CIRCULAR 201-20
November 20, 2020

REQUEST FOR COMMENTS

AMENDMENTS TO THE RULES OF BOURSE DE MONTRÉAL INC. REGARDING DAILY SETTLEMENT PROCEDURES FOR EQUITY INDEX FUTURES AND SHARE FUTURES

On November 4, 2020, the Rules and Policies Committee of Bourse de Montréal Inc. (the "**Bourse"**) approved amendments to the equity futures daily settlement procedures outlined in appendices to article 6.412 of the Rules of the Bourse - Daily Settlement Price or Closing Quotation, in order to ensure a fair and orderly market close and pricing for approved participant.

Comments on the proposed amendments must be submitted at the latest on **December 21, 2020**. Please submit your comments to:

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

M[e] Philippe Lebel
Corporate Secretary and
Executive Director, Legal Affairs
Autorité des marchés financiers
Place de la Cité, tour Cominar
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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 MONTRÉAL INC. REGARDING DAILY SETTLEMENT PROCEDURES FOR EQUITY INDEX FUTURES AND SHARE FUTURES

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I. DESCRIPTION

Bourse de Montreal (the “Bourse”) is proposing to modify the equity futures daily settlement procedures outlined in appendices to article 6.412 of the Rules of the Bourse - Daily Settlement Price or Closing Quotation. These procedures are important to the Bourse in order to have a transparent and public methodology for the calculation of the daily price settlement, enabling traders to understand how their position will be impacted by the settlement.

Unlike the S&P TSX 60 index futures product (SXF), other index futures are illiquid and do not have the convenience of a lit market. This puts additional pressure on implementing a reliable methodology to calculate a settlement price that is clear, accurate and understandable by the Bourse’s market participants.

As many of these products trade by appointment through prearranged transactions, it was deemed essential for the Bourse to take into account Basis Trade on Close (“BTC”) activity within its settlement rules. In addition, with the introduction of new, quasi-OTC products to its market (ex: upcoming Dividend Futures), the Bourse took the opportunity to refine and strengthen the models being used to calculate a product’s settlement price using a theoretical value, whose predictable and consistent output is obtained via an automated method.

The Bourse strongly believes that these amendments to its settlement procedures will be instrumental in reinforcing its clients’ continued confidence in a more sound, manageable and rigorous approach to calculating equity futures settlement prices.

II. PROPOSED AMENDMENTS

The proposed amendments are attached.

III. ANALYSIS

a. Background

The last time the equity futures daily settlement procedures were modified dates back to September 2018. At that time, the index futures daily settlement procedures were modified to use the Volume Weighted Average Price (“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.

Since the Bourse last revisited its daily settlement rules, there has been increased activity in products that do not have a consistently quoted market, i.e. Share Futures. Additionally, concerns have been raised by market participants over the current methodology's ability to accurately determine a settlement price for illiquid products, i.e. sector index futures, and satisfy the settlement requirements of newly-introduced products such as Dividend Futures.

In response to those apprehensions, the Bourse has decided to strengthen their settlement procedures and use the opportunity to improve the rules process and bring clarity to its measures.

In conjunction with rule changes outlined under the proposed amendments, the Bourse is working on related projects that will upgrade the surveillance tools the Market Operations department relies on a daily basis. Furthermore, these tools will be able to source reference prices whose accuracy will be enhanced through the adoption of improved fair value calculation models.

b. Objectives

The Bourse's main objective is 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.

The Bourse settlement procedures have been clarified to avoid confusion on which steps come first within the methodology. By separating the procedures within a tiered process, this will alleviate these concerns and simplify the steps that are taken to arrive at a settlement price.

The last tier, which can consist of settling a product using theoretical value, requires the development of robust reference price models. Due to the lack of a posted market, products such as the sector index futures, share futures and some longer term index futures, are dependent on a settlement price derived from a fair value calculation. The fair value calculation is based on the resources available to the Bourse. The introduction of market maker programs to quote illiquid futures contracts is being studied and will lessen the pressure to calculate a settlement price using a theoretical model.

c. Comparative Analysis

The Bourse's review of global exchanges daily settlement rules, policies and procedures have showcased the following features:

CME[1]:

- **Tier 1:** VWAP from 15:14:30 – 15:15:00 CT (S&P 500 Futures), 14:59:30 - 15:00:00 CT (Dividend Futures).
- **Tier 2:** If no trades occur during the aforementioned settlement periods, then the contract month settles to the midpoint of the Bid/Ask between those times.
- **Tier 3:** If a two-sided market is not available during the settlement period, then the cash index will be used in the following Carry calculation to derive a settlement price. **Index price + [(Days to expiration/ 365) x Interest rate x Index price)]**

[1] https://www.cmegroup.com/confluence/display/EPICSANDBOX/Equity+Indices

OneChicago (pre-closing announcement)

- All OneChicago Products follow the same settlement methodology continuously compounding the official closing price of the underlying equity at a specified rate over the time duration between the current trade date and maturity of the future.

  $F = S \times e^{rt}$ **F** - the futures price, **S** - the underlying security price, **r** - the market derived rate, **t** - the time to expiration

Eurex[2]

- Last minute VWAP, minimum of 5 trades. If there is an insufficient number of trades, calculate VWAP of the last 5 trades within 15 minutes of the calculation period.
- Average bid / ask spread of respective expiry month
- Theoretic price based on the price of the underlying:
- Ex: Div Futures $PV_t(Div_{t,T}) = S_t + P_t - C_t - K(1 + r_{t,T})^{-(T-t)}$

  with S_t as the price of the underlying at time t, C_t and P_t as the prices of a European-style call and put option with maturity in T and strike K, $PV(Div_{t,T})$ as the present value of the dividends paid on the underlying in $[t,T]$, and $r_{t,T}$ as the risk-free interest rate in that period.

  - The fair value at time t of a dividend futures contract on the dividends paid on the underlying during a period $[t,T]$
  - $FV_t(DivFut_{t,T}) = PV_t(Div_{t,T})(1 + r_{t,T})^{T-t}$.

ASX[3] *(Australian Stock Exchange)*

- Following close of the market, settlement price is calculated using one, or a combination, of the following methods:
  a. Final bid/ask mid price if bid/ask is within specified tick range (Ex: Index Futures = 10pts, Fixed Income Futures = 5pts)
  b. Last trade Price if between final bid/ask. If Price is below bid OR above ask, then Bid or Ask shall be Settlement Price
  c. Final bid or Final ask - if no last trade price
  d. Last trade price - if no final quotes
  e. Previous day Settlement Price (adjusted to maintain the previous days differential to spot month) - if no final quotes or last trade
  f. Settlement Price can be determined based on differential with an Inter-Commodity related product

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2 https://www.eurex.com/resource/blob/281156/70e3cfe8f85ef88a6c958873e70692a5/data/k02-chapter02_ab_2020_10_01.pdf

3 https://www.asx.com.au/documents/rules/asx_24_section_02.pdf

In conclusion, the Bourse's proposal to amend its equity futures daily settlement procedures will strengthen the alignment with the procedures that are currently being followed across global exchanges and offer market participants enhanced methods to provide a clearer and accurate settlement price.

d. Analysis of Impacts

i. Impacts on Market

The proposed changes to Rules should be welcomed by market participants who have requested more transparency regarding daily settlement procedures of the Bourse's equity futures products. Due to the importance of a full-proof method to calculate theoretical values as a result of a lack of a lit market, customers will be recognizant and accepting of the efforts being made to improve the current calculation methodology.

ii. Impacts on Technology

Development teams will require a sufficient amount of time and resources to design and implement settlement models for a variety of products and duration.
No impact is expected on ISVs and market participants.

iii. Impacts on regulatory functions

Monitoring reports might have to be adjusted to incorporate new settlement procedures.

iv. Impacts on clearing functions

There is no impact identified by CDCC on its current processes and technological systems. This will however improve the quality of the daily settlement prices for the equity futures products, which are used for risk management processes such as variation margin calculation or margin calculation.

v. Public Interest

The Bourse considers that the present initiative is in the interest of the public as the alignment and simplification of the Bourse's daily settlement procedures to resemble some of its global peers will be well received by customers and the general public.

IV. 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.

V. ATTACHED DOCUMENTS

The proposed amendments are attached.

Appendix 6E—Daily Settlement Price Procedures for Futures Contracts and Options on Futures Contracts

[…]

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

(a) In the case of mini Futures Contracts on S&P/TSX or S&P/MX Indices, the Settlement Price shall be the same as the standard Futures Contracts on S&P/TSX or S&P/MX Indices when such standard Futures Contracts exist.

(b) Front Month: 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 a Market Supervisor based on available market information. All the subsequent expiries are considered Back Months.

Tier 1

(i) 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. ET ("the calculation period"), using a minimum quantity of 10 Contracts. If there is an unfilled order ("booked order") with a higher bid or lower offer in the front month, this bid or offer will override the Settlement Price obtained from the weighted average. A booked 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) If there are no Trades nor booked orders in the calculation period, then the last Trade before the calculation period will determine the Settlement Price only if the last Trade is at or within the sustained bid and offer at the time.

(iii) If the last Trade is not at or within the sustained market bid and offer, then the front month settles to the midpoint of the booked orders bid and offer.

Tier 2

For all Futures contracts on S&P/TSX and S&P/MX indices, and on the FTSE Emerging markets index except the S&P/TSX60 Dividend Index Futures, if there are no Trades nor quotes during the trading session, the weighted average of all basis trade on close transactions (BTC) is applied to the closing price of the underlying asset and this price becomes the settlement price of the instrument. For S&P/TSX60 Dividend Index Futures, the Settlement Price will be the previous day's Settlement Price adjusted to the qualifying bid and offer.

Tier 3

In absence of the conditions necessary to fulfill the front month Tiers 1-2, Market Supervisors will establish the Settlement Price based on available market information and/or a theoretical model. 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, the

Market Operations Department will keep a record of the criteria used to establish the Settlement Price.

(c) Back Months

Tier 1

(i) The Settlement Price shall be the weighted average of all Trades, including spread strategies, during the calculation period (minimum quantity 10 contracts). If there is an unfilled order ("booked order") with a higher bid or lower offer in the back month, this bid or offer will override the Settlement Price obtained from the weighted average. A booked 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) If there are no Trades nor booked orders in the calculation period, then the last Trade before the calculation period will determine the Settlement Price only if the last Trade is at or within the sustained bid and offer at the time.

(iii) If the last Trade is not at or within the sustained market bid and offer, then the back month settles to the midpoint of the booked orders bid and offer.

Tier 2

If there are no Trades nor quotes during the trading session, the weighted average of all basis trade on close transactions (BTC) is applied to the closing price of the underlying asset and this price becomes the settlement price of the instrument. This Tier does not apply to S&P/TSX60 Dividend Index Futures.

Tier 3

If no weighted average price can be determined in this manner, the Settlement Price will be the previous day's Settlement Price (or a price that represents the same net change of the prior expiry) adjusted to the qualifying closing bid and offer.

Tier 4

In absence of the conditions necessary to fulfill the back month Tiers 1-2, Market Supervisors will establish the Settlement Price based on available market information and/or a theoretical model. 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, the Market Operations Department will keep a record of the criteria used to establish the 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 or S&P/MX Indices, the Settlement Price shall be the same as the standard Futures Contracts on S&P/TSX or S&P/MX 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.~~

~~(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.~~

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[...]

Appendix 6E-4.7 CANADIAN SHARE FUTURES CONTRACTS

(a) Front Month

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 a Market Supervisor based on available market information. All the subsequent expiries are considered Back Months.

Tier 1

(iv) 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. ET ("the calculation period"), using a minimum quantity of 10 Contracts. If there is an unfilled order ("booked order") with a higher bid or lower offer in the front month, this bid or offer will override the Settlement Price obtained from the weighted average. A booked 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.

(v) If there are no Trades nor booked orders in the calculation period, then the last Trade before the calculation period will determine the Settlement Price only if the last Trade is at or within the sustained bid and offer at the time.

(vi) If the last Trade is not at or within the sustained market bid and offer, then the front month settles to the midpoint of the booked orders bid and offer.

Tier 2

If there are no Trades nor quotes during the trading session, the weighted average of all basis trade on close transactions (BTC) is applied to the closing price of the underlying asset and this price becomes the settlement price of the instrument.

Tier 3

In absence of the conditions necessary to fulfill the front month Tiers 1-2, Market Supervisors will establish the Settlement Price based on available market information and/or a theoretical model. 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, the Market Operations Department will keep a record of the criteria used to establish the Settlement Price.

(b) Back Months

Tier 1

(iv) The Settlement Price shall be the weighted average of all Trades, including spread strategies, during the calculation period (minimum quantity 10 contracts). If there is an unfilled order ("booked order") with a higher bid or lower offer in the back month, this bid or offer will override the Settlement Price obtained from the weighted average. A booked 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.

(v) If there are no Trades nor booked orders in the calculation period, then the last Trade before the calculation period will determine the Settlement Price only if the last Trade is at or within the sustained bid and offer at the time.

(vi) If the last Trade is not at or within the sustained market bid and offer, then the back month settles to the midpoint of the booked orders bid and offer.

Tier 2

If there are no Trades in the calculation period, the weighted average of all basis Trade on close (BTC) transactions is applied to the closing price of the underlying asset and this price becomes the settlement price of the instrument. This price would be adjusted to the qualifying closing bid and offer.

Tier 3

If no weighted average price can be determined in this manner, the Settlement Price will be the previous day's Settlement Price (or a price that represents the same net change of the prior expiry) adjusted to the qualifying closing bid and offer.

Tier 4

In absence of the conditions necessary to fulfill the back month Tiers 1-2, Market Supervisors will establish the Settlement Price based on available market information and/or a theoretical model. 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, the Market Operations Department will keep a record of the criteria used to establish the Settlement Price.

~~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 Day for all contract months.~~

~~(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 last minute of trading, then the last Trade 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 last minute 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. 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 paragraphs (b) and (c), Market Supervisors 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 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.~~