another 150 lot stop at 1059.00 which was executed down to a level of 1056.00, which would have elected additional stops.

However, at this point, following the 6 point move from 1062 to 1056, the front month E-mini S&P 500 equity index futures market went into reserve state as a result of the Stop Logic functionality being triggered at 13:45:28. The market came out of this reserve state five seconds later. As a result of this brief suspension of trading, the decline in the E-minis was halted and the market came out of the reserve state with an initial price of 1056.75, after which it rallied sharply. Consequently, we believe that the triggering of this functionality served its intended purpose of allowing market participants the opportunity to provide liquidity and permitting the market to regain its equilibrium.

**b. Price Banding Functionality**

To ensure fair, stable and orderly markets, CME Globex subjects all orders to price verification using a process called price banding. The platform utilizes separate mechanisms for futures price banding and options price banding. Price banding prevents the entry of erroneous orders such as a bid at a price well above the market or an offer at prices well below the market which could trigger a sequence of market-moving trades that require subsequent cancellations. In order to determine the level of price banding, CME Group Exchanges use the most current and relevant market information, including, for futures, trades, best bid and offer and implied bid and offer or indicative opening price, and for options, last price of an option or spread and a theoretical options price based on options pricing algorithms.

**c. Protection Points for Market and Stop orders**

This CME Globex functionality automatically assigns a limit price (Protection Point) to futures market orders and stop orders to preclude the execution of these types of orders at extreme prices in situations where there is insufficient liquidity to support the execution of the order within an exchange-specified parameter of the current market.

The Protection Point values vary by product, and in the E-mini S&P futures the Protection Point is established at 3 index points. The CME Globex system calculates the limit price for a Market

Protected Order by applying the Protection Point value to the best bid or offer price (depending on the order's side of market) and by applying the Protection Point value to the trigger price for a Stop Protected Order. Any unmatched quantity remaining for a Market Protected or Stop Protected Order after it is executed to the Protection Point limit becomes a Limit Order at the Protection Point limit price.

d. **Maximum Order Size Protection**

Maximum order size functionality on CME Globex prohibits entry of an order into the trading engine which exceeds a pre-determined quantity. For E-mini S&P 500 futures, the order size is 2,000 contracts. This functionality provides protection against the so-called "fat finger" trades.

In addition, we would like to point out certain risk management practices and measures we take which, in addition to the risk management tools noted above, serve to mitigate potential problems that could result from electronic trading, particularly with high frequency trading.

e. **Messaging Policies**

CME Group has in place certain controls and policies which are designed to avoid problems associated with excessive messaging by market participants. CME Group has instituted a CME Group Messaging Policy that encourages market participants to trade and quote appropriately without harming market liquidity or system performance. Inefficient messaging slows system performance, negatively impacts other market participants and increases system capacity requirements and costs. To mitigate this, CME Group has implemented automated controls which monitor for excessive new order, order cancel and order cancel/replace messaging. If a session exceeds a designated message per second threshold over a three-second window, subsequent messaging will be rejected until the average message-per-session rate falls below this threshold. This helps CME Group to mitigate the extent of the impact of a malfunctioning trading system on the market.

CME Group has also instituted a policy of imposing fee surcharges for excessively high messaging rates. This policy benefits all customers trading on CME Globex by discouraging excessive messaging abuses, which in turn helps to ensure that CME Globex maintains the responsiveness and reliability of the system. Under the CME Globex Messaging Policy, clearing member firms are subject to the surcharges if they exceed product-specific benchmarks, individually tailored to the valid trading strategies of each market. CME Group calculates benchmarks based on a per-product volume ratio, defined as the number of messages submitted for each executed contract in a given product.

f. **Registration of ATS**

All Automated Trading Systems ("ATS") using CME Globex are required to identify themselves as an "ATS" and member ATSs or highly active ATSs must register with the CME Group Exchanges. We currently have over 10,000 ATSs registered. ATSs are treated like any other market participant with respect to the aforementioned messaging policy. Additionally, the CME Group Exchanges employ tools that allow for the monitoring of the trading activity of ATSs, as well as all other market participants, on both a real time and post-trade basis.

## V. High Frequency Trading Enhances Liquidity

An important issue raised in this discussion is the impact of high frequency traders (“HFTs”) on the events of May 6 and their future role in the markets. As recently described in the SEC’s Concept release on market structure, high frequency trading was identified as one of the most significant market structure developments in recent years. Although HFT is not clearly defined, “it typically is used to refer to professional traders acting in a proprietary capacity that engage in strategies that generate a large number of trades on a daily basis.”

CME Group believes that HFTs play an important role in the markets, particularly when trading is complemented by the types of exchange risk management procedures detailed in the previous section and strong risk management practices at the firm level. HFTs are an important part of daily trading activity in the marketplace and have evolved in response to advancements in technology. This represents the natural evolution of technological advancements and improvements in the marketplace and the percentage of trading volume attributable to HFTs will likely continue to increase in the future. There is evidence that HFTs increase liquidity and transparency in the marketplace and narrow spreads which allows investors to buy and sell securities at better prices and at lower costs.

It is also important to note that not all HFTs are alike and employ a wide variety of different strategies. A significant proportion of HFTs active on the CME Group Exchanges promote liquidity by providing continuous markets in our products. As illustrated by the events of May 6, in analyzing the role of several HFTs, a majority of those entities’ trading executed during the relevant one-hour period was related to the firm’s market making activities. Thus, before contemplating restrictions on HFT activity, consideration should be given to the beneficial role played by HFTs in providing liquidity during normal market activity as well as during times of increased market stress.

The use of high frequency trading by proprietary trading firms, investment banks, hedge funds and index traders, among others, has made the marketplace more efficient and competitive for all market participants. Careful consideration should be given to any decision to place significant restrictions or limitations on HFTs that would be harmful to the marketplace and result in less efficient and less liquid markets. It is also important to note that automated trading or algorithmic trading has its origins in Europe. Accordingly, efforts to place limits or impose regulatory burdens on HFTs in the United States may encourage HFTs to shift the trading they currently conduct in the United States to Europe and other foreign jurisdictions that are already well-equipped to handle additional growth in both equities and futures.

As noted above, CME Globex employs many risk management policies and procedures which assist in the mitigation of risk associated with any type of electronic trading, including that of HFTs. In addition, the CME Group Exchanges are proactive in monitoring the trading activity of HFT entities. In sum, CME Group believes that HFTs play an important role in the markets, particularly when such activities are engaged in with the types of risk management procedures detailed in the previous section.

## VI. Recommendations

As noted previously, CME Group has extensively examined the activity in our markets on May 6, 2010. Based upon our review of the activity, to this point, we believe that there are potential changes which would improve the functioning of the markets, particularly during times of severe stress.

Throughout this process we have continued to work closely with our regulator, the CFTC, as well as with other regulators not only to identify the causes of significant volatility on May 6, but also to assist in providing thoughts and recommendations for market improvement. Of course, as we continue to study the events further, we would be happy to contribute our further thoughts and recommendations.

- Immediate additional action is necessary to address the market events of May 6. A comprehensive, coordinated and quantitative review of the market-wide circuit breaker levels and duration of pause should be undertaken across all market centers and trading venues supporting equity based products, including cash equities, single name and index options, single stock futures, index futures and options on index futures and total return swaps and structured products. The current circuit breaker levels of 10, 20 and 30 percent, the duration of the halt and the time of day at which such triggers are applicable should be reevaluated in light of recent events to determine whether any changes are warranted. Any effort should be examined and coordinated across markets and the input of all market operators should be sought.
- Stop Logic and other risk mitigation functionality should be adopted across markets, on a product by product basis. As evidenced by the trading activity on May 6, we believe that our Stop Logic functionality provided the opportunity to source needed liquidity at a crucial time and contributed to allowing the market to gain its equilibrium. Accordingly, we believe that automated functionality that protects market integrity and mitigates volatility in the event of temporary liquidity gaps or errant order entry should be implemented. Functionality similar to CME Group Protection Points, Price Banding and Stop Logic all serve as useful models of functionality that can be employed to serve these objectives with minimal impact to the broader market. Additionally, practices such as stub quoting should be promptly eliminated.
- The effect of the newly implemented circuit breakers on individual securities must be examined. The rules implementing individual security circuit breakers create the potential for disruptions in the trading of broad-based market index and index-based products and could compromise the effectiveness of risk management systems. In addition, to the extent that circuit breakers are applied to equity index ETFs, the parameters should be different than those applied to individual stocks and should be consistent with comparable products across markets.

Exhibit 1

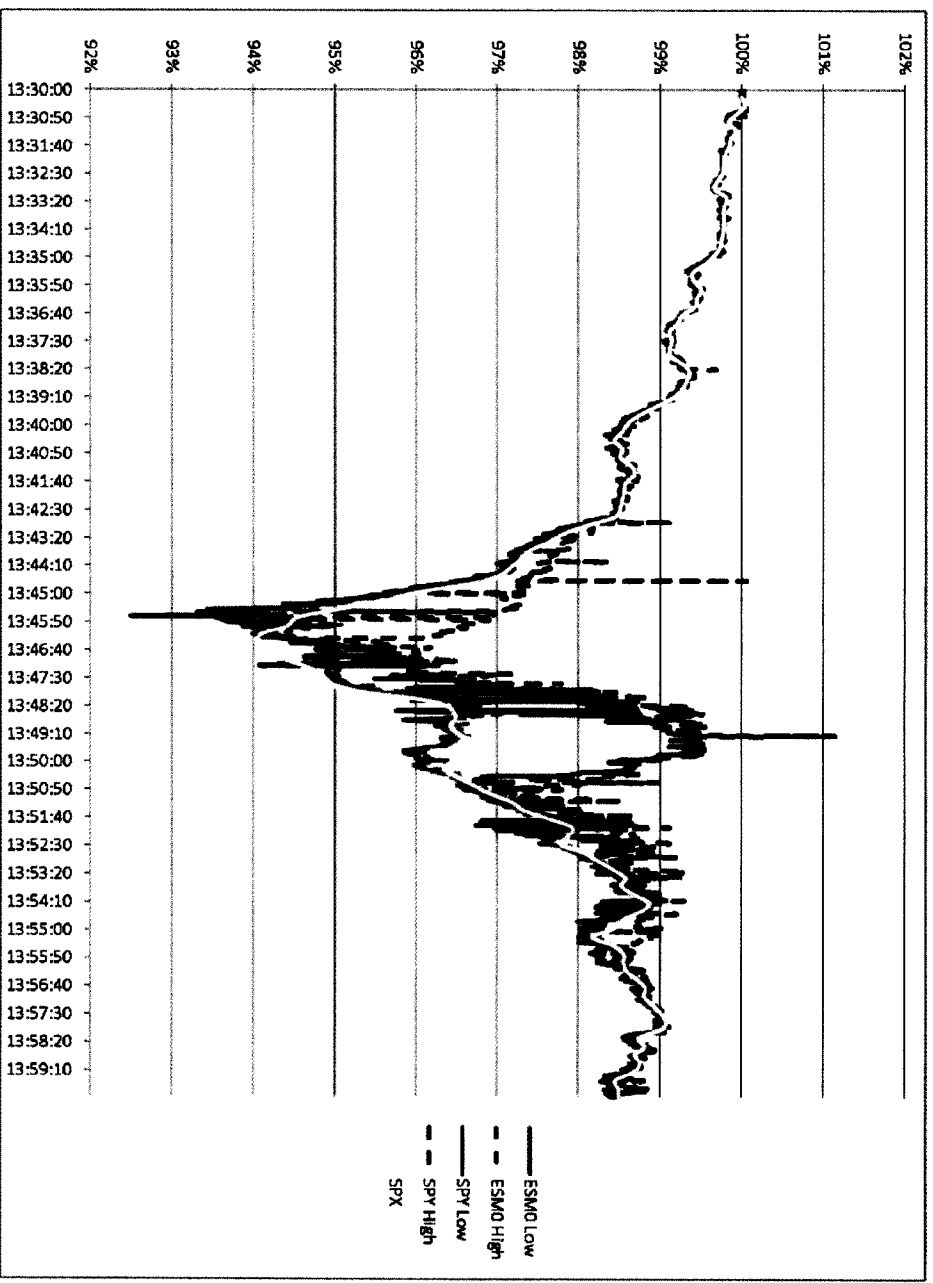


Exhibit 2

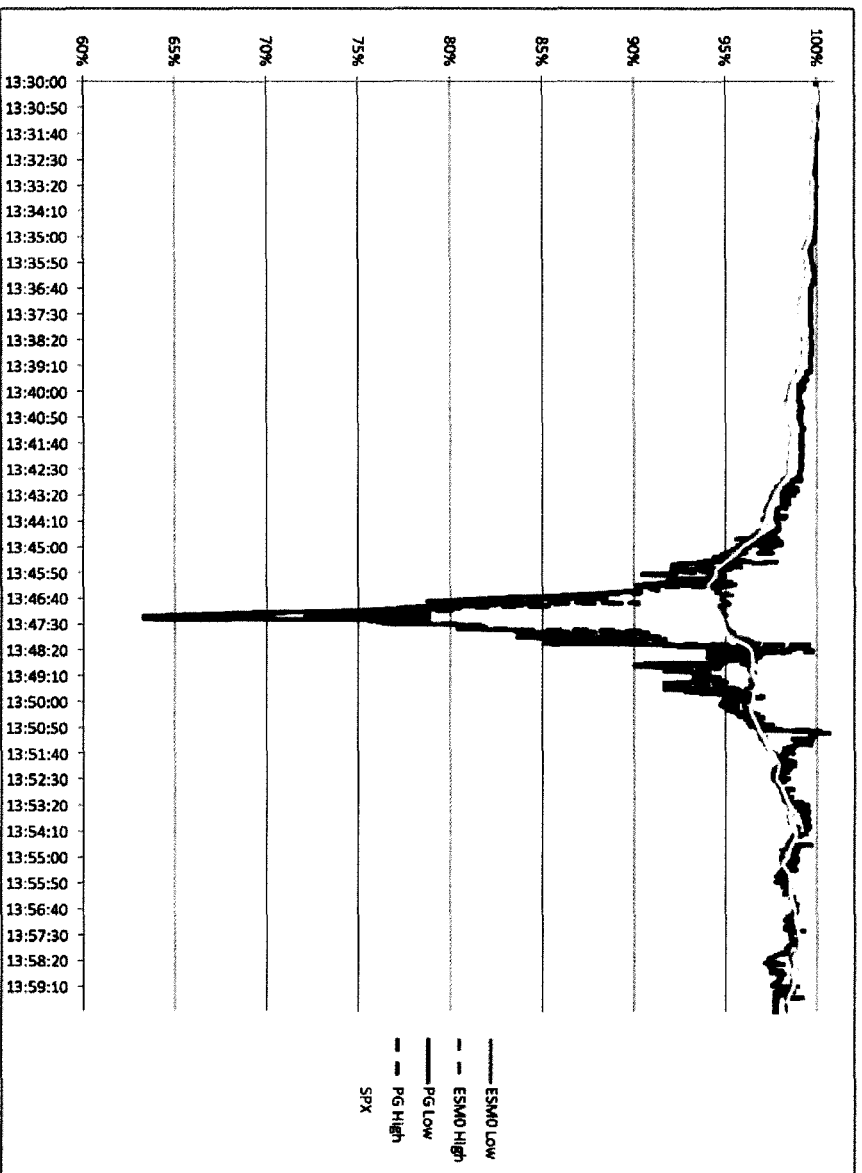


Exhibit 2

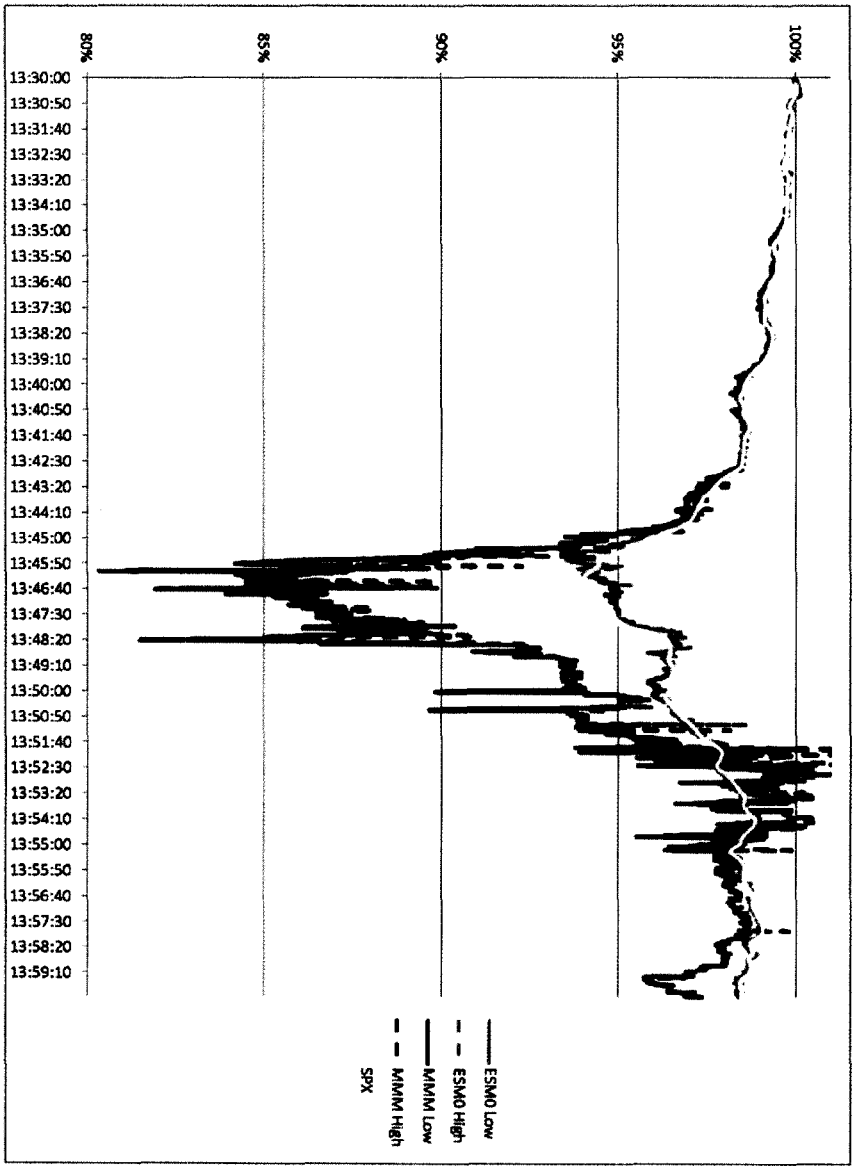
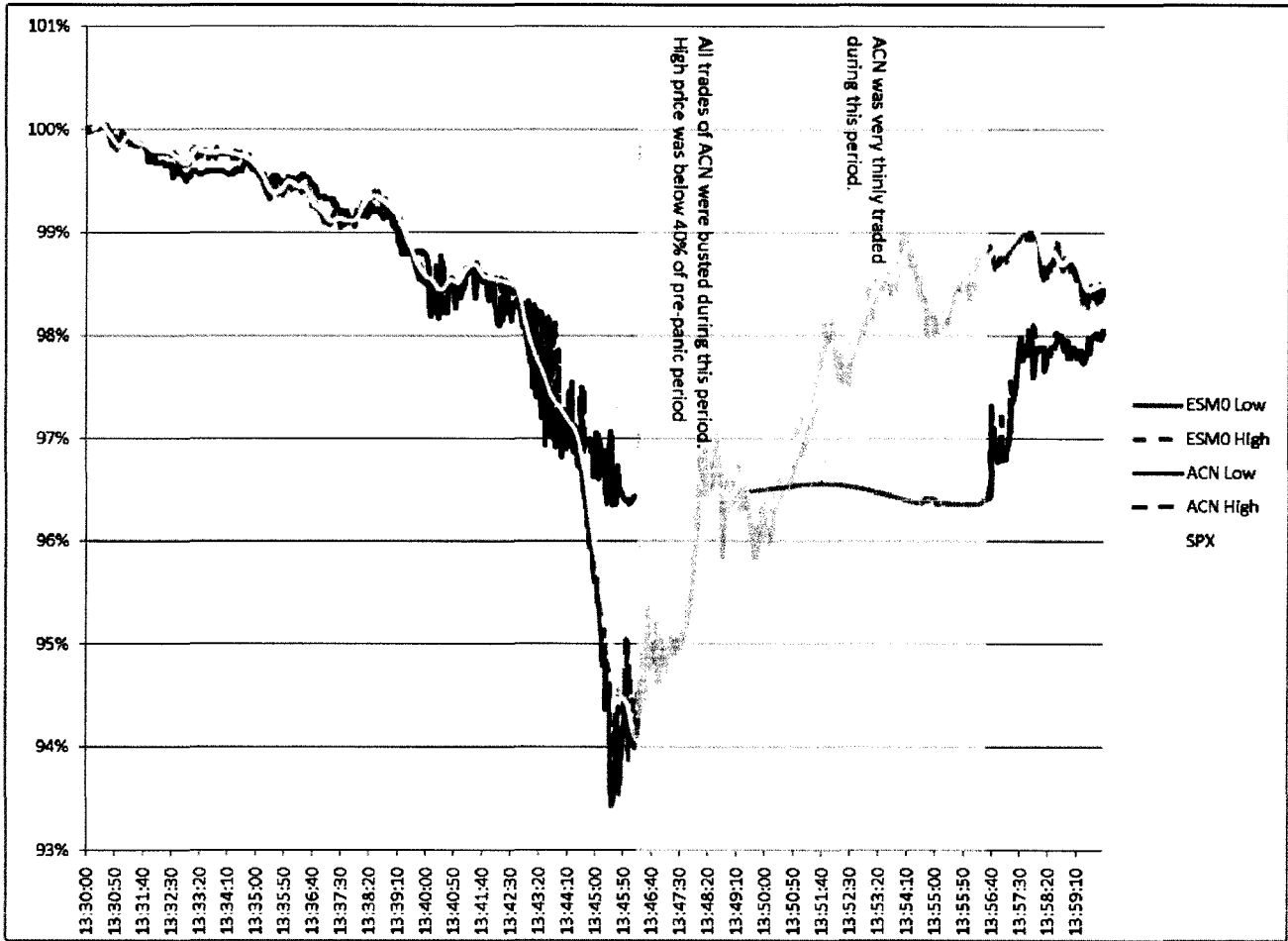




Exhibit 2



**Exhibit 3**  
**CME Group Inc. – Risk Management and Risk Protection Controls**

The following is an outline of the risk management services and applications and risk protection tools, policies and rules employed by CME Group.

**Risk Management Services and Applications**

The CME Group maintains several risk management applications and services to protect CME Globex customers and clearing firms.

*Globex Credit Controls:*

CME Globex Credit Controls provides pre-execution risk controls that enable Clearing Firm Risk Administrators to set credit limits through the CME Globex Credit Controls (GC<sup>2</sup>) tool. Clearing Firm Risk Administrators are able to define firm level trading limits and select real-time actions if those limits are exceeded, including:

- e-mail notification
- order blocking
- order cancellation

CME Globex Credit Controls functionality is available in both Manual and Automated modes.

Manual Mode

- Enables risk administrators to maintain manual credit control limits by setting a maximum order size and the capability to block new orders

Automated Mode

- Automated credit control management defined by Clearing Firm Risk Administrators
- View open and filled orders by executing firm
- Auto-cancel orders

*Drop Copy:*

The Drop Copy service allows customers to receive real-time copies of CME Globex Execution Report and Acknowledgement messages as they are sent over link order entry system sessions. Drop Copy aggregates link messages, enabling customers to aggregate positions and monitor orders for sessions guaranteed by one or more clearing firms upon approval of the clearing firms.

Features:

- Ability to monitor orders and activity
- Aggregated execution and reject messages

### Cancel on Disconnect:

Upon an ungraceful dropped CME Globex to link user connection, Cancel on Disconnect (COD) cancels all resting session/day futures and options orders for that session. Customers are responsible for re-entering any orders cancelled by COD.

Features:

- Opt-in, subscription-based
- Free service

### CME Globex Messaging Volume Controls

- Latencies in CME Globex markets can be caused by customers sending messages at sustained, high frequencies. To protect all market participants from the negative effects of this extraordinary and excessive messaging, CME Group implemented automated controls at the link session level to monitor for excessive new order, order cancel and order cancel/replace messaging. If a link session exceeds the designated message per second (MPS) threshold over a rolling three second window, subsequent messaging will be rejected until the average MPS rate falls below the threshold.

### Mass Quote Governor

- Mass Quote Governor limits the rate at which firms can submit mass quotes. Excessive mass quotes impact CME Group trading engines and result in excessive amounts of market data, which impacts the customer. Mass Quote Governor eases the bandwidth and processing constraints on CME Group and firms receiving market data. This allows CME Group to provide a more stable and reliable market
- Mass Quote Governor measures the number of quotes per second (QPS) for each Market Maker mass quote enabled iLink session. The QPS is measured during a CME Group defined time interval. If a firm exceeds their allotted QPS as measured over the defined time interval, subsequent mass quote messages are rejected during the next time interval.

### **Risk Protection Tools**

The CME Globex electronic trading infrastructure incorporates several risk protection tools to provide added safeguards to customers and clearing firms.

### Price Banding

- To ensure fair, stable and orderly markets, CME Globex subjects all orders to price verification using a process called price banding. The platform utilizes separate mechanisms for futures price banding and options price banding.

- Price banding prevents the entry of erroneous orders such as a limit bid at a price well above the market or a limit offer at prices well below the market which could trigger a sequence of market-moving trades that require subsequent cancellations.

#### Futures Price Banding

A Price Band Variation (PBV) is a static value that varies by product. It is symmetrically applied to both the upside (for bids) and downside (for offers) to determine the Price Band Variation Range (PBVR). The Banding Start Price (BSP) is a dynamically calculated value that determines the PBVR. The BSP uses market activity such as trades, best bid and offer, implied bid and offer or indicative opening price to ensure that the most current and relevant information is used to calculate the PBVR.

#### Enhanced Options Price Banding

Enhanced Options price banding is identical to futures price banding, with the following modifications. Based on market conditions, the reference price is set to the:

- Last Price of the option or spread;
- Theoretical Options Price (TOP), based on well established options pricing algorithms; or,
- Last Price in combination with the TOP, if practical.

The width of the price bands is determined by one of the following:

- A fixed PBV for the entire option series, identical to the current price banding practice;
- A dynamic PBV based on the delta of the option, as estimated by the TOP calculation; or,
- A dynamic PBV based on a percentage of the TOP, where the percentage is based on the delta of the option.

#### Stop Order Logic Functionality

- Stop Order Logic functionality helps to mitigate artificial market spikes that can occur because of the continuous triggering, election and trading of stop orders. On CME Globex, if elected stop orders would result in execution prices that exceed pre-defined thresholds, the market automatically enters a very brief reserved state. During this period, new orders are accepted but trades do not occur until the reserve state expires, thereby providing an opportunity for the market to regain equilibrium.

#### Protection Points for Market & Stop Orders

- Market and Stop Order protection points permit orders to be filled within a pre-defined range of prices without having to manually define a limit price. Any Remaining Quantity for a Market Protected or Stop Protected Order will become a Limit Order at the Limit Price Calculated by the Trading Engine.

#### Maximum Order Size Protection

Maximum order size protection is embedded CME Globex functionality that prohibits entry of an order into the trading engine which exceeds a pre-defined maximum quantity.

### Market Maker Protections

Market Maker Protections (MMPs) are parameters set by the Market Maker to provide a degree of risk protection by limiting their quote execution exposure. MMPs are available exclusively to CME-registered Market Makers specifically using Globex Mass Quote functionality. MMP parameters are set specifically for each Mass Quote Session Identification (Mass Quote ID). When their defined protection values are met or are exceeded within a 15 second interval, the protections are triggered. The MMP functionality is supported for all premium traded options and volatility traded options. MMPs are not available for Futures Instruments.

### CME Group Provided Applications

#### FirmSoft

- FirmSoft is an order management tool which provides real-time visibility and cancel functionality for working and filled orders, across multiple firm IDs, in the CME Globex order management database. Access to FirmSoft can be granted based on one or more Trader ID(s), session(s) and/or account numbers.
- FirmSoft provides important risk mitigation functionality during system failures.
- With FirmSoft, customers can view and cancel orders for iLink and EOS Trader.

FirmSoft users can view:

- Current order status
- Fill information, including partial fills and fills from mass quotes
- Net positions
- Cancel replace history
- CME Globex timestamps

If enabled, FirmSoft users can cancel:

- An individual order
- A group of orders
- All working orders and mass quotes

#### Front-End Clearing System (FEC)

The Front-End Clearing System (FEC) provides real-time trade position details. In addition, FEC gives a clearing member firm back office staff an integrated method for entering and processing a variety of trade data.

### Risk Protection Policy and Rules

#### Accessing CME Globex

- The CME Group Rule Book outlines certain requirements for gaining access to CME Globex, including the requirement that all connections to CME Globex must be

guaranteed by a clearing member firm. Additionally, all individuals entering orders in other than a clerical capacity on behalf of non member customers must have appropriate industry registration. Any clearing member firms providing CME Globex access to their customers must comply with all Credit Control requirements as set forth in the Customer Connection Agreement.

### Error Trade Policy

- The following shall be applied to balance the adverse effects on market integrity of executing trades and publishing trade information inconsistent with prevailing market conditions while preserving legitimate expectations of trade certainty by market participants. This rule authorizes the Globex Control Center (“GCC”) to adjust trade prices or cancel (bust) trades when such action is necessary to mitigate market disrupting events caused by the improper or erroneous use of the electronic trading system or by system defects. Notwithstanding any other provisions of this rule, the GCC may adjust trade prices or bust any trade if the GCC determines that allowing the trade to stand as executed may have a material, adverse effect on the integrity of the market. Please refer to Rule 588 of the Rule Book for complete details of the CME Group Error Trade policy.

## **General Rules and Requirements for Entering Orders on CME Globex**

### Automated Trading System (ATS)

- An ATS that does not require an individual to initiate or manually confirm the creation of a specific instruction must be assigned, and must transmit into CME Globex, a unique TAG 50 that identifies the person who operates, administers and/or monitors the ATS. If the ATS operator is responsible for multiple trading models, algorithms, programs, or systems which trade the same product, and which potentially could trade opposite one another, then each model, algorithm, program or system must be assigned a unique TAG 50. Any deviation from this requirement must be approved by CME Market Regulation before being implemented.
- Some trading entities have assigned groups of individuals that work together to operate and monitor ATSs. For example, a firm may have one person who adjusts pricing parameters, but others who continuously monitor positions or risk and make decisions as to trading size. In these team situations, the individuals may use a single TAG 50 subject to the approval of CME Market Regulation. When registration is required, these team TAG 50s must be properly registered. Team TAG 50s may only be used in true team situations. Entities may not bundle all their ATS operators under one TAG 50 if those operators primarily work independently or at different times of the day.
- When ATS spreading functionality is the primary source of order entry, or if there is a large amount of order traffic from the operator, then a separate TAG 50 must be assigned to distinguish the automated orders from the manual orders.

### ATS TAG 50 Registration Requirements

- CME requires clearing members to register all ATS TAG 50s.
- The clearing firm must associate each ATS TAG 50 with the name of the person who is directly responsible for controlling the trading of the ATS, and must select the ATS attribute on the registration screen to indicate that the TAG 50 represents an ATS. Each ATS operator must provide accurate and up-to-date information to their clearing firm concerning ATS TAG 50s. The TAG 50 that is registered must exactly match the TAG 50 that is submitted on CME Globex orders entered through iLink connections.
- Clearing firms must ensure that all TAG 50s including ATS TAG 50s, which require registration, are appropriately registered and must correct any errors and make any necessary updates to TAG 50 registrations.
- For Team ATS registrations, all of the same information as individual registration is required including each person's designated role as part of the team. These roles include: Desk Manager/Head Trader, Trader, Risk Monitor, Trading Monitor, or Other. If there are changes to the Team over time, it is the responsibility of the trading entity and the clearing firm to ensure that those changes are promptly and accurately recorded.

### CME Group Globex Messaging Policy

- The CME Globex Messaging Policy creates fair business guidelines by which customers are billed a surcharge for overly high message rates. This policy benefits all customers trading on CME Globex by discouraging excessive messaging abuses, which in turn helps to ensure that CME Globex maintains the responsiveness and reliability that our customers around-the world have come to expect from it when trading the CME Group electronic markets. Under the CME Globex Messaging Policy, each clearing member firm (active or in active clearing member firms that maintain relationships with CME Clearing) must not exceed product-specific benchmarks, individually tailored to the valid trading strategies of each market. CME Group calculates benchmarks based on a per-product Volume Ratio, defined as the number of messages submitted for each executed contract in a given product. If a clearing member firm exceeds a benchmark, they will be issued two notices within a rolling 30 business day period.

### ATS Messaging

- ATSS are treated like any other market participant and are subject to the messaging policy which applies to all message flow.  
*(The Exchange sponsors Market Maker programs which may not be subject to all ATS provisions.)*

Implementing this volume control for new order and order cancel/replace messaging is designed to:

- Support valid trading activity.
- Prevent a malfunctioning trading system from impacting the markets.