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Regulatory Circular RG14-062

Date: April 15, 2014

To: All Volatility Index Derivatives Market Participants
From: Regulatory Services Division
Research and Product Development Department
RE: Modified HOSS Opening Procedures for All Volatility Index Option Components

This circular updates CBOE Regulatory Circular RG14-005

This circular describes the current modified Hybrid Opening System (HOSS) opening procedures utilized on Chicago Board Options Exchange, Incorporated (CBOE) for all option series that are used to calculate the exercise / final settlement value for expiring volatility index options and futures contracts (including volatility index security futures). These option series are referred to in this circular as "constituent option series".[1]

Modified HOSS Opening Procedures and Special Opening Quotation

The exercise / final settlement value for volatility index contracts is a Special Opening Quotation (SOQ) of the respective volatility index calculated from the sequence of opening prices, as traded on CBOE, of a single strip of the constituent option series used to calculate the volatility index on the exercise / final settlement date. The opening price for any constituent option series in which there is no trade on CBOE will be the average of that option's bid price and ask price as determined at the opening of trading.

The opening prices for the constituent option series used in calculating the SOQ are determined through an automated auction mechanism (modified HOSS opening procedures) that matches buy and sell orders residing on the electronic order book prior to the opening of trading. Immediately after the series is opened, but prior to dissemination of an opening bid/ask quote, the mechanism automatically cancels all un-executed "OPG" (Opening) contingency orders. If the first bid disseminated to OPRA by CBOE is 0, the limit price of the best OPG buy order(s) with quantity remaining, if any, will be used as the opening bid in the calculation of the SOQ. As a result, the first market disseminated by CBOE may differ from the bid/ask quote used in the calculation of the SOQ of the respective volatility index. For example, assume a constituent open series has only 1 order to buy, and that order is priced at $.05 (OPG), and the best offer is $0.15. The first market disseminated to OPRA by CBOE would be $0 - $0.15, but the bid/ask quote used to calculate the SOQ would be $.05 - $0.15.

Expiration / Final Settlement Date for Volatility Index Derivatives

30-Day Volatility Index Contracts

The expiration / final settlement date for volatility index contracts measuring a 30-day implied volatility period is on the Wednesday that is 30 days prior to the third Friday of the calendar month immediately following the month in which the applicable volatility index option or futures contract expires. If the third Friday of the month subsequent to expiration of the applicable volatility index contract is a CBOE holiday, the expiration / final settlement date for the respective contract shall be 30 days prior to the

[1] Options expire on an expiration date and settle to an exercise settlement value and futures settle on a final settlement date and settle to a final settlement value.

CBOE business day immediately preceding that Friday. If the expiration / final settlement date (a Wednesday) is an Exchange holiday, the expiration / final settlement date for the respective contract shall be on the business day immediately preceding the Wednesday.[2]

Short-Term (Nine Day) Volatility Index Contracts

The expiration / final settlement date for short-term volatility index options measuring a nine-day implied volatility period will be on the specific date (usually a Wednesday) identified in the option ticker symbol for the specific series. For short-term volatility index futures, the final settlement date will be on the Wednesday of the week denoted in the ticker symbol of the futures contract. If that Wednesday or the Friday in the business week following that Wednesday (i.e., nine days away) is a CBOE holiday, the expiration / final settlement date will be on the business day immediately preceding that Wednesday.[2]

Order Submission Deadlines for Participation in Modified HOSS Opening Procedures

Strategy Orders

On the days that the modified HOSS opening procedures are utilized, all option orders for participation in the modified HOSS opening procedures that are related to positions in, or a trading strategy involving, volatility index options or futures ("strategy order"), and any change to or cancellation of any such strategy order:

1) Must be received prior to 8:15 a.m. (Chicago time) for all constituent option series; and

2) May not be cancelled or changed after 8:15 a.m. (Chicago time), unless the strategy order is not executed in the modified HOSS opening procedures and the cancellation or change is submitted after the modified HOSS opening procedures are concluded. Strategy orders may be changed or cancelled after 8:15 a.m. (Chicago time) and prior to the opening of trading in order to correct a legitimate error. In this event, the Trading Permit Holder shall send an email (by no later than the next business day) setting forth the circumstances that resulted in the change or cancellation to the Regulatory Services Division at stratordercancels@cboe.com and to the CBOE Help Desk at helpdesk@cboe.com.

Non-Strategy Orders

All other option orders for participation in the modified HOSS opening procedures, and any change or cancellation to any such order, must be received prior to the opening of the series.

Strategy Order Characteristics

In general, the Exchange shall consider option orders to be related to positions in, or a trading strategy involving, volatility index options or futures for purposes of Rules 6.2B.01 and 6.2B.08 if the orders possess the following three characteristics:

1) The orders are for option series with the expiration that will be used to calculate the exercise settlement or final settlement value of the applicable volatility index contract. For example, in

[2] When CBOE is closed on Wednesday due to a CBOE holiday, the amount of time until expiration for the constituent option series used to calculate the exercise settlement / final settlement value would be increased to reflect the extra day of trading in the constituent option series.

the case of VIX options, the orders would be in standard SPX option series that expire one month following the expiration date of the expiring VIX option.

2) The orders are for option series spanning the full range of strike prices in the appropriate expiration for option series that will be used to calculate the exercise or final settlement value of the applicable volatility contract, but not necessarily every available strike price.

3) The orders are for put options with strike prices less than the "at-the-money" strike price and for call options with strike prices greater than the "at-the-money" strike price. The orders may also be for put and call options with "at-the-money" strike prices.

Whether option orders are related to positions in, or a trading strategy involving, volatility index options or futures for purposes of Rules 6.2B.01 and 6.2B.08 depends upon the specific facts and circumstances. Other types of orders may also be deemed by the Exchange to fall within this category of orders if the Exchange determines that to be the case based upon the applicable facts and circumstances.

Order Eligibility for Modified HOSS Opening Procedures

All orders for participation in the modified HOSS opening procedures must be submitted electronically into the book and orders with any valid origin code are eligible to participate.

Hybrid 3.0 Option Series

Non-customer orders in Hybrid 3.0 option series must include an "OPG" contingency to be accepted into the book and to participate in the modified HOSS opening procedures. Examples of Hybrid 3.0 option series used to calculate volatility indexes include standard SPX option series and Quarterly Index Expirations (QIX)[3] on the S&P 500 index (SPXQ).

Hybrid Option Series

Non-customer orders in Hybrid option series may (but are not required to) include an "OPG" contingency to be accepted into the book and to participate in the modified HOSS opening procedures. Examples of Hybrid option series used to calculate volatility indexes include End-of-Week (weekly) expirations on the S&P 500 index (SPXW), standard iShares MSCI Emerging Markets ETF (EEM) options, standard Russell 2000 index (RUT) options and standard SPDR Gold Shares (GLD) options.

Both Hybrid 3.0 and Hybrid Option Series

For Hybrid 3.0 and Hybrid option series, CBOE's trading systems will automatically cancel any unexecuted remainder of OPG orders after the opening of the series.

Certain DPM or LMM Requirements in Connection with Modified HOSS Opening Procedures

Hybrid 3.0 Option Series

For Hybrid 3.0 series (e.g., standard SPX and SPXQ), only LMMs are required to enter opening quotes that must comply with the best opening bid/ask differential requirements in the modified HOSS opening

[3] SPXQ are constituent option series in the CBOE Short-Term Volatility Index when the last business day of a quarter is the last trading day (usually a Friday) in a week.

procedures. LMMs are permitted to enter orders, in addition to quotes, to participate in the opening. All other market participants interested in participating in the opening must use orders and may not submit quotes.

Hybrid Option Series

For Hybrid series, Market-Makers with an appointment in the constituent option series may enter opening quotes and orders in the modified HOSS opening procedures. Market-makers without an appointment in the constituent option series may not enter quotes and may only enter orders in the modified HOSS opening procedures.

Both Hybrid 3.0 and Hybrid Option Series

For Hybrid 3.0 and Hybrid series, in series where there will be an opening trade, the best composite quote must be within the published Opening Exchange Prescribed Width (OEPW).

Prohibition Against Submission of Orders with Improper Purpose

Market participants that submit orders for participation in the modified HOSS opening procedures may not do so for the purpose of creating or inducing a false, misleading, or artificial appearance of activity or for the purpose of unduly or improperly influencing the opening price or settlement or for the purpose of making a price which does not reflect the true state of the market.

Violations of these requirements and other requirements with regard to the modified HOSS opening procedures are subject to disciplinary action.

Publication of Certain Information in Connection with Modified HOSS Opening Procedures

For certain constituent option series, prior to the opening of these series, the system will generate "Expected Opening Price/Size" (EOP/S) messages for series which have quantity to trade, have buy or sell imbalances or do not have a best composite Market-Maker quote that is within an acceptable width.

EOP/S messages are disseminated via the CBOE CMI and FIX APIs and CBOE's proprietary market data feed, called CBOE Streaming Markets (CSM). EOP/S messages are also published periodically for certain constituent series at: http://cfe.cboe.com/data/EOSPage.aspx on exercise / final settlement days.

Settlement Methodology for Volatility Index Contracts

The CBOE Research Department calculates the SOQ for volatility index contracts using the following procedure:

A. Collect the following information for each eligible option series of the applicable volatility index:

   1. The opening traded price, if any; and

   2. The first bid and offer disseminated to OPRA by CBOE. If the first bid disseminated to OPRA by CBOE is 0, the limit price of the best OPG buy order(s) with quantity remaining, if any, will be used as the opening bid.

B. Determine the applicable forward index level, (F), for each eligible contract expiration 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.

C. Determine K_0 - the strike price immediately below the forward index level.

D. Select the constituent option series - 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. Select both the put and call with strike price K_0.

E. Calculate the volatility index SOQ using the options selected.[4] The price of each option used in the calculation is the opening traded price of that option. For volatility indexes that are composed of multiply listed constituent option series, **the volatility index SOQ uses only the opening prices of the constituent option series 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 first bid and offer disseminated to OPRA by CBOE for that option. If the first bid disseminated to OPRA by CBOE in a particular series is zero the best unexecuted OPG bid, if any, is used as the opening bid.

F. The "time to expiration" used to calculate the SOQ for volatility indexes varies depending on the settlement type (A.M.-settlement, P.M.-settlement) of the constituent option series and the trading hours of the constituent option series. For example, the "time to expiration" used to calculate the SOQ for VIX contracts, which is based on A.M.-settled standard SPX option series, is exactly 30 days. Another example, is the "time to expiration" used to calculate the SOQ for short-term (nine day) volatility index contracts based on P.M.-settled SPXW options is exactly nine days, *plus* 390 minutes in order to reflect the extra time to trade the constituent SPXW option series until 3:00 p.m. (Chicago time).

The "time to expiration" used to calculate the SOQ accounts for the actual number of days and minutes from the opening of trading in the constituent option series on the expiration / final settlement day until expiration for the constituent option series. For example, if CBOE announces that the opening of trading in the constituent option series is delayed, the amount of time until expiration for the constituent option series used to calculate the exercise / final settlement value would be reduced to reflect the actual opening time of the constituent option series. Another example would be when the Exchange is closed on a Wednesday due to an Exchange holiday, the amount of time until expiration for the constituent option series used to calculate the exercise / final settlement value would be increased to reflect the extra day of trading in the constituent option series

[4] All volatility indexes are calculated in the same manner as VIX. A more detailed description of the VIX formula and methodology is available on the CBOE's website at: http://www.cboe.com/micro/vix/vixwhite.pdf.

G. The exercise / final settlement value for the applicable volatility index contract is equal to the respective volatility index SOQ.

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

Additional Information

Market participations are advised to refer to the Options Disclosure Document (ODD) for information concerning the risks associated with volatility index options. The ODD may be accessed at: http://www.optionsclearing.com/about/publications/character-risks.jsp

For regulatory questions, please contact the Regulatory Interpretations and Guidance team at RegInterps@cboe.com or (312) 786-8141 for additional information. For operational questions, please contact the Help Desk at helpdesk@cboe.com or (866) 728-2263 for additional information. For product-related questions, please contact Bill Speth at spethw@cboe.com or (312) 786-7141 or John Hiatt at hiatt@cboe.com or (312) 786-7779 for additional information.