NOTICE TO MEMBERS

No. 2014 – 160
July 29, 2014

REQUEST FOR COMMENTS

AMENDMENTS TO THE RISK MANUAL OF THE CANADIAN DERIVATIVES CLEARING COPORATION TO ADDRESS COLLATERAL HAIRCUT

Summary

On July 14, 2014, the Board of Directors of Canadian Derivatives Clearing Corporation (CDCC) approved amendments to the Risk Manual of CDCC. The purpose of the proposed amendment is to enhance the approach used to assess its haircuts. Such approach should ensure conformity with the PFMI requirements and limit the procyclicality of haircuts.

Please find enclosed an analysis document as well as the proposed amendments.

Process for Changes to the Rules

CDCC is recognized as a clearing house under section 12 of the *Derivatives Act* (Québec) by the Autorité des marchés financiers (AMF) and is a recognized clearing agency under section 21.2 of the *Securities Act* (Ontario) by the Ontario Securities Commission (OSC).

The Board of Directors of CDCC has the power to approve the adoption or amendment of Rules and Operations Manual of CDCC. Amendments are submitted to the AMF in accordance with the self-certification process and the Ontario Securities Commission in accordance with the process provided in its Recognition Order.

Comments on the proposed amendments must be submitted within 30 days following the date of publication of the present notice. Please submit your comments to:

Mrs. Pauline Ascoli
Assistant Secretary
Canadian Derivatives Clearing Corporation
Tour de la Bourse
P.O. Box 61, 800 Victoria Square
Montréal, Québec H4Z 1A9
E-mail: legal@m-x.ca

A copy of these comments shall also be forwarded to the AMF and to the OSC to:

Mrs. Anne-Marie Beaudoin
Corporate Secretary
Autorité des marchés financiers
Tour de la Bourse, P.O. Box 246
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For any question or clarification, Clearing Members may contact CDCC's Corporate Operations.

Glenn Goucher
President and Chief Clearing Officer

AMENDMENTS TO THE RISK MANUAL OF THE CANADIAN DERIVATIVES CLEARING CORPORATION TO ADDRESS COLLATERAL HAIRCUT

CONTENTS

I. SUMMARY

CDCC proposes an enhanced approach to assess its haircuts. Such approach should ensure conformity with PFMI requirements and limit the procyclicality of haircuts. For consistency with other models applied by CDCC, the proposed model will consider an EWMA volatility estimator with 0.99 decay rate and a floor margin calibrated with 10 years of data.

II. ANALYSIS

a. Background

CDCC current haircuts are determined through a percentage discounted from the Mark-to-Market (MTM) value of securities pledged, reflecting its price movement volatility. The Haircuts are calculated based on the following methodology and assumptions:

- Valuation of the market, credit, liquidity and foreign exchange risks based on historical daily returns;
- Confidence interval over 99% obtained by using 3 standard deviations[1], and the assumption that the bond can be liquidated in 2 days;
- Liquidity risk valued according to the bid-ask spread of the issues (if this spread is unavailable, the liquidation window will be expanded and will depend on market conditions); and
- Bonds of the same issuer and comparable maturities.

Once the quantitative analysis is performed, CDCC reserves the right to increase the Haircuts based on qualitative criteria, such as:

- Comparative analysis of CDCC's Haircuts in relation to the haircuts of the Bank of Canada (BoC);
- Comparative analysis of CDCC's Haircuts in relation to the haircuts of other clearing houses;
- The congruence of the different haircuts to the credit rating spreads of the different issuers;
- Any other factor considered relevant.

A haircut of 50% is applied to all Valued Securities pledged against the total Margin required against all accounts combined.

Even if the current haircuts are showing stability, our view point is that such stability is mostly driven by the qualitative criteria mentioned above. Indeed, the quantitative component is procyclical by its nature.

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[1] A maximum standard deviation of the daily price returns between, 20 days, 90 days and 260 days is currently used.

b. Description and Analysis of Impacts

The new haircut framework will focus on two axes: the quantitative analysis that will lead to initial haircuts and adjustments that will help establishing intermediate haircuts, and the final adjustment that will guide us to derive final haircuts based on determined rules.

Our proposed framework will assess the initial haircut for each eligible non-cash collateral on a quarterly basis[2]. The quantitative analysis is considering three elements: 1) the market risk, 2) the liquidity risk and 3) the clustering of eligible instruments.

The market risk component will be using the same methodology as for the Procyclicality of margin, a volatility estimator using an Equally Weighted Moving Average (EWMA) with a decay factor of 0.99 and a floor level calibrated with 10 years of data. This market risk component will also take into consideration the Foreign Exchange (FX) risk if the collateral is not denominated in Canadian dollars.

The liquidity risk component will also use an EWMA approach for the estimation of the volatility of the bid=ask spread.

The clustering approach will be more granular than the current approach; CDCC will use up to 6 buckets for each type of eligible collateral instead of currently using 4 buckets. Once these clusters defined, it is important to select only one haircut (qualified as "**intermediate haircut**" hereafter) to be applicable for the whole cluster. To ensure conservatism of the approach, the intermediate haircut will correspond to the maximum[3] of initial haircuts observed in each cluster.

The final adjustment uses the intermediate haircuts obtained from the quantitative analysis (market and liquidity risk components) and the clustering procedure should be benchmarked with haircuts published periodically by regulators and peers. Thus, CDCC will adjust, based on determined rules, its intermediate haircuts if they are largely different from those published by BoC and major CCPs. These rules are the following:

a. Haircuts are rounded to .50%.
b. Haircuts are increasing with maturity.
c. Haircuts are greater than or equal to those of the Bank of Canada.

Following such procedure, adjusted haircuts will be obtained for each cluster. These adjusted haircuts should be at least equal to those published by the BoC.

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[2] The review could be performed more frequently if required.

[3] The second highest initial haircut of the cluster should be considered if the maximum is considered as an outlier.

c. Proposed Amendments

The proposed amendments are presented in Appendix 1.

d. Benchmarking

CDCC has reviewed methodologies applied by major CCPs (namely, LCH Clearnet, CME group, and ICE Clear Credit) to assess their non-cash collateral haircut.

LCH Clearnet:

From the narrative disclosure under the Principles for Financial Market Infrastructures (PFMIs) published by LCH Clearnet[4], it appears that haircuts are reviewed quarterly subject to intra-quarter monitoring. In addition, haircuts are calibrated to cover periods of major market stresses, including the Lehman default and the European sovereign debt crises.

Indeed, LCH states that "*haircuts are applied to securities to cover market, credit, concentration/liquidity, wrong-way and foreign exchange risks, calculated to a 99.7% confidence level over a 3 day horizon based on a 10 year look-back period*"[5].

In addition, it appears that LCH has identified 9 buckets to develop its non-cash collateral haircuts. While the first bucket includes debt securities with a modified duration lower than 6 months, the last bucket contains those with a modified duration exceeding 30 years.

CME group:

The narrative disclosure under the PFMIs published by CME group[6] indicates that their haircuts are evaluated using at least one-day 99% confidence intervals over the last year. In addition, tail risk information obtained from data over the last 4 years is also included in the analysis to assess exposures. Moreover, CME intends to lead qualitative analysis to identify and account for factors that affect market fundamentals, but may not yet be reflected in the quantitative information.

By doing so, CME is looking to establish stable collateral haircuts that are typically above current volatility levels associated with collateral prices and consequently provide coverage through a broad range of market environments.

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[4] The disclosure is dated as of December 31, 2013 and could be found at http://www.lchclearnet.com/about_us/corporate_governance/

[5] For reference, see http://www.lchclearnet.com/risk_management/ltd/default.asp

[6] The disclosure is dated as of December 31, 2013 and could be found at http://www.cmegroup.com/pfmidisclosure

The review of collateral haircuts for potential changes is performed by CME at least on a monthly basis or more frequently as market conditions warrant, consistent with CFTC Regulation 39.11(d)(1).

Moreover, we mention that CME is currently considering "time to maturity" buckets to disclose its non-cash collateral haircuts: the first bucket includes debt securities with a time to maturity lower than 1 year; the sixth and last bucket contains those with a time to maturity exceeding 30 years.

Finally, we note that a different haircut is applied to US strip bonds by CME (such instrument is not acceptable as a collateral by LCH).

ICE Clear Credit (ICC):

It appears from ICC[7] disclosure framework that collateral haircuts are obtained by forecasting adverse 5-day fluctuations in value during stressed market conditions. These haircuts are reviewed at least monthly, but may be updated more frequently if required due significant changes in market conditions.

To conclude, it appears that the assessment of haircuts on collateral should be based on stressed market conditions to ensure their stability through the cycle. In addition, such haircuts should consider market risk, credit risk, liquidity and concentration, wrong way risk, FX risk.

III. DRAFTING PROCESS

The Committee on Payment and Settlement Systems had clearly stated in April 2012[8] that central counterparties ("CCP") should appropriately address procyclicality in its collateral arrangements to prevent from potential adverse effects (exacerbation of market stress and contribution to driving down asset prices). Indeed, in a stressed market, a CCP may require the posting of additional collateral both because of the decline of asset prices and because of an increase in haircut levels. Thus, the same committee has requested CCPs "to establish stable and conservative haircuts that are calibrated to include periods of stressed market conditions in order to reduce the need for procyclical adjustments".

IV. IMPACTS ON TECHNOLOGICAL SYSTEMS

The calculations of the individual haircuts is performed upstream of Sola® Clearing. Once the haircut are calculated by CDCC, they will be transferred in Sola® Clearing by the upload of a csv file containing all haircuts levels per eligible securities. In order to minimize the potential for

[7] The disclosure is dated as of January 9, 2014 and could be found at http://www.theice.com

[8] Bank for International Settlements: "Principles for financial market infrastructures". April 2012.

operational risk, the configuration change will be tested prior to its implementation in the production system.

V. OBJECTIVES OF THE PROPOSED MODIFICATIONS

The objective of the proposed modification is to address the procyclicality of haircut on eligible collateral currently requested by CDCC from its Clearing Members.

VI. PUBLIC INTEREST

In CDCC's opinion, the proposed amendment to CDCC's Risk Manual is not contrary to the public interest

VII. MARKET IMPACTS

The proposed approach allows for less procyclical haircuts for all considered eligible collateral. In addition, the average haircuts obtained from the proposed approach are close, or slightly higher than those obtained from the current approach. Thus, the "skin in the game" of current clearing members should not be reduced following the implementation of our proposed approach for haircuts and that market efficiency will be maintained or improved.

VIII. PROCESS

The proposed amendment is submitted for approval by the CDCC Board. Once the approval has been obtained, the proposed amendment, including this analysis, will be transmitted to the *Autorité des marchés financiers* in accordance with the self-certification process and the Ontario Securities Commission in accordance with the "Rule Change Requiring Approval in Ontario" process. The proposed amendment and analysis will also be submitted for approval to the Bank of Canada in accordance with the Oversight Regulatory Agreement.

IX. EFFECTIVE DATE

The proposed changes to address the Procyclicality of haircuts will be implemented by December 2014. This date is subject to regulatory approval.

X. ATTACHED DOCUMENTS

Appendix 1: Amended CDCC's Risk Manual

TMX | CDCC

Risk Manual

ACCEPTABILITY OF UNDERLYING INTERESTS

ACCEPTABLE UNDERLYING INTERESTS OF EQUITY OPTIONS

- *Section B-603* of the Rules sets out the eligibility criteria for Equity Options.
- *Section B-604* of the Rules sets out the ineligibility criteria for Equity Options.

CDCC reviews and publishes quarterly the eligibility threshold and deficiency threshold in terms of market capitalization and volume (expressed as an average daily volume of the last 20 business days) for clearing Equity Options.

ACCEPTABLE UNDERLYING INTERESTS OF SHARE FUTURES

- *Section C-1503* of the Rules sets out the eligibility criteria for Share Futures.
- *Section C-1504* of the Rules sets out the ineligibility criteria for Share Futures.

CDCC reviews and publishes quarterly the eligibility threshold and deficiency threshold in terms of market capitalization and volume (expressed as an average daily volume of the last 20 business days) for clearing Share Futures.

ACCEPTABLE UNDERLYING INTERESTS OF OTCI

- *Section D-104* of the Rules sets out the acceptance criteria for OTCI.

CDCC reviews and publishes quarterly on its website a list of the single name equities and ETFs that are Acceptable Underlying Interests for clearing OTCI.

Between two quarterly publications of the list of Acceptable Underlying Interests, a Clearing Member who wishes to clear OTCI for which an Underlying Interest is not included on the list must obtain the Corporation’s prior approval. The Underlying Interest must at least meet the acceptance criteria prescribed in *Section D-104* of the Rules.

ACCEPTABLE UNDERLYING INTERESTS OF CASH BUY OR SELL TRADES

For the application of *Sections D-104* and *D-603* of the Rules, Securities are acceptable for Cash Buy or Sell Trades clearing if they meet the following criteria:

- The issuer must be eligible, which includes the following issues:
    - Bonds and Treasury bills issued by the Government of Canada, including real return issues;
    - Canada Mortgage and Housing Corporation debt securities;
    - Bonds issued by Business Development Bank of Canada;

  - Bonds issued by Export Development Canada;
  - Bonds issued by Farm Credit Canada; and
  - Bonds issued by Canada Post;
  - Bonds issued by certain provincial governments and provincial Crown corporations determined as acceptable by CDCC[1], excluding real return issues, zero coupon bonds, and bonds with a maturity of less than one year.
- The bonds must be repayable at maturity;
- The bonds must be denominated in Canadian dollars;
- The coupon type must be fixed, real return, step-up or zero (Treasury bills are eligible);
- The net amount outstanding[2] must be greater than or equal to $250 million;
- The bonds' prices must be issued by a source that is acceptable to the Corporation.

ACCEPTABLE UNDERLYING INTERESTS OF REPURCHASE TRANSACTIONS

For the application of the provisions of *Sections D-104* and *D-603* of the Rules, Securities are eligible for clearing of Repurchase Transaction if they meet the following criteria:

- The Underlying Interest must be an Acceptable Underlying Interests of Cash Buy or Sell Trades;
- The Purchase Date of the Repurchase Transaction must be no earlier than the Novation Date;
- The Repurchase Date of the Repurchase Transaction must not be more than 365 days later than the Purchase Date of the Repurchase Transaction and must be no later than the maturity date of the Acceptable Security.

[1] To be acceptable by CDCC, the issuer should be rated by two or more credit agencies (among Moody's Investors Service, Standard and Poor's, Fitch Ratings and the Dominion Bond Rating Service). The final rating considered by CDCC corresponds to the second highest among ratings assigned by these agencies. Such final credit rating of the issuer must be investment grade and not lower than 6 notches below the credit rating assigned to the Government of Canada by the same credit agency. ~~To be acceptable by CDCC, the credit rating of the issuer must be investment grade and not lower than 6 notches below the credit rating of the Government of Canada, as stated by Standard & Poor's (or another recognized rating agency). For example, if the Government of Canada has an AAA rating, the lowest rating eligible would be A-~~.

[2] The net amount outstanding is defined as the outstanding amount issued on the market minus the stripped coupon bonds and issuer repurchases.

FORMS OF COLLATERAL

The forms of collateral that may be deposited with CDCC are prescribed in Section A-608 and Section A-709 of the Rules.

The different forms of collateral are valued by accounting for their potential loss in the event that liquidation is required. Accordingly, the value of the Margin Deposits is discounted in relation to their market value. This discount, commonly called the Haircut, applies to Valued Securities, Canada Mortgage Bonds and Government Securities, as prescribed in Section A-709 of the Rules.

For the purposes of application of the provisions of Section A-608 and Section A-709 of the Rules, CDCC proceeds as follows:

CASH

Cash amounts are accepted only in Canadian dollars.

GOVERNMENT SECURITIES AND CANADA MORTGAGE BONDS

CDCC accepts Acceptable Treasury Bills and other Government of Canada and United States Government bonds, in addition to the bonds of certain Canadian provinces, as Margin Deposits. For each issue accepted in advance, a concentration limit equal to $250 million or 10% of the total issue outstanding, whichever is less, is applied. The concentration limit is in effect for all Government Securities and Canada Mortgage Bonds at the Corporation level. Acceptance of the issues is conditional on the availability of a price from a source that CDCC determines to be acceptable and reliable. The Government Securities and Canada Mortgage Bonds accepted as Margin are reviewed by CDCC on a regular basis.

VALUED SECURITIES

CDCC accepts Valued Securities listed on any duly recognized Canadian Exchange against their total Margin requirements These Securities should respect the criteria set forth in Section A-709 of CDCC's Rules.

CALCULATING THE HAIRCUTS FOR GOVERNMENT SECURITIES AND CANADA MORTGAGE BONDS

The Haircuts are calculated based on the following methodology and assumptions:

- Valuation of the market, credit, liquidity and foreign exchange risks based on historical daily returns;
- The volatility estimator uses the EMWA approach as defined in the Margin Interval (MI) Calculation section,~~Confidence interval over 99% obtained by using 3 standard~~

~~deviations,~~ and the assumption that the bond can be liquidated at a reasonable price in “n”~~N~~ days. (~~N~~ “n” ~~will~~is ~~be~~ determined according to the type of products and prevailing market conditions – see the Margin Interval (MI) Calculation section). In addition, a minimal floor for the EWMA volatility estimator is calculated as an average of a daily EWMA volatility estimator observed over the last 10 years;

- Liquidity risk valued according to the bid-ask spread of the issues using the same EWMA volatility estimator and the floor (if this spread is unavailable, the liquidation window will be expanded and will depend on market conditions); and
- Bonds of the same issuer and comparable maturities.

Once the quantitative analysis is performed, CDCC reserves the right to increase the Haircuts based on qualitative criteria, such as:

- Comparative analysis of CDCC’s Haircuts in relation to the Haircuts of the Bank of Canada;
- Comparative analysis of CDCC’s Haircuts in relation to the Haircuts of other clearing houses;
- The congruence of the different Haircuts to the credit rating spreads of the different issuers;
- Any other factor considered relevant.