



**CIRCULAR 112-20**

June 23, 2020

**REQUEST FOR COMMENTS**

**AMENDMENTS TO THE RULES OF BOURSE DE MONTREAL INC. TO UPDATE THE SETTLEMENT PRICE PROCEDURES FOR INDEX FUTURES**

On March 17, 2020, the Rules and Policies Committee of Bourse de Montréal Inc. (the “**Bourse**”) approved amendments to article 6.412 - Daily Settlement Price or Closing Quotation, and Appendices 6E-1, 6E-3 and 6E-4.2 of the Rules of the Bourse to introduce new month-end settlement procedures involving Futures contracts on S&P/TSX and S&P/MX Indices.

Comments on the proposed amendments must be submitted at the latest on **August 24, 2020**. Please submit your comments to:

Alexandre Normandeau  
Legal Counsel  
Bourse de Montréal Inc.  
1800-1190 av des Canadiens-de-Montréal  
P.O. Box 37  
Montreal, Quebec H3B 0G7  
E-mail: [legal@tmx.com](mailto:legal@tmx.com)

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

M<sup>e</sup> Philippe Lebel  
Corporate Secretary and  
Executive Director, Legal Affairs  
Autorité des marchés financiers  
Place de la Cité, tour Cominar  
2640 Laurier boulevard, suite 400  
Québec (Québec) G1V 5C1  
Fax : (514) 864-8381  
E-mail: [consultation-en-cours@lautorite.qc.ca](mailto: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. Unless specified otherwise, comments will be published anonymously by the Bourse.

## **Appendices**

You will find in the appendices an analysis as well as the text of the proposed amendments. The implementation date of the proposed amendments will be determined by the Bourse, in accordance with the self-certification process as established by the *Derivatives Act* (CQLR, 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 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, the Policies and the Procedures, which are thereafter submitted to the Autorité in accordance with the self-certification process as determined by the *Derivatives Act* (CQLR, chapter I-14.01).



**AMENDMENTS TO THE RULES OF BOURSE DE MONTREAL INC. TO UPDATE THE SETTLEMENT  
PRICE PROCEDURES FOR INDEX FUTURES**

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## I. DESCRIPTION

Bourse de Montréal Inc. (the “Bourse”) is proposing to modify the month-end settlement price procedures for all its equity index futures (“Index Futures”). By capturing all relevant trading information to populate a fair and representative settlement price, these changes will provide a transparent and public methodology for the calculation of the Index Futures month-end settlement prices, enabling traders to understand how their positions will be impacted by the settlement.

The impetus for this initiative was to find an alternative to the survey methodology presently in place to calculate the month-end settlement price. Over the last 10 years international exchanges have moved away from surveying their participants in order to establish a month-end settlement price for their index futures. The Bourse is following suit and has reviewed alternative methods of establishing a month-end settlement price resulting in the present proposal.

The end of month price is used by several Financial Institutions to calculate the Net asset value (NAV) that is reported to the market. The Bourse’s goal is to enhance the transparency of the Index Futures month-end price calculation while supporting the development and the quality of the Canadian financial market. In order to have future settlement prices that reflect the reality of holders of the underlying asset (i.e. the basket of stocks), it is important that the settlement procedures take the link between the two universes (cash market vs future market) into consideration.

Following consultation with market participants, it was determined that Index Futures settlement prices would be calculated at month end using a time-weighted average price (“TWAP”). In addition, the settlement price calculation would also incorporate the future’s related Basis Trade on Close (“BTC”) daily mid-market quotes. A weighted average of both the Index Future and BTC would establish the month-end settlement price for the product.

These modifications are essential measures to enhance settlement procedures’ transparency and minimize the risks associated with a survey (current month-end procedure).

Please note that the existing daily settlement price procedures will be observed on all other trading days with the exception of the last business day of each month, as it is currently the case.

## II. PROPOSED AMENDMENTS

The Bourse is amending Article 6.412 - Daily Settlement Price or Closing Quotation, and Appendices 6E-1, 6E-3 and 6E-4.2 of its Rules to introduce new month-end settlement procedures involving Futures contracts on S&P/TSX and S&P/MX Indices. These amended Rules will also replace the Bourse’s practice of providing a month-end fair value for its Index Futures products, currently available on the Bourse’s website<sup>1</sup>.

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<sup>1</sup> [https://www.m-x.ca/marc\\_terme\\_sxfmonth\\_end\\_value\\_en.php](https://www.m-x.ca/marc_terme_sxfmonth_end_value_en.php)

### III. ANALYSIS

#### A. Background

*History of the Bourse's Settlement Price Procedures:*

- **September 2000**, the Bourse instituted a stock index futures settlement procedure determined on the basis of their fair value on the last business day of each calendar quarter. As was prevalent at the time at other exchanges, the Bourse established that the fair value would be obtained through a survey of its market participants;
- **May 2001**, the Bourse switched from an end-of-quarter fair value assessment to an end-of-month one based on numerous requests received by its market participants;
- **September 2018**, the index futures daily settlement procedures were modified to use the VWAP for the last minute of the trading session between 3:59 pm and 4:00 pm, rather than the previous time between 4:14 pm and 4:15 pm. This was done in conjunction with the extension of the index futures closing time to 4:30 pm from 4:15 pm. The rationale for extending the trading session was due to market participants' demand to have more time to rebalance their portfolios after the underlying cash markets closed. By having the settlement price calculation of the index futures contract coinciding with the closing time of the underlying index, its outcome would be more transparent and representative of relevant market conditions.

Over the last 10 years, global exchanges have moved away from a survey methodology. Striving for more consistency and efficiency, their daily settlement procedures have been adopted to establish the month-end settlement prices (i.e. ICE, CME use VWAP for both daily settlement and month-end settlement).

*Current Month-End Settlement Price Methodology:*

- The Bourse's Market Operations Department surveys Canadian index approved participants and requests that each of them submit their basis spread. The average of the received basis spreads is then added to the corresponding cash index closing price to establish a fair value price for the front month contract.

Since the Libor price manipulation scandal<sup>2</sup>, exchanges across the world have backed away from using surveys as part of the process to determine settlement prices in order to ensure a fair and transparent market.

#### B. Objectives

The Bourse proposes a new methodology that is aligned with feedback received from market participants. The Bourse's largest holders of its most liquid index futures contract, SXF, have

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<sup>2</sup> <https://www.theguardian.com/business/2017/jan/18/libor-scandal-the-bankers-who-fixed-the-worlds-most-important-number>

disputed the adoption of a month-end settlement price calculation using a VWAP in the last minute of trading, as such a practice would not reflect the reality of holders who are tied to the cash market. Given the relevance of the month-end settlement prices for the reporting of the NAV, two main risks were highlighted: (a) basing the settlement on solely 1 minute of activity may not be sufficiently representative considering the current market depth and as such, a full day's worth of data would be more representative, and (b) the potential disproportionate impact that the trading activity of participants that have low, sometimes inexistent, activity in the cash market may have in the last minute of trading.

The Bourse proposes a methodology that will address these concerns: (a) the use of trading activity throughout a period during the day that the cash market is open (see details below); (b) the adoption of a time-weighted average price calculation rather than a volume-weighted one; (c) the assurance that the settlement price accurately reflects the relationship ("basis") between the cash market and futures market prevalent in the market. This difference mentioned in (c) is commonly named the "*basis*" and represents in index points the combination of the implied cost of funding of the participants and their expectations of future dividends. If the future settlement price does not appropriately reflect the *basis* of participants on the cash market (i.e. holder of the underlying basket) a future contract might lose relevance as a hedging and cash equitization tool.

The proposed methodology is described below (using SXF as example):

- The price of the Index Future's last traded contract is captured at every 1 minute interval.
- The aforementioned product's trading activity is measured against the underlying index value at intervals of 1 minute throughout the day.
- The data is retrieved between 9h30 - 15:55EST in order to exclude periods of price volatility during the last minutes of trading on some index futures.
- The following trading data conditions must be present for the primary methodology to take effect: (i) a trade must be registered on at least 50% of all minute intervals throughout the period the data is captured, (ii) there must be a minimum of one data point present every 30 minutes throughout the period the data is captured, (iii) the TSX feed must be available and its data captured between 15:00EST and 15:55EST. If these conditions are not met, then the Daily Settlement procedures, as outlined in the Bourse's rules - Appendix 6E-4.2, would apply.
- For **SXF** - at each minute the last underlying Index Level and the Index Future's last traded price are obtained. The implied basis is calculated taking the difference between the two (Index & Future price) at each minute: S&P/TSX60 ("Future contract") - S&P/TSX60 ("Index"). At 16h00, the system calculates the average of each minute's implied basis obtained throughout the day.
- For S&P TSX 60 Basis Trade on Close (**BSF**) - the mid-market of all bid-ask quotes posted throughout the day is obtained. At 16h00, the system calculates the mid-market quote average for the day.
- The Settlement Price is determined by weighting the Index Future implied average basis and the BTC mid-market average basis.
- The BTC basis is weighted according to the instrument's trading volume during the previous month. The weighting percentage will be dependent on the BTC monthly volume crossing a

pre-established threshold range.

- BTC monthly volume in January = 0 (or instrument has no BTC available); TWAP weighting for February = 100%
- BTC monthly volume in January = 0.01 to 4.99% of total future contract & BTC volume; BTC weighting = 5% for February
- BTC monthly volume in January = 5 to 9.99% of total future contract & BTC volume; BTC weighting = 10% for February
- BTC monthly volume in January = 10 to 14.99% of total future contract & BTC volume; BTC weighting = 15% for February
- and so forth using 5% range increments

This methodology will be added to the Bourse rules pertaining to settlement procedures, alongside current Index futures daily settlement procedures. The new methodology will be treated as a separate Month-End settlement procedure solely for futures contracts on S&P/TSX and S&P/MX indices.

The methodology described above will become the main procedure for calculating the month-end settlement price for futures contracts on S&P/TSX and S&P/MX indices. Their ancillary procedures will be the current daily settlement procedures detailed under Bourse rules Appendix 6E-4.2 for Futures Contracts on S&P/TSX and S&P/MX Indices.

*Current Daily Settlement Price Methodology on Futures contracts on S&P/TSX/MX Indices & Single Stock Futures - As per the Bourse's Article 6.412 - Appendix 6E-4.2*

The Settlement Price shall be the weighted average of all Trades during the calculation period, which ranges from 3:59 p.m. to 4:00 p.m. 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.

**(a) Main Procedure:**

(i) 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.

(ii) Last Trades. If there are no Trades in the calculation period, then the last Trade before the calculation period will be taken into account while still respecting posted bids and offers in the market.

**(b) First Ancillary Procedure.** When two contract months and the spread are trading (quarterly calendar roll), the ancillary procedure of this Chapter will apply.

(i) The front month must be settled first (the establishment of the front month is based on the month with the greatest Open Interest).

(ii) The spread between the two contract months must be settled next by taking into account the average trading price of the calculation period and by examining the Trades executed

during the previous 10 minutes.

(iii) 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.

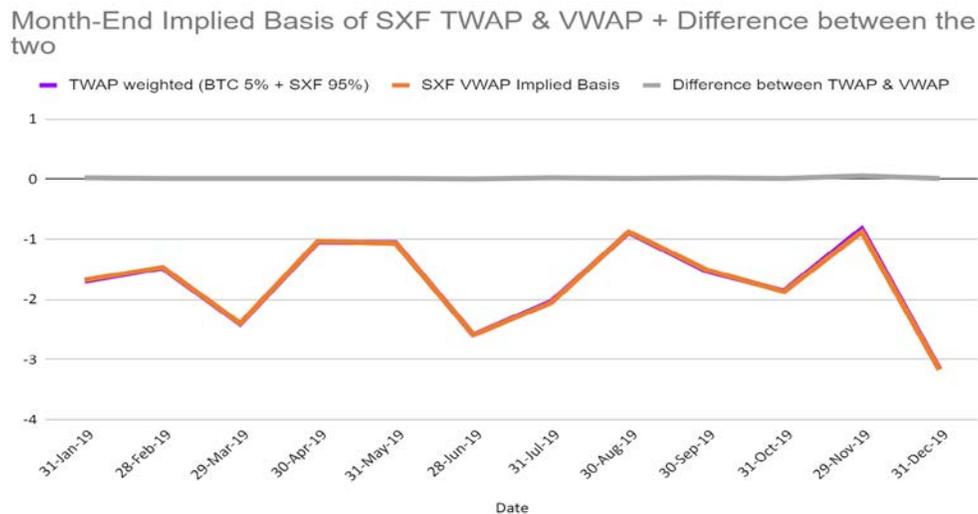
**(c) Second Ancillary Procedure.** In the absence of the items required to apply the main procedure in paragraph (a) and the ancillary procedure in paragraph (b), the following ancillary procedure will apply.

(i) Market Supervisors 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. The Settlement Price shall be the weighted average of all Trades during the calculation period, which ranges from 3:59 p.m. to 4:00 p.m. 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.

**(d) Third Ancillary Procedure.** In the absence of the items required to apply the main procedure in paragraph (a) and the ancillary procedures in paragraph (b) and in paragraph (c), the following ancillary procedure will apply. In this situation, Market Supervisors 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 Trading Day and which is not compatible with a given Settlement Price. In this situation, Market Supervisors will keep a record of the criteria used to establish the Settlement Price.

Figure 1 below illustrates the 2019 monthly spread between the month-end implied basis results using the proposed methodology of TWAP vs. the current procedure of VWAP. The S&P/TSX60 future contract ("SXF") data was used for this example.

Figure 1



As can be observed from Figure 1, there is a close correlation between the TWAP and VWAP methodologies.

### C. Comparative Analysis

As a benchmarking exercise, the Index Futures settlement procedures of 20 international exchanges were studied.

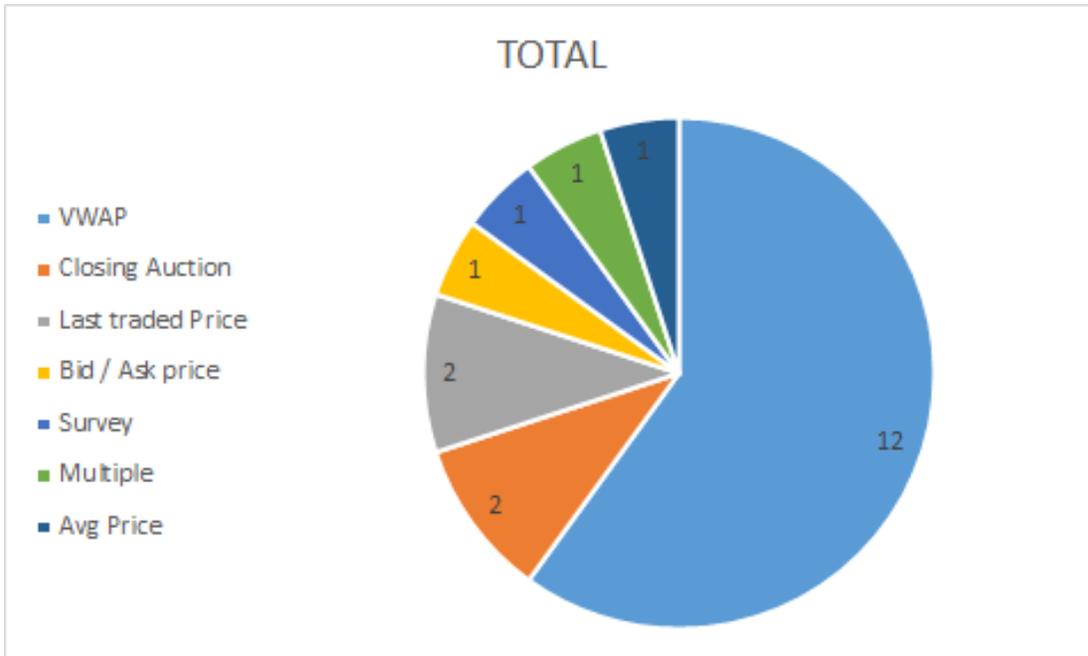
- CME, One Chicago, Eurex, NSE, Euronext, Borsa Italiana, MEFF, MexDer, TAIFEX, LSE, ASX, ASX24, TFEF, HKEX, Moscow, Bovespa (B3), JPX, CFFEX, SGX, Shanghai.

Relevant observations:

- IV. The majority of exchanges employing VWAP methodology use trading data from the last minute of trading. There are unique scenarios such as the Borsa Italiana (VWAP of last 5% of trades) and TFEF (last 5 minutes of trading);
- V. B3 calculates the settlement price based on the average of the values of the underlying index every 30 seconds in the last 3 trading hours;
- VI. SGX is in the unique situation where they have the flexibility to determine the settlement price using 1 of 5 methods (pre-closing auction, last price, spreads with back months, survey of market participants or theoretical pricing model).

Figure 2 illustrates the types of settlement procedures present in the 20 observed exchanges

**Figure 2 - Index Futures Settlement Procedures methodology - International benchmarking**



## **A. Analysis of Impacts**

### **i. Impacts on Markets**

Although the Bourse's analysis reveals similar results whether using a VWAP or a TWAP, the decision to adopt the TWAP methodology is supported by market participants due to its better representativity of activity linked to cash activity.

This proposal is further strengthened by the incorporation of BTC price data within the chosen methodology. The BTC facility allows traders to post their view on the basis between the cash market (S&P/TSX60) and the future market (SXF). BTC is a tradable instrument, bringing transparency to the formation of the price settlement. With their inclusion in the settlement price calculations, BTC trades could witness a significant rise in interest from mutual fund, hedge fund and pension fund managers. Such market participants would benefit, via BTC trades, from trading futures at a price understood to be the theoretical equivalent of the official cash index close with given assumptions on dividends and all-in implied financing to maturity.

### **ii. Impacts on Technology**

No impacts are expected on the trading engine or on the broadcasting of the futures contracts settlement price to vendors.

### **iii. Impacts on regulatory functions**

The new methodology will not create any substantial changes to the Regulatory Division's margin files or procedures.

### **iv. Impacts on clearing functions**

CDCC will not require rule changes in parallel to the rule changes proposed by the Bourse to take into account the new settlement procedures.

### **v. Public Interest**

The Bourse considers these amendments to be in the interest of the public as they aim at fostering an efficient market for Index futures, bringing more transparency to the Index Futures end of month price settlement, hence improving the market's quality and fairness.

## **VII. PROCESS**

The proposed amendments, including this analysis, must be approved by the Bourse's Rules and Policies Committee and submitted to the Autorité des marchés financiers, in accordance with the self-certification process, and to the Ontario Securities Commission for information purposes.

## **VIII. ATTACHED DOCUMENTS**

Proposed amendments to the rules.

## PROPOSED MODIFICATIONS

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### Article 6.412 Daily and month-end Settlement Price or Closing Quotation

The daily Settlement Price or the closing quotation, and where applicable, the month-end Settlement Price, are determined according to the procedures established by the Bourse for each Derivative Instrument.

### Appendix 6E—Daily and month-end Settlement Price Procedures for Futures Contracts and Options on Futures Contracts

#### Appendix 6E-1 RULE

Article 6.412 of the Rules stipulates that, “The daily Settlement Price or the closing quotation, and where applicable, the month-end Settlement Price, are determined according to the procedures established by the Bourse for each Derivative Instrument.”

#### Appendix 6E-2 SUMMARY

- (a) Futures Contracts And Options On Futures Contracts Daily and month-end Settlement Prices.
- (i) These markets use the average price during the last minutes of trading or other calculation methods, as specified for each instrument in the following procedures, so as to establish a single Settlement Price. These calculations are executed manually by Market Supervisors or, as the case may be, by an automated algorithm using pre-established guidelines for each product.
- (ii) The prices at which block trades, Exchange for Physical (EFP) or Exchange for Risk (EFR) are arranged shall not be used to establish the open, high, low or daily Settlement Price.

#### Appendix 6E-3 OBJECTIVES

The objectives of establishing daily and month-end Settlement Prices are to:

- (a) 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.
- (b) Ensure that CDCC and all market participants are informed of the Settlement Prices.

## Appendix 6E-4 DESCRIPTION

[...]

### Appendix 6E-4.2 FUTURES CONTRACTS ON S&P/TSX AND S&P/MX INDICES, AND ON THE FTSE EMERGING MARKETS INDEX

#### Daily Settlement Price

The daily Settlement Price shall be calculated using a ~~the~~ weighted average of all Trades during the calculation period, ~~which ranges from 3:59 p.m. to 4:00 p.m. for all contract months~~. In the case of mini Futures Contracts on S&P/TSX or S&P/MX Indices, the daily Settlement Price shall be the same as for the standard Futures Contracts on S&P/TSX or S&P/MX Indices when such standard Futures Contracts exist.

(a) Main Procedure.

~~(i)~~ Calculation. The daily Settlement Price shall be the weighted average of all Trades from 3:59 p.m. to 4:00 p.m. for all contract months.

~~(ii)~~ 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.

~~(iii)~~ Last Trades. If there are no Trades in the calculation period, then the last Trade before the calculation period will be taken into account while still respecting posted bids and offers in the market.

(b) First Ancillary Procedure. When two contract months and the spread are trading (quarterly calendar roll), the ancillary procedure of this Chapter will apply.

(i) The front month must be settled first (the establishment of the front month is based on the month with the greatest Open Interest).

(ii) The spread between the two contract months must be settled next by taking into account the average trading price of the calculation period and by examining the Trades executed during the previous 10 minutes.

(iii) 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.

- (c) Second Ancillary Procedure. In the absence of the items required to apply the main procedure in paragraph (a) and the ancillary procedure in paragraph (b), the following ancillary procedure will apply.
- (i) Market Supervisors 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.
- (d) Third Ancillary Procedure. In the absence of the items required to apply the main procedure in paragraph (a) and the ancillary procedures in paragraph (b) and in paragraph (c), the following ancillary procedure will apply. In this situation, Market Supervisors 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 Trading Day and which is not compatible with a given Settlement Price. In this situation, Market Supervisors will keep a record of the criteria used to establish the Settlement Price.

#### Month-end Settlement Price

The month-end Settlement Price shall be calculated on the last business day of each month using a time-weighted average price ("TWAP") and the future's related Basis Trade on Close (BTC) daily mid-market quotes average, as further detailed below. In the case of mini Futures Contracts on S&P/TSX or S&P/MX Indices, the month-end Settlement Price shall be the same as for the standard Futures Contracts on S&P/TSX or S&P/MX Indices when such standard Futures Contracts exist.

- (a) Main Procedure.
- (i) TWAP calculation. The price of the Index Future's last traded contract is captured at every 1-minute interval between 9:30 a.m. and 3:55 p.m. The Index Future's trading activity is measured against the underlying index value at intervals of 1 minute throughout the day. The implied basis is calculated taking the difference between the underlying index and the price of the Future contract at each minute. At 4:00 p.m., the system calculates the average of each minute's implied basis obtained throughout the day (TWAP);
- (ii) TWAP conditions. The following trading data conditions must be present for the TWAP to be calculated: (i) a trade must be registered on at least 50% of all minute intervals throughout the period the data is captured, (ii) there must be a minimum of one data point present every 30 minutes throughout the period the data is captured, (iii) the TSX feed must be available and its data captured between 3:00 p.m. and 3:55 p.m.;

- (iii) BTC daily mid-market quotes calculation. In order to obtain BTC daily mid-market quotes, the Bourse captures all bid-ask quotes posted throughout the day at every 1-minute interval. At 4:00 p.m., the system calculates the mid-market quote average for the day;
- (iv) Month-end Settlement Price. The month-end Settlement Price is determined by weighting the Index Future implied average basis (TWAP) and the BTC mid-market average basis. The BTC mid-market average basis is weighted according to the instrument's trading volume during the previous month and the weighting percentage is dependent on the BTC monthly volume crossing a pre-established threshold range.
- (b) Ancillary Procedure. Should the TWAP conditions mentioned above not be met for the calculation of the month-end Settlement Price, the Bourse shall calculate the month-end Settlement Price using the Main and Ancillary Procedures outlined in this Appendix 6E-4.2 for the calculation of the daily Settlement Price.
- ~~(a)~~

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## **Article 6.412 Daily and month-end Settlement Price or Closing Quotation**

The daily Settlement Price or the closing quotation, and where applicable, the month-end Settlement Price, are determined according to the procedures established by the Bourse for each Derivative Instrument.

### **Appendix 6E—Daily and month-end Settlement Price Procedures for Futures Contracts and Options on Futures Contracts**

#### **Appendix 6E-1 RULE**

Article 6.412 of the Rules stipulates that, “The daily Settlement Price or the closing quotation, and where applicable, the month-end Settlement Price, are determined according to the procedures established by the Bourse for each Derivative Instrument.”

#### **Appendix 6E-2 SUMMARY**

- (a) Futures Contracts And Options On Futures Contracts Daily and month-end Settlement Prices.

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

### **Appendix 6E-3      OBJECTIVES**

The objectives of establishing daily and month-end Settlement Prices are to:

- (a) 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.
- (b) Ensure that CDCC and all market participants are informed of the Settlement Prices.

### **Appendix 6E-4      DESCRIPTION**

[...]

#### **Appendix 6E-4.2      FUTURES CONTRACTS ON S&P/TSX AND S&P/MX INDICES, AND ON THE FTSE EMERGING MARKETS INDEX**

##### *Daily Settlement Price*

The daily Settlement Price shall be calculated using a weighted average of all Trades during the calculation period. In the case of mini Futures Contracts on S&P/TSX or S&P/MX Indices, the daily Settlement Price shall be the same as for the standard Futures Contracts on S&P/TSX or S&P/MX Indices when such standard Futures Contracts exist.

- (a) Main Procedure.
  - (i) Calculation. The daily Settlement Price shall be the weighted average of all Trades from 3:59 p.m. to 4:00 p.m. for all contract months.
  - (ii) 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.

- (iii) Last Trades. If there are no Trades in the calculation period, then the last Trade before the calculation period will be taken into account while still respecting posted bids and offers in the market.
- (b) First Ancillary Procedure. When two contract months and the spread are trading (quarterly calendar roll), the ancillary procedure of this Chapter will apply.
  - (i) The front month must be settled first (the establishment of the front month is based on the month with the greatest Open Interest).
  - (ii) The spread between the two contract months must be settled next by taking into account the average trading price of the calculation period and by examining the Trades executed during the previous 10 minutes.
  - (iii) 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.
- (c) Second Ancillary Procedure. In the absence of the items required to apply the main procedure in paragraph (a) and the ancillary procedure in paragraph (b), the following ancillary procedure will apply.
  - (i) Market Supervisors 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.
- (d) Third Ancillary Procedure. In the absence of the items required to apply the main procedure in paragraph (a) and the ancillary procedures in paragraph (b) and in paragraph (c), the following ancillary procedure will apply. In this situation, Market Supervisors 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 Trading Day and which is not compatible with a given Settlement Price. In this situation, Market Supervisors will keep a record of the criteria used to establish the Settlement Price.

#### *Month-end Settlement Price*

The month-end Settlement Price shall be calculated on the last business day of each month using a time-weighted average price (“TWAP”) and the future’s related Basis Trade on Close (BTC) daily mid-market quotes average, as further detailed below. In the case of mini Futures Contracts on S&P/TSX or S&P/MX Indices, the month-end Settlement Price

shall be the same as for the standard Futures Contracts on S&P/TSX or S&P/MX Indices when such standard Futures Contracts exist.

(a) Main Procedure.

- (i) TWAP calculation. The price of the Index Future's last traded contract is captured at every 1-minute interval between 9:30 a.m. and 3:55 p.m. The Index Future's trading activity is measured against the underlying index value at intervals of 1 minute throughout the day. The implied basis is calculated taking the difference between the underlying index and the price of the Future contract at each minute. At 4:00 p.m., the system calculates the average of each minute's implied basis obtained throughout the day (TWAP);
- (ii) TWAP conditions. The following trading data conditions must be present for the TWAP to be calculated: (i) a trade must be registered on at least 50% of all minute intervals throughout the period the data is captured, (ii) there must be a minimum of one data point present every 30 minutes throughout the period the data is captured, (iii) the TSX feed must be available and its data captured between 3:00 p.m. and 3:55 p.m.;
- (iii) BTC daily mid-market quotes calculation. In order to obtain BTC daily mid-market quotes, the Bourse captures all bid-ask quotes posted throughout the day at every 1-minute interval. At 4:00 p.m., the system calculates the mid-market quote average for the day;
- (iv) Month-end Settlement Price. The month-end Settlement Price is determined by weighting the Index Future implied average basis (TWAP) and the BTC mid-market average basis. The BTC mid-market average basis is weighted according to the instrument's trading volume during the previous month and the weighting percentage is dependent on the BTC monthly volume crossing a pre-established threshold range.

- (b) Ancillary Procedure. Should the TWAP conditions mentioned above not be met for the calculation of the month-end Settlement Price, the Bourse shall calculate the month-end Settlement Price using the Main and Ancillary Procedures outlined in this Appendix 6E-4.2 for the calculation of the daily Settlement Price.