A CME/Chicago Board of Trade/NYMEX Company

Trading Volatility on CME Group

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Forward-Looking Statements

Statements in these materials that are not historical facts are forward-looking statements. These statements are not guarantees of future performance and involve risks, uncertainties and assumptions that are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or implied in any forward-looking statements. Among the factors that might affect our performance are: our ability to realize the benefits and control the costs of our merger with NYMEX Holdings, Inc. and our ability to successfully integrate the businesses of CME Group and NYMEX Holdings, including the fact that such integration may be more difficult, time consuming or costly than expected and revenues following the merger may be lower than expected and expected cost savings from the merger may not be fully realized within the expected time frames or at all; increasing competition by foreign and domestic entities, including increased competition from new entrants into our markets and consolidation of existing entities; our ability to keep pace with rapid technological developments, including our ability to complete the development and implementation of the enhanced functionality required by our customers; our ability to continue introducing competitive new products and services on a timely, cost-effective basis, including through our electronic trading capabilities, and our ability to maintain the competitiveness of our existing products and services; our ability to adjust our fixed costs and expenses if our revenues decline; our ability to generate future revenues from processing services; our ability to maintain existing customers and attract new ones; our ability to expand and offer our products in foreign jurisdictions; changes in domestic and foreign regulations; changes in government policy, including policies relating to common or directed clearing, changes as a result of a combination of the Securities and Exchange Commission and the Commodity Futures Trading Commission, or changes relating to the recently enacted Emergency Economic Stabilization Act of 2008; the costs associated with protecting our intellectual property rights and our ability to operate our business without violating the intellectual property rights of others; our ability to generate revenue from our market data that may be reduced or eliminated by decreased demand or the growth of electronic trading or declines in subscriptions; changes in our rate per contract due to shifts in the mix of the products traded, the trading venue and the mix of customers (whether the customer receives member or non-member fees or participates in one of our various incentive programs) and the impact of our tiered pricing structure; the ability of our financial safeguards package to adequately protect us from the credit risks of clearing members; the ability of our compliance and risk management methods to effectively monitor and manage our risks; changes in price levels and volatility in the derivatives markets and in underlying fixed income, equity, foreign exchange and commodities markets; economic, political, geopolitical and market conditions, including the recent volatility of the capital and credit markets; natural disasters and other catastrophes, our ability to accommodate increases in trading volume and order transaction traffic without failure or degradation of performance of our systems; our ability to execute our growth strategy and maintain our growth effectively; our ability to manage the risks and control the costs associated with our acquisition, investment and alliance strategy; our ability to continue to generate funds and/or manage our indebtedness to allow us to continue to invest in our business; industry and customer consolidation; decreases in trading and clearing activity; the imposition of a transaction tax on futures and options on futures transactions; the unfavorable resolution of material legal proceedings; the seasonality of the futures business; and changes in the regulation of our industry with respect to speculative trading in commodity interests and derivatives contracts. More detailed information about factors that may affect our performance may be found in our filings with the Securities and Exchange Commission, including our most recent periodic reports filed on Form 10-K and Form 10-Q, which are available in the Investor Relations section of the CME Group Web site. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise.

Non-GAAP Financial Measures
In this presentation we refer to non-GAAP financial measures, including pro forma results that assume the merger with CBOT Holdings and acquisition of NYMEX Holdings were completed as of the beginning of the period presented. A reconciliation of these measures to our GAAP financial results is available in the company's latest financial statements in the Investor Relations section of the CME Group Web site.

NOTE: Unless otherwise noted, all references to CME Group volume, open interest and rate per contract information in the text of this document is based on pro forma results assuming the merger with CBOT Holdings and the acquisition of NYMEX Holdings were completed as of the beginning of the period presented. All data exclude CME Group's non-traditional TRAKRS℠ products, for which CME Group receives significantly lower clearing fees of less than one cent per contract on average, as well as CME Group Auction Markets™ products and Swapstream® products. Unless otherwise noted, all year, quarter and month to date volume is through 3/13/09.

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Agenda

Why Volatility Futures

Crude Oil VIX

Gold VIX

Realized vs. Implied Volatility

Trading, Risk Management, and Hedging

Why Volatility Futures

- **Risk Versus Uncertainty**
  - Frank Knight (University of Chicago) Distinction

- **Risk is Often Measured Using Volatility**
  - Usually assumes a Probability Distribution. Probability Distributions Usually Rely on Standard Deviation (Volatility) Measures to predict Future Outcomes
  - Used to Manage Risk Through Margin

- **Uncertainty** is when the risk measures (Volatility) themselves change. How do you manage risk when the definition itself changes over time?

- **Proposed Solution: Volatility Futures, A Separate Asset Class**

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Why Volatility Futures?

- **Pure Play on Implied Volatility**
  - Traditional Option Strategies Depend on Price Movements as well as Volatility Movements
  - VIX Futures Payoff is Solely Determined by Volatility Changes
  - Composite Measure of the Implied Volatility Skews of Two Option Months
  - Based on Call (above the at-the-money) and Put (below the at-the-money) Option Premiums Relative to their Strike Prices
  - More Complex than a Simple Implied Volatility
    - Incorporates the entire Option "Skew" in order to correct for non-normal distribution of the underlying futures contracts
    - Compensates for "Fat Tails", Asymmetric Skews, etc
    - Both Gold and Crude Oil Futures have been Known not to follow a Normal Distribution
    - Two Months Employed in order to Maintain Continuity

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Realized vs. Implied Volatility

- VIX Represents a Measure of the Implied Volatility of Options
- This is Not to Be Confused With Realized Volatility (Variance) Swaps
- VIX is A Forecast of Volatility
- Realized Swaps are a Look Back at What Has Happened
  - Variance Swaps are Volatility Squared
- CME Group is Hopeful of Launching Realized Variance Swaps in 2011
- Choice Will Become Realized versus Expected Volatility
  - Spreading Opportunities?

Clearing figures as of 12/31/2008

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Formula

K = Strike Price

K_0 = At-The-Money Strike Price

ΔK = Strike Price Increment

For each of the two Option Contract Months,

Call/Put = Respective Option Premium for Strike K

$$P = 2e^{r\tau}\left[\sum_{0}^{K_0}(\Delta K / K^2)Put_K + \sum_{K_0}^{\infty}(\Delta K / K^2)Call_K\right] - (F_0 / K_0 - 1)^2$$

That is all of the Out-of-the-Money Calls and Puts Premiums are Included

Expected 30-day variance = $wP_{\text{1st Month}} + (1\text{-}w)P_{\text{2nd Month}}$

VIX = 100 $\sqrt{\text{Expected Variance}}$

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Contract Specifications: Gold VIX

- **Monthly Listings: February, April, June, August, October, December**
- **Contract Termination: 30 Calendar Days Prior to First Option Contract Expiration**
- **Floating Index Price: 60 Day Future Volatility, Weighted Average of Two Option Contract Months**
  - February: Weighted Average of February/April Options
  - April: Weighted Average of April/June Options
  - June: Weighted Average of June/August Options
  - August: Weighted Average of August/October Options
  - October: Weighted Average of October/December Options
  - December: Weighted Average of December/February Options
- **Contract Multiplier: $500**
- **Final Settlement: Arithmetic Average of Published Floating Price From 8:30 A.M. to 9:30 A.M (NY Time). Index Published every 15 Seconds**

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Contract Specifications: Crude Oil VIX

- **Monthly Listings: 12 Consecutive Month: January Through December**

- **Contract Termination: 30 Calendar Days Prior to First Option Contract Expiration**

- **Floating Index Price: 30 Day Future Volatility, Weighted Average of Two Option Contract Months**
  - January: Weighted Average of January/February Options
  - February: Weighted Average of February/March Options
  - March: Weighted Average of March/April Options
  - April: Weighted Average of April/May Options
  - May: Weighted Average of May/June Options
  - June: Weighted Average of June/July Options
  - July: Weighted Average of July/August Options
  - August: Weighted Average of August/September Options
  - September: Weighted Average of September/October Options
  - October: Weighted Average of October/November Options
  - November: Weighted Average of November/December Options
  - Weighted Average of December/January Options

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Crude Oil VIX Contract Specifications

- **Contract Multiplier:** $500
- **Final Settlement:** Arithmetic Average of Published Floating Price From 2:00 P.M. to 2:30 P.M. (NY Time). Index Published every 15 Seconds

Trading Uses

- **Hedging Option Portfolios**
  - "Vega" Risk for Market Makers
  - Basis Risk for Individual Strike Prices but Would Serve as a Macro Hedge
- Systemic Changes in Markets
  - Commodity VIX Tends to be Inversely Related to Price Levels for Both Crude Oil and Gold
  - For Crude Oil, Also Tends to Be Related to Term Structure
  - For Gold, Inflation, Currency Uncertainty
  - As Market Goes into Backwardation, Implied Option Volatility Tends to Rise
- Speculative Positions
  - Allows Traders to Position For Significant Volatility Changes
    - Unlike Straddles and Delta Hedged Strategies, No Rebalancing is Needed

Systemic Relationships

Crude Oil At-The-Money Implied Volatility (2000-2010): Negatively Related to Price and Term Structure

	Coefficient	T-Statistic
Price	-.10	-9.52
1-2 Spread	-4.08	-15.66

Implied Volatility Correlation (2000-2010)

S&P – Oil	.65
S&P – Gold	.56
Gold – Oil	.50

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Option Contracts

The Exchange Is Hopeful of Launching Options on Gold and Crude Oil VIX Futures By Year-End 2010

Specifications:

- **Strikes at 1.00 Intervals**
- **Expiration Coincides With Futures Termination**
- **Financial Settlement**
- **$500 Multiplier**

Trading Venues

- **Competitive Electronic Trading on CME Globex**
- **Submission For Clearing Bilateral Trades through CME ClearPort**

References

As A Chicago Board Option Exchange patented product, references for calculation of VIX as well as academic articles can be found here:

http://cfe.cboe.com/education/education_vix.aspx

To learn more, visit cmegroup.com/vix,
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