NOTICE TO MEMBERS
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SELF-CERTIFICATION

AMENDMENT TO THE RISK MANUAL OF CDCC

MODIFICATION TO THE THREE-MONTH CANADIAN BANKERS' ACCEPTANCE FUTURES (BAX) CONTRACT MARGIN METHODOLOGY

On January 31, 2014, the Board of Directors of the Canadian Derivatives Clearing Corporation (CDCC) has approved amendments to the Risk Manual of CDCC. CDCC wishes to advise Clearing Members that this amendment has been self-certified in accordance with the self-certification process as established in the *Derivatives Act* (R.S.Q., chapter I-14.01).

The purpose of the amendment is to change the methodology for the Three-Month Canadian Bankers' Acceptance Futures (BAX) contract in order to calculate new margin rates for the outright positions and the spreads strategies of this contract.

Please find enclosed the amendment which will be incorporated in the version of the Risk Manual of CDCC which will be available on CDCC's web site (www.cdcc.ca) as of August 1, 2014 and will be effective on or about October 6, 2014.

If you have any questions or concerns, please contact CDCC's Member Services department or direct your e-mail inquiries to cdccops@cdcc.ca.

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Risk Manual

Glossary

Margin Interval: Parameter established by the Corporation which reflects the maximum price fluctuation that the Underlying Interest could be expected to have during the liquidation period. The Margin Interval (MI) calculations are based on the historical volatility of the Underlying Interest and these calculations are re-evaluated on a regular~~weekly~~ basis. If necessary, the Corporation may update the Margin Intervals more frequently. The Margin Interval is used to calculate the Initial Margin of every Derivative Instrument.

Haircut: Percentage discounted from the market value of Securities pledged as collateral for Margin Deposit. The discount reflects the price movement volatility of the collateral pledged. Thus, this reduction assures that even if the collateral's market value declines, there is time to call for additional collateral to adjust its value to the required level.

Initial Margin: The Initial Margin covers the potential losses that may occur over the next liquidation period as a result of market fluctuations. The Initial Margin amount is calculated using the historical volatility of the Underlying Interest return for Options contracts, futures prices for Futures contracts and yield-to-maturity (YTM) of the on-the-run security for Fixed Income Transactions.

Variation Margin: The Variation Margin takes into account the portfolio's liquidating value (this is also known as the Replacement Cost or RC) which is managed through the Mark-to-Market daily process.

Price Scan Range: The maximum price movement reasonably likely to occur, for each Derivative Instrument or, for Options, their Underlying Interest. The term PSR is used by the Risk Engine to represent the potential variation of the product value and it is calculated through the following formula:

PSR = Underlying Interest Price x MI x Contract Size

Volatility Scan Range: The maximum change reasonably likely to occur for the volatility of each Option's Underlying Interest price.

Risk Array: A Risk Array (RA) is a set of 16 scenarios defined for a particular contract specifying how a hypothetical single position will lose or gain value if the corresponding risk scenario occurs from the current situation to the near future (usually next day).

Combined Commodity: The Risk Engine divides the positions in each portfolio into groupings called Combined Commodities. Each Combined Commodity represents all positions on the same ultimate Underlying Interest – for example, all Futures contracts and all Options contracts ultimately related to the S&P/TSX 60 Index.

Scanning Risk: The Risk Engine chooses the difference between the current market value of an Underlying Interest and its most unfavourable projected liquidation value obtained by varying the values of the Underlying Interest according to several scenarios representing adverse changes in normal market conditions.

Active Scenario: The number of the Risk Arrays scenario that gives the largest amount (worst case scenario).

Short Option Minimum: Rates and rules to provide coverage for the special situations associated with portfolios of deep out-of-the-money short option positions. This amount will be called if it is higher than the result of the Risk Arrays.

Liquidity Interval: The Liquidity Interval is calculated based on the historical bid-ask price spread of the Underlying Interest according to the same formula for Margin Interval.

Buckets: All Acceptable Securities of Fixed Income Transactions that behave in a similar manner are grouped together into "Buckets" and each Bucket behaves as a Combined Commodity. Acceptable Securities are bucketed according to their remaining time to maturity and issuer. Due to the nature of the bucketing process, the Acceptable Securities' assignation will be dynamic in that they will change from one Bucket to the other as the Acceptable Security nears maturity.

MTM Price Valuation: The MTM Price Valuation is the difference between the market value of the Security and the funds borrowed. This amount is collateralized and should be credited (or debited) to the Repo Party's Margin Fund and debited (or credited) to the Reverse Repo Party's Margin Fund.

Intra-Commodity (Inter-Month) Spread Charge: Underlying Interests' prices, from a maturity month to another are not perfectly correlated. Gains on a maturity month should not totally offset losses on another. To fix this issue, the Risk Engine allows the user to calculate and to apply a margin charge relative to the Inter-Month spread risk in order to cover the risk of these two positions.

Inter-Commodity Spread Charge: The Corporation considers the correlation that exists between different classes of Futures contracts when calculating the Initial Margin. For example, different interest rate Futures contracts are likely to react to the same market indicators, but at different degrees. For instance, a portfolio composed of a long position and a short position on two different interest rate Futures contracts will be likely less risky than the sum of the two positions taken individually.

Clearing Engine: The Corporation uses SOLA® Clearing as its Clearing Engine.

Risk Engine: The Corporation uses the Standard Portfolio Analysis system (SPAN®) as its Risk Engine.

The terms and concepts herein defined, as used in this Risk Manual, are derived from the CME Group proprietary SPAN® margin system, adapted for CDCC's licensed use thereof.

MARGIN DEPOSIT

The Corporation has three different funds for margining purposes and each serves a specific purpose:

- Margin Fund
- Difference Fund
- Clearing Fund

MARGIN FUND

The Margin Fund is composed of the Initial Margin and the Variation Margin. The Initial Margin covers the potential losses and market risk that may occur as a result of future adverse price movements across the portfolio of each Clearing Member under normal market conditions. Furthermore, in the event of a default, the Corporation is faced with closing out the defaulters' portfolio within a short period (the liquidation period). In a complementary manner, Variation Margin is a daily payment process that covers the market risk due to the change in price since the previous day, ahead of the default of one of its Clearing Members. Variation Margin is settled in cash for Futures contracts and collateralized for Options contracts, OTCI and Fixed Income Transactions.

INITIAL MARGIN

As fundamental inputs to calculate the Initial Margin, the Corporation uses the following parameters: 1) confidence level (to reflect normal market conditions), 2) assumed liquidation period and 3) historical volatility over a specific period.

Specifically, the Corporation uses three standard deviations to consider a confidence level over 99% under the normal distribution's assumption. The Corporation also considers a variable number of days as an acceptable liquidation period. The Initial Margin amount is calculated using the historical volatility of the daily price returns of the Underlying Interests for Options contracts, the daily price returns of the futures prices for Futures contracts and the yield-to-maturity (YTM) daily variation of the on-the-run security for Fixed Income Transactions. The historical volatility, combined with the liquidation period and the confidence level gives the Margin Interval (MI) as described below.

MARGIN INTERVAL (MI) CALCULATION

The Margin Interval calculations are re-evaluated on a regular~~ly~~ basis. However, the Corporation may use its discretion and update the Margin Intervals more frequently if necessary. The Margin Intervals are used to calculate the Initial Margin for each Derivative Instrument.

The Margin Interval (MI) is calculated using the following formula:

$$MI = \alpha \times \sqrt{n} \times Max\left[\sigma_{20\ days}, \sigma_{90\ days}, \sigma_{260\ days}\right]$$

Where 'n' is the number of liquidation days[1], 'σ' is the standard deviation of the daily variation over 20, 90 and 260 days, and α~~3~~ is equal to the critical value equivalent to 99.87% of the cumulative Normal distribution~~for a one-tail confidence interval under the normal distribution's assumption~~ or equal to the critical value equivalent to 99% of the cumulative Studen'ts t-distribution with 4 degrees of freedom.

Price Scan Range (PSR) Calculation

In order to calculate the most unfavourable projected liquidation value, the Risk Engine uses the MI of the above formula to calculate the Price Scan Range (PSR) and to run several scenarios through its Risk Array calculation (for a detailed description refer to the section on Risk Arrays below).

A Risk Array is a set of 16 scenarios defined for a particular contract specifying how a hypothetical single position will lose or gain value if the corresponding risk scenario occurs from the current situation to the near future (usually next day).

PSR is the maximum price movement reasonably likely to occur, for each Derivative Instrument or, for Options contracts, their Underlying Interest. The term PSR is used by the Risk Engine to represent the potential variation of the product value and it is calculated through the following formula:

PSR = Underlying Interest Price x MI x Contract Size.

[1] The Corporation uses the following number of liquidation days 'n' as follows:

- For Futures contracts and Options contracts n = 2 days;
- For OTCI options n = 5 days;
- For Fixed Income Transactions, where the Underlying Interest is issued by the Government of Canada or a federal Crown corporation n = 2 days; and
- For Fixe Income Transactions, where the Underlying Interest is issued by a provincial government or a provincial Crown corporation n = a + 2 days, where a = number of additional days.

'a' is based on a quantitative and qualitative analysis, established according to the degree of liquidity of the Underlying Interest which is derived from parameters such as but not limited to traded volume, Government of Canada/ provincial yield spreads and international guidelines. For a provincial government or provincial Crown corporation issuer 'a' is determined at least once a year and communicated to Clearing Members by written notice.

Furthermore, in anticipation of Remembrance Day (the "Banking Holiday") the Corporation will add one more day to the number of liquidation days 'n'. Hence, for Options and Futures contracts where the Underlying Interest is an Equity (i.e. Stock and ETF) or an Index the liquidation period will increase to three Business Days prior and up to the Banking Holiday, and for OTCI options, the liquidation period will increase to six Business Days prior and up to the Banking Holiday. The additional margin amount for the Banking Holiday will be released on the morning of the following Business Day.

Example 2:

Let's assume a portfolio with three different positions: a short position in ten (10) Futures contracts on the S&P/TSX 60 Index, a long position in six (6) call Options contracts on the same index and a short position in three (3) put Options contracts on the same Underlying Interest (the expiry date for these three Options contracts might be the same or different).

In addition, the contract size and the price of the Futures contract are respectively 200 and F_0 and its Margin Interval is MI_F. The price of the call option is X_0, the price of the put option is Y_0 and the contract size of these two Option contracts is 100, whereas the price of the Underlying Interest S&P/TSX 60 Index is P_0 and its Margin Interval is MI_I. The MI_F and the MI_I values are almost the same but not exactly equal since the first is calculated using the historical volatility of the Ff uture's returns, whereas the second is calculated using the historical volatility of the index's returns. However, since the index and the Futures contracts are strongly correlated, both Margin Interval values must be almost similar. Using the calculated Margin Intervals, we can calculate the Price Scan Range (PSR_F) of the Future contract, which represents the fluctuation range of the Futures contract and the index Price Scan Range (PSR_I) which represents the fluctuation range of the underlying index as follows:

$$PSR_F = MI_F \times F_0 \times Contract\ Size$$

and,

$$PSR_I = MI_I \times P_0 \times Contract\ Size$$

Thus, since this Futures contract size is 200 and the contract size of the index option is 100, the previous formulas become:

$$PSR_F = MI_F \times F_0 \times 200$$

and,

$$PSR_I = MI_I \times P_0 \times 100$$

For the clarity of the table below, please note that the PSR_F and the PSR_I do not include the contract size, i.e. $PSR_F = MI_F \times F_0$ and $PSR_I = MI_I \times P_0$.

INITIAL MARGIN FOR FUTURES CONTRACTS

This section describes how the Iinitial Mmargin is calculated for the Futures contracts, which includes the Index Futures, Interest Rate Futures, Government of Canada Bonds Futures and Shares Futures.

The first part of the example # 2 of the previous section on Risk Arrays shows how the Scanning Risk is calculated. The Scanning Risk represents the most unfavourable projected liquidation value of the Ffutures position. The calculated Scanning Risk is the Initial Margin for a Futures contract. However, since the Futures contract prices are linear with respect to their Underlying Interest prices, the Active Scenario for a Futures contract is always the one with the positive amount between scenario 5 and scenario 6. In other words, the Initial Margin for a Futures contract is always equal to its Price Scan Range (PSR).

With respect to the Three-Month Canadian Bankers' Acceptance Futures (BAX) contract, CDCC combines the contracts in different groups and applies the same charge to the contracts of a same group.

CDCC updates the Margin Intervals (MI) on a regular basis and publih them on its website.

WHowever, when the holder of a short position on a Futures contract has deposited a Futures Underlying Interest Deposit to cover the total quantity of the Underlying Interest deliverable thereunder in accordance with Section A-708 of the Rules, the Corporation will not require Margin on the relevant Futures contract.

INTRA-COMMODITY (INTER-MONTH) SPREAD CHARGE

The different Futures contracts belonging to the same Combined Commodity have in generally positively correlated returns. For example, a portfolio composed of a long position and a short position of two Futures contracts that have the same Underlying Interest but different expiry dates, will be less risky than the sum of the two positions taken individually. Margins on correlated positions address this fact.

The Risk Engine automatically matches the long positions on Ffutures maturing in one month with the short positions on Ffutures maturing in another month. The resulting Margin Requirement on these two Futures contracts belonging to the same Combined Commodity, could be lower than the real risk associated with the combination of the two contractsassumes a perfect correlation between the two Futures contracts. Thus the gain of one position is offsetted by the loss of the other position. However, the Futures contracts prices with different maturity months are not perfectly correlated. Gains on a Futures contracts with a certain expiry month should not totally offset losses on a Futures contracts whose expiry month is different. To addressfix this issue, the Risk Engine allows the user to calculate and to apply an additional margin charge relative to the Inter-Month spread risk, in order to cover the risk associated with of these two positions. This margin is called Inter-Month Spread Charge or Intra-Commodity Spread Charge (because it is calculated within the same Combined Commodity).

Intra-Ccommodity (Inter-Mmonth) Spread Charge on correlated Ffutures positions

IS~~are~~ calculated by the Corporation's risk department and updated on a regular~~ly~~ basis.

For the Futures contracts, the Intra-Commodity Spread Charge (ICSC) which is an additional dollar amount charge applied to each combination of two different Futures contracts, is determined as follows:

$$ICSC = \alpha \times \sqrt{n} \times Max\left[\sigma_{20\ days}, \sigma_{90\ days}, \sigma_{260\ days}\right]$$

Where 'n' is the number of liquidation days (see footnote 3), 'σ' is the standard deviation of the Futures combination's daily profit and loss (P&L) over 20, 90 and 260 days, and α[2]~~3~~ is equal to the critical value equivalent to 99~~.87~~% of the cumulative Student's t-distribution with 4 degrees of freedom with regards to the BAX contract or equal to the critical value equivalent to 99% of the cumulative Normal distribution with regards to all other Futures products~~under the normal distribution's assumption~~.

With respect to the Three-Month Canadian Bankers' Acceptance Futures (BAX) contract, CDCC calculates the Intra-Commodity (Inter-Month) Spread Charge for all combinations of spreads and butterfly's strategies and applies a same charge for a same group of combinations with close maturities.

For all Futures contracts, in order to consider the highest economical correlation between the different Futures contracts and to offer the highest benefit to the clearing members, CDCC applies the different Intra-Commidity (Inter-Month) Spread Charges by considering the combinations with the lowest charges first and the ones with the highest charges will be considered at the end. If two different combinations or group of combinations will have the same charge, the one with the lowest maturity will be considered first. This is the same spread priority concept that is applied for Fixed-Income.

The Intra-Commodity (Inter-Month) Spread Charges and the spread priorities are updated and published on the CDCC website on a regular basis.

INTER-COMMODITY SPREAD CHARGE

Similarly, the Corporation considers the correlation that exists between different classes of Futures contracts when calculating the Initial Margin. For example, different interest rate Futures contracts are likely to react to the same market indicators, but at different degrees. For instance, a portfolio composed of a long position and a short position on two different interest rate Futures contracts will be likely less risky than the sum of the two positions taken individually. The Corporation will grant a margin relief according to the historical correlation of the returns of the two Futures contracts.

When calculating the Initial Margin on a portfolio with several long and short F~~f~~utures

[2] α is equal to 3.75 for the BAX's ICSC and 3 for all other Futures's ICSC.

positions, the Corporation matches the positions in accordance with predefined steps. For example, if the first matching step consists of matching long or short positions on the front month Futures contracts with long or short positions on the second front month Futures contract, the positions of both Futures contracts might not be equal. In this case, the Corporation determines, using the hedge ratio concept the exact position (number of contracts) of a Futures contract that can be offset by a position on the other Futures contract. Any position that has not been matched will be available for the second matching step. This is the same spread priority process also defined for Cash Buy or Sell Trades and Repurchase Transactions.

The Corporation regularly performs an analysis to determine the margin reductions that are applied for all Futures contracts combinations.

The Corporation also considers the positive (negative) correlation that exists between the different interest rate Futures contracts and the Fixed Income Transactions, and provides a margin benefit for a combination of any Futures contracts with the opposite (same) Fixed Income Transactions.

Spread Priority

To determine the appropriate margin reduction for each combination of two Futures contracts, the Corporation performs the following steps:

1) Use the yearly historical data of the different Futures contracts and calculate the correlation matrix.
2) For the priority allowance, start by considering the closest diagonal to the leading one (the diagonal with the 100% correlations that represent the Futures contracts correlations with themselves). This closest diagonal usually contains the highest correlations because of the proximity of the maturities. Then, consider the second closest diagonal, then the third and so on until the last diagonal that has one correlation number.
3) Amongst the numbers of each diagonal, consider the highest number first, then the second highest number, then the third and so on until the last number. This methodology's goal is to maximise the margin reduction applied to the Clearing Members. Discounts are applied to all the matrix correlation numbers before the priority process. The discounts are meant to cover the potential daily variation of the correlations.
4) If there is one or some ties between the discounted numbers within the same diagonal, consider the one with the lowest maturity first, then the second, then the third and so on until the last one.

Different Futures contracts that do not have the same contract size nor the same volatility yield would not have a margin reduction applied to their respective entire positions. By consequent, a hedge ratio is used to determine how much position of one contract in any combination can be matched with the other Futures contract of the same combination. The remaining position (or quantity of Futures contracts) of any contract of this first combination will be matched with another position to form another combination according to the above priority process. At the end of this process, there might be a single outright position that is left to be margined individually.

The Corporation allows a margin reduction for two positively correlated Futures contracts with different directions and for two negatively correlated Futures contracts with same directions.

When the spread priority process is performed, the Corporation considers the combinations between interest rate Futures contracts first (Intra-Commodity Spread Charge). Any remaining (outright) positions in these Futures contracts positions will be considered for Inter-Commodity Spread Charge with Fixed Income Transactions.

INITIAL MARGIN FOR FIXED INCOME TRANSACTIONS

At the Corporation, a Fixed Income Transaction can be either a Repurchase Transaction or a Cash Buy or Sell Trade. A Cash Buy or Sell Trade is the sale of a security from one party to another. Depending on its maturity, the Fixed Income Security can be delivered one, two or three days after the Fixed Income Transaction is completed. Between the Fixed Income Transaction novation date and the delivery date, the Corporation has to cover the counterparty risk.

A Repurchase Transaction is a transaction whereby the seller (the Repo Party) agrees to sell a security to a buyer (the Reverse Repo Party) on a given date (the purchase date) and simultaneously agrees to buy the same security back from the Reverse Repo Party at a later date (the repurchase date) at a fixed price (the repurchase price). Thus, a Repo is equivalent to a cash transaction combined with a forward contract. The cash transaction results in a transfer of money from the buyer to the seller in exchange for a legal transfer of the security from the seller to the buyer, while the forward contract ensures repayment by the seller to the buyer and return of the securities from the buyer to the seller. The difference between the repurchase price and the purchase price is the Price Differential calculated with the agreed Repo Rate, while the settlement date of the forward contract (i.e. the repurchase date) is the maturity date of the transaction.

In such Repurchase Transaction, there are two sources of risk that the Corporation needs to consider and cover. The potential Purchased Security's price fluctuation and the Floating Price Rate fluctuation over the life of the Repurchase Transaction. However, in a Cash Buy or Sell Trade, there is only one source of risk that the Corporation needs to consider and cover, namely, the Purchased Security's price fluctuation.

SECURITY PRICE RISK

The price of the Purchased Security changes continuously during the life of a Repurchase Transaction. On one hand, if the price decreases and the Repo Party defaults, the Corporation, as a central counterparty, incurs market risk for the price difference. The position may be transferred to any Fixed Income Clearing Member who agrees to buy the security at the expiry date with the new market conditions (new security's market price and interest rate). In this case, the Corporation has to cover the potential decrease in the security's value (negative variation for the seller) that could arise during the next specific period. On the other hand, if the security's price increases and the Reverse Repo Party defaults, the Corporation, as a central counterparty, incurs market risk for the price difference. The position may be

transferred to any Fixed Income Clearing Member who agrees to sell the same security at the expiry date with the new market conditions (new security's market price and interest rate). In that case, the Corporation has to cover the potential increase in the security's value (negative variation for the buyer) that could arise during the next specific period.

The methodology to calculate the Initial Margin for Fixed Income Transactions is slightly different from the Options contracts and Futures contracts. Indeed, the different types of securities that are accepted by the Corporation for clearing of a Repurchase Transaction are separated in different Buckets depending on their remaining time to maturities and issuers. In addition, in its risk model, the Corporation assumes that all securities belonging to the same Bucket have the same yield volatility expressed in terms of Margin Interval (same concept of Margin Interval as described before) which is calculated using the yield-to-maturity (YTM) of the on-the-run security of the Bucket. The Margin Interval is calculated as follows:

$$MI = \alpha \times \sqrt{n} \times Max\left[\sigma_{20\,days}, \sigma_{90\,days}, \sigma_{260\,days}\right]$$

Where 'n' is the number of liquidation days (see footnote 3), σ is the standard deviation of the YTM's daily variation of the on-the-run security over the reference period and ~~α3~~ is equal to the critical value equivalent to 99.87% of the cumulative Normal distribution~~to allow a confidence level over 99% under the normal distribution's assumption~~.

It's important to note that for some particular Buckets, there may not be any on-the-run security. In this particular situation, a linear interpolation between the MIs of the two closest Buckets is performed to determine the MI of the particular bucket.

Each Bucket is considered as a Combined Commodity. Since the bond's convexity effect is very small with respect to its duration, the Initial Margin is calculated for a physical cash trade exactly the same way as for Futures contracts. The first part of the example # 2 of the section on Risk Arrays shows how the Scanning Risk is calculated for a Futures contract. As for a Futures contract, the Initial Margin for a physical security can also be obtained straightforwardly by calculating its Price Scan Range (PSR).

Therefore, the Initial Margin amount related to the security's price of a Repurchase Transaction on one security belonging to a Bucket is calculated as follows:

Initial Margin 1 = Security's Price x *MI* x *D* x *Contract Size*

Where D is the duration of the security and the contract size is the transaction's Nominal Value divided by 100. However, for all securities that belong to the 3-month, 6-month and 1-year buckets, CDCC uses a fixed duration which is set at 1.

Thus, all Repo related Fixed Income Securities belonging to the same Bucket have the same Margin Interval but each specific Repo related security of the same Bucket has a different Initial Margin driven by its own price and its own duration.

In the above formula of the Price Scan Range, only the first part of the Initial Margin of a Repurchase Transaction is calculated, namely, the Initial Margin 1. As

mentioned above, there are two sources of risk for a Repurchase Transaction. This is the Initial Margin of the first source of risk, the security's price. In the next section, the second part of the Initial Margin of a Repurchase Transaction which covers the second source of risk, the Floating Price Rate, is described. Finally, both Initial Margins are added up to get the total Initial Margin of a Repurchase Transaction. However, the Initial Margin 1 corresponds to the total Initial Margin for a Cash Buy or Sell Trade.

Interest Rate Risk (Repurchase Transactions)

The Floating Price Rate changes continuously during the life of a Repurchase Transaction. On one hand, if the Floating Price Rate decreases and the Repo Party defaults, the Corporation, as a central counterparty, incurs market risk. The position may be transferred to any Fixed Income Clearing Member who agrees to buy the Fixed Income Security at the expiry date with the new market conditions. In this case, the Corporation has to cover the potential decrease in the Floating Price Rate (negative variation for the seller) that could arise during the next specific period. On the other hand, if the Floating Price Rate increases and the Reverse Repo Party defaults, the Corporation, as a central counterparty, incurs market risk. The position may be transferred to any Fixed Income Clearing Member who agrees to sell the same Fixed Income Security at the expiry date with the new market conditions. In that case, the Corporation has to cover the potential increase in the Floating Price Rate (negative variation for the buyer) that could arise during the next specific period.

In order to properly quantify the risk related to the Floating Price Rate using the Risk Engine, it is necessary to model the Floating Price Rate into a Virtual Futures Contract (VFC) with a price equal to: VFC's price = 100 – Floating Price Rate. For an overnight Repurchase Transaction the Initial Margin is straightforwardly calculated by sending to the Risk Engine the determined VFC. However, in order to calculate the VFC's price for longer term Repurchase Transactions, the Corporation determines the appropriate interest rate using the overnight index swap (OIS) term structure.

The portion of the Initial Margin that covers the Floating Price Rate related risk is then added to the portion of Initial Margin that covers the security price related risk to get the total Initial Margin for a Repurchase Transaction.

It's important to note that the portion of Initial Margin that covers the Floating Price Rate related risk is very small with respect to the portion of Initial Margin that covers the security price related risk.

Intra-Commodity (Inter-Month) Spread Charge

For Fixed Income Transactions, a portfolio composed of a short position and a long position on two different Acceptable Securities belonging to the same Bucket, will generate a lower margin requirement than if they were margined independently without considering their correlation.

The Risk Engine automatically matches the Seller and the Buyer of two different securities belonging to the same Bucket. The resulted Margin requirement on these two Repurchase Transactions assumes a perfect correlation between the two Fixed

Income Securities, thus the gain of one Fixed Income Security is offsetted by the loss of the other Fixed Income Security. However, the Acceptable Securities' prices are not perfectly correlated. Gains on one position should not totally offset losses of the other Fixed Income Security. To fix this issue, the Risk Engine allows the user to calculate and to apply a margin charge relative to the Inter-Month spread risk in order to cover the risk of these two Fixed Income Transactions. This margin is called the Intra-Commodity (Inter-Month) Spread Charge or Intra-Commodity Spread Charge (because it is calculated within the Combined Commodity).

The Intra-Commodity (Inter-Month) Spread Charge on correlated Acceptable Securities of each Bucket is calculated by the Corporation's risk department and updated regularly.

For Fixed Income Transactions, the Intra-Commodity Spread Charge (ICSC) which is an additional dollar amount charge applied to each combination of two different transactions on two different securities that belong to a same Bucket, is determined as follows:

$$ICSC = \alpha \times \sqrt{n} \times Max\left[\sigma_{20\ days}, \sigma_{90\ days}, \sigma_{260\ days}\right]$$

Where 'n' is the number of liquidation days (see footnote 3), 'σ' is the standard deviation of the securities combination's daily profit and loss (P&L) over 20, 90 and 260 days, and α~~3~~ is equal to the critical value equivalent to 99.87% of ~~under~~ the N~~n~~ormal distribution~~'s assumption~~.

INTER-COMMODITY SPREAD CHARGE

The Fixed Income Securities belonging to two different Buckets generally have a significant correlation. Inter-Commodity spread charge is a margin amount generated for opposite or similar Fixed Income Transactions in two different Acceptable Securities belonging to two different Buckets.

Without any margin relief, the Initial Margin for opposite or similar positions on two different Acceptable Securities belonging to different Buckets would be the sum of both Initial Margins. However, two different Fixed Income Transactions in different Acceptable Securities belonging to two different Buckets can benefit from a reduction in their Initial Margins because of the consideration given to their correlation. The formula to get the portfolio's Initial Margin is:

$$\text{Total Initial Margin} = (\text{Initial Margin}_{\text{Position 1}} \times \text{Hedge Ratio}_{\text{Position 1}} + \text{Initial Margin}_{\text{Position 2}} \times \text{Hedge Ratio}_{\text{Position 2}}) \times (1 - \text{Margin Relief})$$

The margin relief is a percentage determined using the correlation matrix between the different on-the-run Fixed Income Securities of each Bucket.

The Inter-Commodity margin relief percentages between the different Buckets are calculated by the Corporation's risk department and updated on a regular~~ly~~ basis.

The Corporation also considers the positive (negative) correlation that exists between the different Fixed Income Transactions and the interest rate Futures contracts. The Corporation provides a margin reduction for a combination of any Fixed Income Transactions with opposite or similar Futures contracts positions.