CBOE Information Circular IC11-032
CFE Information Circular IC11-28

Date: April 21, 2011

To: CBOE Trading Permit Holders
CFE Trading Privilege Holders

From: CBOE Research Department

Re: CBOE Gold ETF Volatility Index (GVZ) Options and Security Futures Settlement

This information circular describes the calculation of the Final Settlement Value for CBOE Gold ETF Volatility Index ("GVZ") options and security futures traded on Chicago Board Options Exchange, Incorporated ("CBOE") and CBOE Futures Exchange, LLC ("CFE"), respectively. Additionally, this circular describes the opening and order entry procedures for options on SPDR Gold Shares ("GLD") (the constituent securities in GVZ) on the expiration days for GVZ options and security futures and discusses a risk inherent in the settlement procedure for GVZ options and security futures.

<u>Calculation of the Final Settlement Value for GVZ Options and Security Futures</u>

The Final Settlement Value for GVZ options and security futures is a Special Opening Quotation ("SOQ") of the GVZ Index calculated from the sequence of opening prices, as traded on CBOE, of a single strip of GLD options ("Constituent Options") expiring 30 days after the Final Settlement Date for those GVZ options and security futures.[1] This means, for example, that May 2011 GVZ options and security futures will settle on Wednesday, May 18, 2011, which is 30 days prior to the expiration date of June GLD options - Friday, June 17, 2011. If the third Friday of the month subsequent to expiration of GVZ options and security futures is a CBOE holiday, the Final Settlement Date for the contracts shall be 30 days prior to the CBOE business day immediately preceding that Friday.

The CBOE Research Department calculates the SOQ for GVZ using the following procedure:

- Collect the following information from CBOE Time & Sales for each GLD option series expiring in 30 days:

  - The opening trade price, if any; and

  - The best bid and best ask prices of quotes and orders remaining in the CBOE electronic order book following the successful opening for each GLD option series expiring in 30 days.

[1] If the third Friday of the month subsequent to expiration of a GVZ options or security futures contract is a CBOE holiday, the Final Settlement Date for the respective contract shall be 30 days prior to the CBOE business day immediately preceding that Friday.

- Determine the 30-day forward level, (F), of GLD based on at-the-money put and call option prices. The at-the-money strike is the strike price at which the difference between the call and put mid-quote prices is smallest.

- Determine K_0 - the strike price immediately below the GLD forward level.

- Select the Constituent Options - Sort all of the options in ascending order by strike price. Select call options that have strike prices greater than K_0 and have bid prices greater than zero, beginning with the strike price closest to K_0 and moving to the next higher strike prices in succession. After encountering two consecutive calls with a bid price of zero, do not select any other calls. Next, select put options that have strike prices less than K_0 and have bid prices greater than zero, beginning with the strike price closest to K_0 and then moving to the next lower strike prices in succession. After encountering two consecutive puts with a bid price of zero, do not select any other puts.

- The "time to expiration" used to calculate the SOQ for GVZ is 30 days *plus* 390 minutes (43,590 minutes). The extra 390 minutes reflects the fact that GLD options are p.m.-settled contracts that expire 390 minutes (6 ½ hours) after the market opening.

- Using the formulas and methodology described in the VIX White Paper,[2] calculate the GVZ SOQ using the opening trade prices of the GLD Constituent Options. **The GVZ SOQ uses only the opening prices of GLD options traded on CBOE**. In the event that there is no opening traded price for an option, the price used in the SOQ calculation is the average of the bid/ask quote for that option immediately following the opening trade match, but before any OPG orders are canceled.

The Final Settlement Value is rounded to the nearest $0.01. If the Final Settlement Value is not available or the normal settlement procedure cannot be utilized due to a trading disruption or other unusual circumstance, the Final Settlement Value will be determined in accordance with the rules and bylaws of The Options Clearing Corporation.

Opening Procedures for GLD Options on GVZ Settlement Days

The opening prices for the Constituent Options of the SOQ for GVZ options and security futures are determined through the normal Hybrid Opening System ("HOSS") opening procedure, which is described in CBOE Rule 6.2B and is briefly summarized below. Note that for GLD options, HAL on the Open ("HAL-O") functionality will been inactivated as of May 3, 2011, and going forward HOSS will be used as the opening method on each trading day, including GVZ options and security futures settlement days.

Currently, there are no designated cut-off times for orders in GLD options on the final settlement date for GVZ options and security futures. Trading Permit Holders may submit orders and quotes at any time prior to the opening.

Prior to the opening, Expected Opening Price/Size ("EOP/S") messages will be disseminated through the API to inform quoters of trading conditions in individual GLD option series. These messages will be disseminated at 30-second intervals from 8:00 a.m. until the start of rotation, as long as at least one Trading Permit Holder has submitted a quote for the series.

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[2] The VIX White Paper may be found on the CBOE website at the following link: http://www.cboe.com/micro/vix/vixwhite.pdf

EOP/S messages are disseminated for series that have 1) quantity to trade on the open or 2) order imbalances that require additional liquidity or re-pricing by quoters.

A GLD option series will successfully open if a matching trade takes place in that series. Series may also open if there are no contracts traded, or if there are contracts to trade and there is sufficient liquidity to open within a valid opening price range. If an option series cannot open, the system sends updated EOP/S messages, requesting additional liquidity for that series. Each series that does not open is re-checked at subsequent 1-second intervals, until opened.

Risk Inherent in Settlement Procedure

The Final Settlement Value of each GVZ option and security futures contract is calculated from the actual opening premium prices on CBOE of the Constituent Options on the Final Settlement Date unless there is no trade in a series at the opening, in which case the mid-point of the bid and offer premium quotations for that series as determined at the opening of trading is used. In contrast, all other GVZ index values disseminated during the life of GVZ options and security futures contracts are "indicative" values – namely, values that are calculated using the mid-points of the disseminated bid and offer premium quotations on CBOE of the Constituent Options.

Because actual prices are used to compute the Final Settlement Value of GVZ options and security futures while mid-point GLD options quotes are used to compute indicative GVZ values, there is an inherent risk of a significant disparity between the Final Settlement Value of an expiring GVZ option or security futures contract and the opening indicative GVZ value on the Final Settlement Date. It is to be expected that there will be at least some divergence between the Final Settlement Value for an expiring GVZ option or security future and the opening indicative GVZ value on the Final Settlement Date, because the opening price for each of the options series that is used to calculate the Final Settlement Value will typically be at either the bid or the ask quotation, depending on the forces of supply and demand for that series, and not at the mid-point between the bid and ask quotations. In fact, such disparities have occurred in the past with respect to other contracts based on volatility indexes. Accordingly, investors should be aware that the possibility exists that there could be a significant difference between the Final Settlement Value for a GVZ option or security futures contract and the previous day's closing indicative volatility value, or the opening indicative GVZ value on the Final Settlement Date.

GVZ options investors should refer to the Options Disclosure Document[3] for further options risk disclosure information, and GVZ security futures investors should refer to the Risk Disclosure Statement for Security Futures Contracts[4] for further security futures risk disclosure information.

[3] The Options Disclosure Document may be found on the CBOE website at the following link: http://www.cboe.com/Resources/intro.aspx

[4] The Risk Disclosure Statement for Security Futures may be found on the CFE website at the following link: http://cfe.cboe.com/AboutCFE/RiskDisclosureFutures.aspx

Contact Information

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