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☒	Trading – Equity and Index Derivatives	☒	Technology
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CIRCULAR 035-15
April 8, 2015

REQUEST FOR COMMENTS

SETTLEMENT PRICE FOR THREE-MONTH CANADIAN BANKERS' ACCEPTANCE FUTURES CONTRACTS

AMENDMENT OF THE *DAILY SETTLEMENT PRICE PROCEDURES FOR FUTURES CONTRACTS AND OPTIONS ON FUTURES CONTRACTS*

The Rules and Policies Committee of Bourse de Montréal Inc. (the "**Bourse**") has approved amendments to the *Daily Settlement Price Procedures for Futures Contracts and Options on Futures Contracts* (the "**Procedures**") in order to update the procedure governing the daily settlement of Three-Month Canadian Bankers' Acceptance Futures contracts (BAX).

Comments on the proposed amendments must be submitted within 45 days following the date of publication of this notice, at the latest on **May 22, 2015**. Please submit your comments to:

Me Sabia Chicoine
Legal Counsel, Legal Affairs, Derivatives
Bourse de Montréal Inc.
Tour de la Bourse
P.O. Box 61, 800 Victoria Square
Montréal, Québec H4Z 1A9
E-mail: legal@m-x.ca

A copy of these comments shall also be forwarded to the *Autorité des marchés financiers* (the "**Autorité**") to:

Me Anne-Marie Beaudoin
Corporate Secretary
Autorité des marchés financiers
800 Victoria Square, 22nd Floor
P.O. Box 246, Tour de la Bourse
Montréal (Québec) H4Z 1G3
E-mail: consultation-en-cours@lautorite.qc.ca

Please note that comments received by one of these recipients will be transferred to the other recipient and that the Bourse may publish a summary of such comments as part of the self-certification process concerning this file.

Appendices

For your information, you will find in the appendices an analysis of the proposed amendments as well as the amendments proposed to the Procedures. The implementation date of the proposed amendments will be determined by the Bourse, in accordance with the self-certification process as determined by the *Derivatives Act* (R.S.Q., chapter I-14.01).

Process for Changes to the Rules

The Bourse is authorized to carry on business as an exchange and is recognized as a self-regulatory organization (SRO) by the Autorité. The Board of Directors of the Bourse has delegated to the Rules and Policies Committee of the Bourse its powers to approve and amend the Rules and Procedures. The Rules of the Bourse are submitted to the Autorité in accordance to the self-certification process as determined by the *Derivatives Act* (R.S.Q., chapter I-14.01).

SETTLEMENT PRICE FOR THREE-MONTH CANADIAN BANKERS' ACCEPTANCE FUTURES CONTRACTS

AMENDMENT OF THE *DAILY SETTLEMENT PRICE PROCEDURES FOR FUTURES CONTRACTS AND OPTIONS ON FUTURES CONTRACTS*

Table of Contents

I. SUMMARY

Bourse de Montréal Inc. (the "Bourse") is proposing to update the procedure governing the daily settlement of three-month Canadian bankers' acceptance futures contracts (BAX) set forth in the *Daily Settlement Price Procedures for Futures Contracts and Options on Futures Contracts* (the "Procedures"). This update is a three-step process. The Bourse intends first to amend the volume threshold required by the automated pricing algorithm to determine the BAX settlement price. It then proposes to place greater importance on individual contracts and less on spread and butterfly spread trades in connection with the BAX price settlement process. Finally, the Bourse wishes to specify that the BAX settlement price must respect the bid/offer price of the individual contract.

II. ANALYSIS

a. Background

As indicated in the *Procedures*, the Bourse determines the daily BAX settlement price by means of an automated pricing algorithm.[1] The settlement price so determined is then used by the clearing house, i.e., the Canadian Derivatives Clearing Corporation (CDCC), to establish end-of-day margins. As settlement prices influence end-of-day margins, they have a significant impact on market participants holding open positions.

The current version of the *Procedures* provides that:

> "… the automated daily settlement price algorithm will determine the settlement price [of the BAX front quarterly contract month] according to the following priorities: first, it will use the last three minute weighted average price of cumulated trades prior to 3:00 pm, or prior to 1:00 pm on early closing days, amounting to at least 50 contracts on that contract month; if no such average price is available, it will then use the last 30 minute weighted average price of cumulated trades prior to 3:00 pm, or prior to 1:00 pm on early closing days, amounting to at least 50 contracts on that contract month."[2]

This minimum 50-contract threshold was established by the Bourse to prevent market participants from influencing the BAX settlement price. However, this volume threshold required for BAX contracts was last updated in December 2008, although, as shown in Table 1 below, BAX contract volumes have increased since then. The Bourse therefore considers that the required volume threshold should be raised to reflect the increase in BAX volume.

Table 1: BAX average daily volume between 2008 and 2015

Year	Average Daily Volume
2014	98,560
2013	86,102
2012	82,542
2011	83,798
2010	54,795
2009	30,675
2008	39,677

Source: Bourse de Montréal, *Monthly Statistics*, http://www.m-x.ca/nego_donnees_mensuels_en.php

[1] Bourse de Montréal Inc., *Daily Settlement Price Procedures for Futures Contracts and Options on Futures Contracts*, section 4.1.
[2] *Ibid.* section 4.1.2.

b. Description and Analysis of Market Impacts

Increase in volume threshold required for BAX

The high increase in the volume of trading in BAX contracts means that liquidity is higher in the last minutes of trading on the nearest expiries (see Table 2 below).

Table 2: Average daily volume between 2:57 PM-3:00 PM for the months of July to December 2014

Month	July 2014	August 2014	September 2014	October 2014	November 2014	December 2014	Average of Q3 and Q4 2014
1st contract	112	60	331	81	60	162	**134**
2nd contract	265	147	458	250	561	231	**319**
3rd contract	245	166	376	218	102	382	**248**
4th contract	232	210	556	271	109	373	**292**
5th contract	329	344	191	112	86	177	**207**
6th contract	84	131	138	157	69	35	**102**
7th contract	182	149	48	50	23	29	**80**
8th contract	41	53	10	21	44	17	**31**
9th contract	13	4	4	10	32	37	**17**
10th contract	5	2	1	6	3	3	**3**
11th contract	1	1	0	1	0	3	**1**
12th contract	0	0	0	0	0	0	**0**

Source: Bourse de Montréal

As mentioned previously, the Bourse currently uses a single threshold of 50 contracts for all BAX expiries. This threshold is relatively low and should therefore be raised to eliminate the possibility that the settlement price could be influenced on a day where there is little trading activity on the BAX market.

The Bourse therefore wishes to introduce three distinct thresholds to be used by the pricing algorithm when calculating the BAX settlement price. The first threshold would apply from the 1st to the 4th BAX quarterly contract month ("whites") and would be set at 150 contracts. The second threshold, for the 5th to the 8th quarterly contract month ("reds"), would be set at 100 contracts. The third threshold, involving less liquid contracts from the 9th to the 12th quarterly contract month ("greens"), would remain unchanged at 50 contracts.

Raising the threshold for near-term contracts (from the 1st to the 8th quarterly contract month, "whites" and "reds") will make it more difficult and costly to influence the settlement price. As a result of the proposed amendments, a market participant who is tempted to influence the BAX settlement price would have to hold more substantial positions, resulting in additional trading costs and greater risk for such participant.

Relative Weight of Individual Contracts vs Spreads

Currently, the volume of a trade or order for spreads carries as much weight when calculating the settlement price as the volume of a trade or order for individual contracts. As a result, a participant could, at relatively little cost, use an order or trade for a spread to attempt to influence the daily settlement price on account of the minimal margins required by the Bourse, which are lower on a spread or butterfly spread position than on an individual contract.

To remedy this situation, the Bourse wishes to set a relative weight of 50% for orders and trades for spreads and a relative weight of 25% for orders and trades for butterfly spreads relative to individual contracts. This relative weight is calculated on the basis of the margins required for individual contracts and for spread and butterfly spread positions.

This new relative weight will increase the number of contracts required to achieve a settlement price. With a lower relative weight, a trader will have to double his or her volume on a spread to achieve the same result, and quadruple the volume on a butterfly spread. This increase will result in higher execution costs to achieve the same effect as at present.

The margins required for BAX are modified every day based on market volatility and liquidity. Greater risk in trading in BAX contracts gives rise to higher margins. Table 3 shows margins required for BAX on January 9, 2015. The Bourse proposes to establish the 50% and 25% ratios referred to in the preceding paragraph to ensure that margin costs on spreads and butterfly spreads are proportional to margin costs on individual contracts.

Table 3: Margin required by the Regulatory Division of the Bourse for BAX on January 9, 2015

Position on individual contracts

BAX	Speculator	$507	CAD
	Hedger	$457	CAD

Spread and butterfly spread position

TYPES OF MARGIN	BAX
Spread	$335
Butterfly spread (consecutive contract months)	$85
Butterfly spread (Non-consecutive contract months)	$155

Source: Bourse de Montréal, *Futures Contracts Margin Rates* January 9, 2015, http://reg.m-x.ca/en/regulation/futures_margins

Importance of Bid and Ask Prices

At the end of 2014, the Bourse held a consultation with market participants on the way it determines the BAX settlement price. Some approved participants suggested that the Bourse should ensure that the BAX settlement price cannot close outside the bid and ask price of the individual contract. The Bourse took note of these comments and wishes to add an important specification to the procedure used to determine BAX settlement prices: it is proposing to add that the settlement price must respect the bid/ask price of the individual BAX contract. However, an exception is provided where the bid or ask price is lower than the required minimum threshold, described above; in such cases section 4.1.4 of the *Procedures* would apply.

c. Comparative Analysis

Certain specifications of the procedure used by the Bourse to determine daily BAX settlement prices are similar to those of other exchanges on which short term interest rate futures are traded, such as CME and ICE. Their threshold and the time required are different, based on the liquidity of the reference futures contract.

Table 4: Comparative analysis of average time of settlement and thresholds for contracts similar to BAX for three world stock exchanges

EXCHANGE	*Substitute Product*	*Average Time of Settlement*	*Number Traded or Quoted in the Last 1-5 Minutes*
Australian Securities Exchange (ASX)	*90 Days Bank Bill Futures*[3]	*Unavailable Data*	*No weight average calculation specified.*
Chicago Mercantile Exchange (CME)	*Eurodollar Futures*[4]	*1 minute* *Between* *1:59 pm-2:00 pm CT.* *Or* *2:59 pm-3:00 pm EST*	*100 contracts*
Intercontinental Exchange (ICE)	*Three Month Sterling Futures (Short Sterling)*[5]	*10 minutes* *Between* *4:05 pm -4:15 pm GMT*[6] *Or* *11:05 am- 11:15 am EST*	*250 contracts*
Bourse de Montréal (MX)	*Three-Month Canadian Bankers' Acceptance Futures (BAX)*[7]	*3 minutes* *Between 2:57 pm-3:00 pm*	*50 contracts*

Table 4 shows the thresholds and time required by other exchanges. Note that ASX does not use the same methodology as CME, ICE or the Bourse. ASX uses a procedure based on orders in the order book at closing, a technique which the Bourse does not wish to use as it is not suitable for the BAX contract.

d. Proposed Amendments

The Bourse proposes to amend section 4.1.2 of the *Procedures* for the purpose of deleting the statement to the effect that a number "amounting to at least 50 contracts" must be used by the BAX settlement price automated pricing algorithm, and replacing such statement with the notion of "Minimum Threshold". The Bourse is also proposing to define, in section 4.1 of the *Procedures*, the three new Minimum Thresholds to be used by the automated algorithm, being:

[3] ASX Website, consulted on January 9, 2015, http://www.asx.com.au/documents/products/90-Day-bank-bill-futures-factsheet.pdf
[4] CME Group Daily Settlement Procedures, http://www.cmegroup.com/market-data/files/cme-group-settlement-procedures.pdf
[5] ICE Website, Three Month Sterling Futures (Short Sterling), consulted on December 23, 2014, https://www.theice.com/publicdocs/contractregs/163_XX_TRADING_PROCEDURES.pdf https://globalderivatives.nyx.com/contract/content/29101/contract-specification
[6] LIFFE Website, LIFFE Migration, Fixed Income Part 2, https://www.theice.com/publicdocs/circulars/14127.pdf
[7] MX Website, Three-Month Canadian Bankers' Acceptance Futures (BAX) contract specification, consulted on February 23, 2015, http://www.m-x.ca/produits_taux_int_bax_en.php

150 contracts for the first four quarterly contract months (“whites”);
100 contracts for quarterly contract months 5 to 8 (“reds”); and
50 contracts for quarterly contract months 9 to 12 (“greens”).

The Bourse further proposes to add the two following specifications to sections 4.1.2 and 4.1.3:

> A settlement price must be within the bid/offer price of the individual contract, provided that the bid or offer meets the Minimum Threshold of volumes required.
>
> All volumes and orders on a spread will be weighted at 50% relative to the orders and volumes on individual contracts, whereas a butterfly spread will be weighted at 25% relative to the orders and volumes on individual contracts.

It should be noted that the amendments proposed by the Bourse will not change the methodology set forth in the Procedures and the automated pricing algorithm will not be modified except for the new Minimum Thresholds and new relative weight of individual contracts vs spreads.

III. AMENDMENT PROCESS

The amendment process was triggered by the Bourse’s desire to update a procedure that is more than six years old and bring it into line with the new market reality. The comments received by the Bourse as a result of a consultation held with its clients in 2014 reaffirmed its intention to update this procedure.

IV. IMPACT ON TECHNOLOGICAL SYSTEMS

The potential impact on the Bourse’s technological systems and those of its approved participants is considered minimal.

V. OBJECTIVE OF PROPOSED AMENDMENTS

The objective of the amendments is to revise the procedure used to determine the BAX settlement price and bring it into line with the new reality of the BAX market in order to make it more efficient.

VI. PUBLIC INTEREST

The proposed amendments will enhance the quality of the closing prices and thus increase the transparency of the BAX

VII. MARKET IMPACT

The proposed amendments will have minimal impact on daily trading as they apply only to the calculation of the BAX settlement price, which is based on the last minutes of daily trading.

However, the volume of the first four BAX contract months (“whites”) may increase during the closing range as the required threshold will be raised. However, the Bourse foresees no major impact on the volume of trading in individual contracts.

The number of trades in spreads and butterfly spreads may diminish in the last minutes of the trading day since their new lower relative weight could reduce the incentive to trade in this type of contract.

VIII. PROCESS

The proposed amendments are being submitted to the Bourse's Rules and Policies Committee for approval. They will also be submitted to the Autorité des marchés financiers in accordance with the self-certification process, and to the Ontario Securities Commission for information purposes.

IX. ATTACHED DOCUMENT

- *Daily Settlement Price Procedures for Futures Contracts and Options on Futures Contracts*

DAILY SETTLEMENT PRICE PROCEDURES FOR FUTURES CONTRACTS AND OPTIONS ON FUTURES CONTRACTS

1. RULE

Article 6390 of the Rules of Bourse de Montréal Inc. (the Bourse) stipulates that:

“The daily settlement price or the closing quotation are determined according to the procedures established by the Bourse for each derivative instrument.”

2. SUMMARY

FUTURES CONTRACTS AND OPTIONS ON FUTURES CONTRACTS DAILY SETTLEMENT PRICES

- These markets use the average price during the last minutes of trading, as specified for each instrument in the following procedures, so as to establish a single settlement price. These calculations are executed manually by market officials or, as the case may be, by an automated algorithm using pre-established guidelines for each product.
- The prices at which block trades, Exchange for Physical (EFP), Exchange for Risk (EFR) or Substitution transactions are arranged shall not be used to establish the open, high, low or daily settlement price.

3. OBJECTIVES

The objectives of establishing daily settlement prices are to:

- Ensure a fair and orderly market close and pricing for approved participants so that they can properly mark-to-market their positions for margin calculations and back office processing, including the clearing and settlement of their transactions ;
- Ensure that the Canadian Derivatives Clearing Corporation (CDCC) and all market participants are informed of the settlement prices.

4. DESCRIPTION

4.1 THREE-MONTH CANADIAN BANKERS' ACCEPTANCE FUTURES CONTRACTS (BAX)

The daily settlement price procedure for the Three-Month Canadian Bankers’ Acceptance Futures contract (BAX) is executed by a fully automated pricing algorithm which utilizes the parameters described in sections 4.1.1, 4.1.2 and 4.1.3 to ensure accuracy in the process.

DEFINITIONS:

"Regular orders": Orders routed by approved participants to the Montréal Exchange trading system.

"Implied orders": Orders generated by the implied pricing algorithm (using regular orders) and registered in the order book by the trading engine.

"Minimum Threshold": The applicable threshold for BAX will be:

- 150 contracts for the first four quarterly contract months ("whites");
- 100 contracts for quarterly contract months 5 to 8 ("reds"); and
- 50 contracts for quarterly contract months 9 to 12 ("greens").

4.1.1 IDENTIFICATION OF THE FRONT QUARTERLY CONTRACT MONTH

The automated daily settlement pricing algorithm identifies the front quarterly contract month from the first two quarterly contract months. The front quarterly contract month is the one, among the first two quarterly contract months, that has the largest open interest and the required market information. In the absence of both these criteria together, then the front quarterly contract month shall be determined by market officials based on available market information.

4.1.2 ALGORITHM UTILIZED FOR THE DETERMINATION OF THE DAILY SETTLEMENT PRICE OF THE FRONT QUARTERLY CONTRACT MONTH

Once the front quarterly contract month has been identified, the automated daily settlement price algorithm will determine the settlement price of the front quarterly contract month according to the following priorities: first, it will use the ~~last three minute~~ weighted average price of cumulated trades that meet the Minimum Threshold, during the last three minute prior to 3:00pm, or prior to 1:00pm on early closing days, ~~amounting to at least 50 contracts~~ on that contract month; if no such average price is available, it will then use the ~~last 30 minute~~ weighted average price of cumulated trades ~~prior to 3:00pm, or prior to 1:00pm on early closing days,~~ for a total equal to the Minimum Threshold ~~amounting to at least 50 contracts~~ on that contract month for a period not exceeding the last 30 minutes prior to 3:00pm, or prior to 1:00pm on early closing days. Trades resulting from both regular and implied orders will be used in the process. If no such average price is yet available, then the least variation between the bid or offer price that is not as a result of implied orders and the previous day settlement price will be used.

The settlement price must be within the bid/offer price of the individual contract provided that the bid or offer meets the Minimum Threshold of volumes required.

All volumes and orders on a spread will be weighted at 50% relative to the orders and volumes on individual contracts, whereas a butterfly spread will be weighted at 25% relative to the orders and volumes on individual contracts.

~~Once the daily settlement price for the front quarterly contract month has been established, it will be verified against the booked orders and if there is a better outright bid or offer that is not as a result of implied orders, the latter will take precedence over the daily settlement price calculated as described in the paragraph above.~~

4.1.3 PROCEDURE FOR THE DETERMINATION OF THE DAILY SETTLEMENT PRICE OF THE REMAINING BAX CONTRACT MONTHS

Upon completion of the aforementioned steps, the automated daily pricing algorithm will then establish the settlement prices for all other BAX contract months sequentially. The daily settlement prices of all other BAX contract months will be based first on the last three minute outright market (resulting from regular and implied orders) prior to 3:00pm, or prior to 1:00pm on early closing days, and strategy combination traded weighted average or, if no weighted average price can be determined in this manner, the least variation between the bid or offer for booked orders.

The settlement price must be within the bid/offer price of the individual contract provided that the bid or offer meets the Minimum Threshold of volumes required.

All volumes and orders on a spread will be weighted at 50% relative to the orders and volumes on individual contracts, whereas a butterfly spread will be weighted at 25% relative to the orders and volumes on individual contracts.

4.1.4 ANCILLARY PROCEDURE

In the absence of any required items to apply the aforementioned procedure, market officials will establish the settlement price based on available market information. They may also disregard any event (trade, bid or offer) which occurs close to 3:00pm, or close to 1:00pm on early closing days, and which is not compatible with a given settlement price.

In this situation, market officials will keep a record of the criteria used to establish the settlement price.

4.2 FUTURES CONTRACTS ON S&P/TSX INDICESAND ON THE FTSE EMERGING MARKETS INDEX

The settlement price shall be the weighted average of all trades during the closing range. The closing range is defined as the last minute of the trading session for all contract months. In the case of mini futures contracts on S&P/TSX indices, the settlement price shall be the same as the standard futures contracts on S&P/TSX indices when such standard futures contracts exist.

4.2.1 MAIN PROCEDURE

- **Booked orders**

  If there is an unfilled order with a higher bid or lower offer in an outright month, this bid or offer will override the settlement price obtained from the weighted average. The order must have been posted for 20 seconds or longer prior to the close and its size must be for a total of 10 contracts or more.

- **Last trades**

  If there are no trades in the last minute of trading, then the last trade will be taken into account while still respecting posted bids and offers in the market.

4.2.2 FIRST ANCILLARY PROCEDURE

When two contract months and the spread are trading (quarterly calendar roll), the ancillary procedure of this section will apply.

- The front month must be settled first (the establishment of the front month is based on the month with the greatest open interest).
- The spread between the two contract months must be settled next by taking into account the last minute average trading price and by examining the trades executed during the previous 10 minutes.
- The settlement price for the back month or far month is obtained by the difference between the front month settlement price and the value of the spread.

4.2.3 SECOND ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.2.1 and the ancillary procedure in 4.2.2, the following ancillary procedure will apply.

Market officials will post a settlement price that will reflect the same differential that was applied on the previous day settlement. The settlement price will be adjusted accordingly to respect that contract's previous settlement price.

4.2.4 THIRD ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.2.1 and the ancillary procedures in 4.2.2 and in 4.2.3, the following ancillary procedure will apply.

In this situation, market officials will establish the settlement price based on available market information. They may also disregard any event (trade, bid or offer) which occurs near the end of the regular trading session and which is not compatible with a given settlement price.

In this situation, market officials will keep a record of the criteria used to establish the settlement price.

4.3 GOVERNMENT OF CANADA BOND FUTURES CONTRACTS

4.3.1 MAIN PROCEDURE

The settlement price shall be the weighted average of all trades during the closing range. The closing range is defined as the last minute of trading prior to 3:00pm, or prior to 1:00pm on early closing days, for all contract months.

- **Booked orders**

  If there is an unfilled order with a higher bid or lower offer in an outright month, this bid or offer will override the settlement price obtained from the weighted average. This order must have been posted for 20 seconds or longer prior to 3:00pm, or prior to 1:00pm on early closing days, and its size must be for 10 contracts or more.

- **Last trades**

  If there are no trades in the last minute of trading, then the last trade will be taken into account while still respecting posted bids and offers in the market.

4.3.2 FIRST ANCILLARY PROCEDURE

When two contract months and the spread are trading (quarterly calendar roll), the following ancillary procedure will apply.

- The front month must be settled first (the establishment of the front month is based on the month with the greatest open interest).

- The spread between the two contract months must be settled next by taking into account the last minute average trading price prior to 3:00pm, or prior to 1:00pm on early closing days, and by examining the trades executed during the previous 10 minutes.

- The settlement price for the back month or far month is obtained by the difference between the front month settlement price and the value of the spread.

4.3.3 SECOND ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.3.1 and the ancillary procedure in 4.3.2, the following ancillary procedure will apply.

Market officials will post a settlement price that will reflect the same differential that was applied on the previous business day. The settlement price will be adjusted accordingly to respect that contract's previous settlement price.

4.3.4 THIRD ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.3.1 and the ancillary procedures in 4.3.2 and 4.3.3, the following ancillary procedure will apply.

In this situation, market officials will establish the settlement price based on available market information. They may also disregard any event (trade, bid or offer) which occurs close to 3:00pm, or close to 1:00pm on early closing days, and which is not compatible with a given settlement price.

In this situation, market officials will keep a record of the criteria used to establish the settlement price.

4.4 OPTIONS ON THREE-MONTH CANADIAN BANKERS' ACCEPTANCE FUTURES CONTRACTS

4.4.1 MAIN PROCEDURE

4.4.1.1 Weighted average

The settlement price shall be the weighted average of the prices traded in the closing range (last minute of trading prior to 3:00pm, or prior to 1:00pm on early closing days). If there is, at the close, a higher bid or lower offer than the settlement price so obtained, that bid or offer shall be the settlement price.

4.4.1.2 Last trades

If no trade occurs during the closing range, the market officials will consider transactions executed during the last 30 minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days. Also, to be considered, the bids and offers shall be for a minimum of 25 contracts and shall have been posted at least one minute before 3:00pm , or before 1:00pm on early closing days, to be considered.

If no trade occurs in the closing range (or in the last 30 minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days), the settlement price shall be the theoretical price calculated by the Bourse (as described in section 4.4.2). If there is, at the close, a higher bid or lower offer than the settlement price so obtained, that bid or offer shall be the settlement price.

4.4.2 ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.4.1, the following ancillary procedure will apply.

The settlement price shall be determined by inserting the following parameters into a standard option pricing model (Black & Scholes):

Price of the underlying:

- The Bourse will capture the settlement price of the underlying BAX futures contract. This will be the price of the underlying.

Interest rate:

- The interest rate used will be the rate implied by the settlement price of the BAX futures contract nearest to expiration.

Volatility:

- The Bourse will use the implied volatility (per contract month, for puts and calls) obtained from the acting Market Maker. The same volatility will be applied for both calls and puts.

The strike price of the options' series and the time to expiration are the other parameters that will be inserted into the model.

In determining the closing price, the Bourse shall take into account the information provided by the posted strategy, for example; if the SEP 9200 straddle is 98 bid, the total of the closing prices of these two series should not be inferior to 98.

4.5 30-DAY OVERNIGHT REPO RATE FUTURES CONTRACTS (ONX)

4.5.1 MAIN PROCEDURE

The settlement price shall be the weighted average of all trades during the closing range. The closing range is defined as the last three minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, for all contract months.

4.5.1.1 Weighted average of closing range trades

The weighted average will be derived from trades that occurred in the outright months during the closing range. The total volume traded in each outright month must be for 25 or more contracts.

4.5.1.2 Booked orders

If there is an unfilled order with a higher bid price or lower offer price in a month, this bid or offer will override the settlement price obtained from the weighted average. This order must have been posted for 15 seconds or longer prior to 3:00pm, or prior to 1:00pm on early closing days, and its size must be for a total of 25 or more contracts in each of the months.

4.5.1.3 Remaining balances of booked orders partially executed at the close

In the case of a booked order as stipulated in paragraph 4.5.1.2 above, which would be only partially executed, the trades during the closing period as well as the remaining balance of booked orders will be considered to establish the settlement price.

Example 1: If there is a booked order for 25 ONX contracts at 97.92 and 15 of those contracts are executed, the 10 remaining contracts, if they are still present on the market at the same price, will be considered to establish the required minimum of 25 contracts.

Example 2: If there is a trade of 15 ONX contracts during the closing period at 97.92 and there is a booked order bid for 10 ONX contracts at 97.91 (respecting the required time limit), the bid will be considered in addition to the trades in the closing period to establish a settlement price.

4.5.1.4 Strips and spreads

All trades and unfilled booked orders for strips and spreads related to any expiry months will be ignored.

4.5.2 FIRST ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.5.1, the following ancillary procedure will apply.

4.5.2.1 Weighted average of trades on strategies

The settlement price shall be the weighted average of the trades on the strategies traded during the last five minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, provided the volume for the strategy taken into account was of 25 or more contracts.

4.5.2.2 Booked orders

If there is an unfilled order with a higher bid or lower offer, this bid or offer will override the settlement obtained from the weighted average described in 4.5.2.1. It has to have been posted for three minutes or longer prior to 3:00pm, or prior to 1:00pm on early closing days, and the size must be for 25 or more contracts.

4.5.3 SECOND ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.5.1 and the ancillary procedure in 4.5.2, the following ancillary procedure will apply.

4.5.3.1 Differential with the previous contract month's settlement price

The settlement price will be defined by a price that reflects an appropriate differential with the settlement price of the previous contract month always starting with the contract month closest to expiry.

4.5.3.2 Conflicts between spreads

If two spreads are in conflict, the calendar spread closest to expiry will have priority.

4.5.4 THIRD ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.5.1 and the ancillary procedures in 4.5.2 and 4.5.3, the following ancillary procedure will apply.

In this situation, market officials will establish the settlement price based on the available market information. They may also disregard any event (trade, bid or offer) which occurs close to 3:00pm, or close to 1:00pm on early closing days, and which is not compatible with a given settlement price.

In this situation, market officials will keep a record of the criteria used to establish the settlement price.

4.6 FUTURES CONTRACTS ON CARBON DIOXIDE EQUIVALENT (CO_2e) UNITS

4.6.1 MAIN PROCEDURE

The settlement price shall be the weighted average of all traded prices during the closing range. The closing range is defined as the last fifteen minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, for all contract expiries.

- **Booked orders**

  If there is an unfilled order with a higher bid or lower offer in a particular contract expiry, this bid or offer will override the settlement price obtained from the weighted average. This order must have been posted for 20 seconds or longer prior to 3:00pm, or prior to 1:00pm on early closing days, and its size must be for 10 contracts or more.

- **Last trades**

  If there are no trades in the last fifteen minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, then the last trade will be taken into account while still respecting posted bids and offers in the market.

4.6.2 FIRST ANCILLARY PROCEDURE

When two contracts expiries and the spread are trading (calendar roll), the following ancillary procedure will apply.

- The contract having the earliest expiry must be settled first.
- The spread between the two contracts must be settled next by taking into account the last fifteen minute average trading price prior to 3:00pm, or prior to 1:00pm on early closing days, and by examining the trades executed during the previous 30 minutes.
- The settlement price for the far-dated contracts corresponds to the difference between the settlement price of the contract having the earliest expiry and the value of the spread.

4.6.3 SECOND ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.6.1 and the ancillary procedure in 4.6.2, the following ancillary procedure will apply.

Market officials will post a settlement price that will reflect the same differential that was applied on the previous trading day. The settlement price will be adjusted accordingly to respect that contract's previous settlement price.

4.6.4 THIRD ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.6.1 and the ancillary procedures in 4.6.2 and 4.6.3, the following ancillary procedure will apply.

In this situation, market officials will establish the settlement price based on available market information. They may also disregard any event (a trade, a bid or an offer) which occurs close to 3:00pm, or close to 1:00pm on early closing days, and which is not compatible with a given settlement price.

Market officials will register in the "daily settlement price record" the criteria considered for determining the settlement price.

4.7 FUTURES CONTRACTS ON CANADIAN CRUDE OIL

The daily settlement price procedure for Futures contracts on Canadian Crude Oil is executed by a fully automated pricing algorithm which utilizes the parameters described in sections 4.7.1, 4.7.2 and 4.7.3 to ensure accuracy in the process.

DEFINITIONS:

"Regular orders": Orders routed by approved participants to the Bourse's trading system.

"Implied orders": Orders generated by the implied pricing algorithm (using regular orders) and registered in the order book by the trading engine.

4.7.1 IDENTIFICATION OF THE FRONT CONTRACT MONTH

The automated daily settlement pricing algorithm identifies the front contract month from the first two contract months. The front contract month is the one, among the first two contract months, that has the largest open interest and the required market information. In the absence of both these combined criteria, the front contract month shall be determined by market officials based on available market information.

4.7.2 ALGORITHM UTILIZED FOR THE DETERMINATION OF THE DAILY SETTLEMENT PRICE OF THE FRONT CONTRACT MONTH

4.7.2.1 Main Procedure

A. Once the front contract month has been identified, the automated daily settlement price algorithm will determine the settlement price of the front contract month according to the following priorities:

1) first, it will use a weighted average price of cumulated trades executed during the last five minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, and amounting to at least 10 contracts on that contract month;

2) if no such average price is available, it will then use the weighted average price of cumulated trades executed during the last 30 minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, and amounting to at least 10 contracts on that contract month.

B. Trades resulting from both regular and implied orders will be used in the process.

C. If no such average price is yet available, the bid price or offer price, that is not the result of implied orders and representing the smallest variation compared to the previous day settlement price will be used.

Once the daily settlement price for the front contract month has been established, it will be verified against the booked orders and if there is a better outright bid or offer that is not resulting from implied orders, the latter will take precedence over the daily settlement price calculated as described in paragraphs 4.7.2.1 A), B) and C) above.

4.7.3 PROCEDURE FOR THE DETERMINATION OF THE DAILY SETTLEMENT PRICE OF THE REMAINING CONTRACT MONTHS

Upon completion of the aforementioned steps, the automated daily pricing algorithm will then establish the settlement prices for all other contract months sequentially. The daily settlement prices of all other contract months will be established as follows:

A. first it will use the weighted average price of transactions (resulting from regular and implied orders) and strategies executed during the last five minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, ; or,

B. if no weighted average price can be determined in this manner, then the same variation from the previous day's settlement price as calculated for the preceding contract expiry will be applied while respecting the posted market;

4.7.4 ANCILLARY PROCEDURE

A. In the absence of the required items to apply the aforementioned procedure, market officials will establish the daily settlement price based on available market information. They may also disregard any event (trade, bid or offer) which occurs close to 3:00pm, or close to 1:00pm on early closing days, and which is not compatible with a given settlement price.

B. In this situation, market officials will keep a record of the criteria used to establish the settlement price.

4.8 OVERNIGHT INDEX SWAP FUTURES CONTRACTS (OIS)

4.8.1 MAIN PROCEDURE

The settlement price shall be the weighted average of all trades during the closing range. The closing range is defined as the last three minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, for all contract months.

4.8.1.1 Weighted average of closing range trades

The weighted average will be derived from trades that occurred in the outright months during the closing range. The total volume traded in each outright month must be for 25 or more contracts.

4.8.1.2 Booked orders

If there is an unfilled order with a higher bid price or lower offer price in a month, this bid or offer will override the settlement price obtained from the weighted average. This order must have been posted for 15 seconds or longer prior to 3:00pm, or prior to 1:00pm on early closing days, and its size must be for a total of 25 or more contracts in each of the months.

4.8.1.3 Remaining balances of booked orders partially executed at the close

In the case of a booked order as stipulated in paragraph 4.8.1.2 above, which would be only partially executed, the trades during the closing period as well as the remaining balance of booked orders will be considered to establish the settlement price.

Example 1: If there is a booked order for 25 OIS contracts at 97.92 and 15 of those contracts are executed, the 10 remaining contracts, if they are still present on the market at the same price, will be considered to establish the required minimum of 25 contracts.

Example 2: If there is a trade of 15 OIS contracts during the closing period at 97.92 and there is a booked order bid for 10 OIS contracts at 97.91 (respecting the required time limit), the bid will be considered in addition to the trades in the closing period to establish a settlement price.

4.8.1.4 Strips and spreads

All trades and unfilled booked orders for strips and spreads related to any expiry months will be ignored.

4.8.2 FIRST ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.8.1, the following ancillary procedure will apply.

4.8.2.1 Weighted average of trades on strategies

The settlement price shall be the weighted average of the trades on the strategies traded during the last five minutes of trading prior to 3:00pm, or prior to 1:00pm on early closing days, provided the volume for the strategy taken into account was of 25 or more contracts.

4.8.2.2 Booked orders

If there is an unfilled order with a higher bid or lower offer, this bid or offer will override the settlement obtained from the weighted average described in 4.8.2.1. It has to have been posted for three minutes or longer prior to 3:00pm, or prior to 1:00pm on early closing days, and the size must be for 25 or more contracts.

4.8.3 SECOND ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.8.1 and the ancillary procedure in 4.8.2, the following ancillary procedure will apply.

4.8.3.1 Differential with the previous contract month's settlement price

The settlement price will be defined by a price that reflects an appropriate differential with the settlement price of the previous contract month always starting with the contract month closest to expiry.

4.8.3.2 Conflicts between spreads

If two spreads are in conflict, the calendar spread closest to expiry will have priority.

4.8.4 THIRD ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.8.1 and the ancillary procedures in 4.8.2 and 4.8.3, the following ancillary procedure will apply.

In this situation, market officials will establish the settlement price based on the available market information. They may also disregard any event (trade, bid or offer) which occurs close to 3:00pm, or close to 1:00pm on early closing days, and which is not compatible with a given settlement price.

In this situation, market officials will keep a record of the criteria used to establish the settlement price.

4.9 CANADIAN SHARE FUTURES CONTRACTS

The settlement price shall be the weighted average of all trades during the closing range. The closing range is defined as the last minute of the trading session for all contract months.

4.9.1 MAIN PROCEDURE

- **Booked orders**

If there is an unfilled order with a higher bid or lower offer in an outright month, this bid or offer will override the settlement price obtained from the weighted average. The order must have been posted for 20 seconds or longer prior to the close and its size must be for a total of 10 contracts or more.

- **Last trades**

If there are no trades in the last minute of trading, then the last trade will be taken into account while still respecting posted bids and offers in the market.

4.9.2 FIRST ANCILLARY PROCEDURE

When two contract months and the spread are trading (quarterly calendar roll), the ancillary procedure of this section will apply.

- The front month must be settled first (the establishment of the front month is based on the month with the greatest open interest).
- The spread between the two contract months must be settled next by taking into account the average trading price of the last minute and by examining the trades executed during the previous 10 minutes.
- The settlement price for the back month or far month is obtained by the difference between the front month settlement price and the value of the spread.

4.9.3 SECOND ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.9.1 and the ancillary procedure in 4.9.2, the following ancillary procedure will apply.

Market officials will post a settlement price that will reflect the same differential that was applied on the previous day settlement. The settlement price will be adjusted accordingly to respect that contract's previous settlement price.

4.9.4 THIRD ANCILLARY PROCEDURE

In the absence of the items required to apply the main procedure in 4.9.1 and the ancillary procedures in 4.9.2 and in 4.9.3, market officials will establish the daily settlement price based on available market information. They may also disregard any event (trade, bid or offer) which occurs near the end of the regular trading session and which is not compatible with a given settlement price.

In this situation, market officials will keep a record of the criteria used to establish the settlement price.

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