Bourse
de Montréal Inc.

# DAILY SETTLEMENT PRICES PROCEDURES

## 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

### *2.1 Futures and Options on Futures settlement prices*

These markets use an average price during the last minutes of trading to establish a single settlement price. These calculations are executed manually by Market Supervisors using pre-established guidelines for each product.

### *2.2 Equity Options and Index Options closing quotations*

These procedures were forwarded to approved participants in the circular no. 198-2001 dated November 22, 2001 and described in section 4, entitled "Equity, index and bond option closing procedures".

## 3 OBJECTIVES

The objectives of establishing daily settlement prices are:

- 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;

- 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 (BAX)*

### *4.1.1 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 (3) minutes of the trading session for all contract months.

#### *4.1.1.1 Weighted Average of closing range trades*

The weighted average will be derived from trades that occurred in the outright months in the closing range. The total volume traded in each outright month must be for 50 or more contracts in each of the front two (2) standardized months and 25 or more contracts in all other expiry months.

#### *4.1.1.2 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. It has to have been posted for 15 seconds for the front two (2) standardized months and 30 seconds or longer for all other expiry months prior to the close. The size must be a total of 50 or more contracts in the front two (2) standardized months and a total of 25 or more in all other expiry months.

#### *4.1.1.3 Remaining Balances of Booked Orders*

In the case of a booked order as stipulated in paragraph 4.1.1.2 above which would only be partially executed during the closing period and if no other trade has occurred during the closing period, the remaining balance will be considered to establish the closing price.

For example, if there is a booked order of 50 BAX contracts at 97.92 and in those 35 contracts are executed during the closing period, the 15 remaining contracts, if they are still present on the market at the same price, will be considered to establish the required minimum of 50 contracts.

#### 4.1.1.4 Strips and Spreads

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

### *4.1.2 FIRST ANCILLARY PROCEDURE*

In the absence of the items required to apply the main procedure in 4.1.1, the ancillary procedure in 4.1.2 will apply.

#### *4.1.2.1 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 (5) minutes provided the volume for the strategy taken into account was of 25 or more contracts. The following priority is given to each strategy:

i) 2 month calendar spreads
ii) 1, 2 and 3 year strips
iii) red and green strips
iv) 3 month calendar spreads

#### *4.1.2.2 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 4.1.2.1. It has to have been posted for three (3) minutes or longer prior to the close and the size must be for a total of 25 or more contracts.

### *4.1.3 SECOND ANCILLARY PROCEDURE*

In the absence of the items required to apply the main procedure in 4.1.1 and the ancillary procedure in 4.1.2, the ancillary procedure in 4.1.3 will apply.

#### *4.1.3.1 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. In determining the appropriate differential, Market Supervisors shall take into account prices of booked orders with the following priority given to each:

(i) red and green strips

(ii) individual contracts

(iii) 2 month calendar spreads

(iv) 1, 2 and 3 year strips

(v) spreads for each calendar month

##### *4.1.3.2 Conflicts between spreads*

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

#### *4.1.4 THIRD ANCILLARY PROCEDURE*

In the absence of the items required to apply the main procedure in 4.1.1, the ancillary procedure in 4.1.2 and the ancillary procedure in 4.1.3, the following ancillary procedure in 4.1.4 will apply.

In this situation Market Supervisors 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.

Market Supervisors will register in the “daily settlement price record” the criteria considered for determining the settlement price.

### *4.2 S&P CANADA 60 INDEX FUTURES (SXF)*

The settlement price shall be the weighted average of all trades during the closing range. The closing range is defined as the last one (1) minute of the trading session for all contract months.

#### *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. It has to have been posted for 20 seconds or longer prior to the close. The size must be a total of 10 contracts or more.

- **Last Trade**

  If there are no trades in the last one (1) minute of trading, then the last trade will be taken into account while still respecting posted bids and offers in the market.

### *4.2.1 FIRST ANCILLARY PROCEDURE*

When two contract months and the spread are trading (quarterly calendar roll), the ancillary procedure in 4.2.2 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 reviewing the last one (1) minute average, and by referring to the trades in the previous ten (10) minutes.

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

### *4.2.2 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 ancillary procedure in 4.2.3 will apply.

Market Supervisors will post a settlement price that will respect 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.

Market supervisors will register in the “daily settlement price record” the criteria considered for determining the settlement price.

### *4.2.3 THIRD ANCILLARY PROCEDURE*

In the absence of the items required to apply the main procedure in 4.2.1, the ancillary procedure in 4.2.2 and the ancillary procedure in 4.2.3, the following ancillary procedure in 4.2.4 will apply.

In this situation Market supervisors 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.

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

## *4.3 TEN – YEAR GOVERNMENT OF CANADA BONDS FUTURES (CGB)*

### *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 one (1) minute of the trading session 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. It has to have been posted for 20 seconds or longer prior to the close. The size must be a total of 10 contracts or more.

- **Last Trade**

  If there are no trades in the last one (1) 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 contracts months and the spread are trading (quarterly calendar roll), the ancillary procedure in 4.3.2 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 reviewing the last one (1) minute average and by referring to the trades in the previous ten minutes.
- The settlement for the back month or far month is obtained by the difference between the front month 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 ancillary procedure in 4.3.3 will apply.

Market Supervisors will post a settlement price that will respect 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, the ancillary procedure in 4.3.2 and the ancillary procedure in 4.3.3, the following ancillary procedure in 4.3.4 will apply.

In this situation Market Supervisors 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.

Market supervisors will register in the “daily settlement price record” the criteria considered for determining the settlement price.

## *4.4 OPTIONS ON TEN-YEAR GOVERNMENT OF CANADA BONDS FUTURES (OGB)*

### *4.4.1 MAIN PROCEDURE*

#### 4.4.1.1 Weighted Average

The closing price shall be the weighted average of the prices traded in the closing range (last minute of trading). If there is at the close, a higher bid or lower offer than the closing price so obtained, that bid or offer shall be the closing price.

#### 4.4.1.2 Last Trades

If no trades occur during the closing range, Market Supervisors consider transactions executed during the last 30 minutes of trading. Also, the bids and offers should be for a minimum of 25 contracts and should be posted at least one (1) minute before the close, to be considered.

If no trades occur in the closing range (or in the last 30 minutes of trading), the closing price shall be the theoretical price generated by the Bourse (as described in section 4.2.2)). If there is at the close a higher bid or lower offer than the closing price so obtained, that bid or offer shall be the closing price.

### *4.4.2 ANCILLARY PROCEDURE*

In the absence of the items required to apply the main procedure in 4.4.1, the ancillary procedure in 4.4.2 will apply.

The closing 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 CGB 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 CGB futures contract nearest to expiration.

***Volatility:***

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

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

## *4.5 OPTIONS ON THREE – MONTH CANADIAN BANKERS' ACCEPTANCE FUTURES (OBX)*

### *4.5.1 MAIN PROCEDURE*

#### 4.5.1.1 Weighted Average

The closing price shall be the weighted average of the prices traded in the closing range (last minute of trading). If there is at the close, a higher bid or lower offer than the closing price so obtained, that bid or offer shall be the closing price.

#### 4.5.1.2 Last Trades

If no trade occurs during the closing range, the Market Supervisors will consider transactions executed during the last 30 minutes of trading. Also, the bids and offers should be for a minimum of 25 contracts and should be posted at least one (1) minute before the close to be considered.

If no trade occurs in the closing range (or in the last 30 minutes of trading), the closing price shall be the theoretical price generated by the Bourse (as described in section 4.5.2). If there is at the close a higher bid or lower offer than the closing price so obtained, that bid or offer shall be the closing price.

### *4.5.2 ANCILLARY PROCEDURE*

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

The closing 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, put and call) obtained from the acting Market Maker. The same volatility is applied for the calls and for the 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, Bourse de Montréal Inc. shall take into account the information provided by the spread market, 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.