

## **CROSS-MARGINING AGREEMENT**

This Cross-Margining Agreement (together with all Appendices, this "Agreement") is entered into this second day of January, 2004\*, by Fixed Income Clearing Corporation ("FICC"), a New York corporation, and Chicago Mercantile Exchange Inc. ("CME"), a Delaware corporation.

### **RECITALS**

A. FICC is a clearing agency registered with the Securities and Exchange Commission (the "SEC") under the Securities Exchange Act of 1934, as amended (the "Exchange Act") and, through its Government Securities Division, acts as a clearing organization for trading in the over-the-counter market for U.S. Government securities, securities of U.S. federal Agencies and U.S. Government-sponsored enterprises, and financing products ("Government Securities").

B. CME acts as the clearing organization for certain futures contracts and options on futures contracts that are traded on the CME and the Chicago Board of Trade ("CBOT") which have been designated as contract markets for such contracts by the Commodity Futures Trading Commission (the "CFTC") pursuant to the Commodity Exchange Act, as amended (the "CEA"). The CME is registered as a derivatives clearing organization pursuant to the CEA.

C. FICC and CME desire to establish a Cross-Margining Arrangement in order to cross-margin products whose price volatility is sufficiently closely correlated that long and short positions in such products offset one another to some degree (as will be calculated under this Agreement) for purposes of determining margin requirements.

D. FICC and CME desire to enter into this Agreement whereby (i) entities that are Clearing Members of both FICC and CME, and (ii) Clearing Members of one such Clearing Organization that have an Affiliate that is a Clearing Member of the other such Clearing Organization, may elect to have their Margin obligations in respect of positions in futures contracts and options on futures contracts in Eligible Products in their proprietary accounts at CME offset against their Margin obligations in respect of positions in Eligible Products at FICC to the extent permitted under this Agreement.

E. In order to facilitate such a Cross-Margining Arrangement, FICC and CME desire to establish procedures whereby CME will guarantee certain obligations of a Cross-Margining Participant to FICC, and FICC will guarantee certain obligations of a Cross-Margining Participant to CME, with reimbursement of amounts paid under such guaranties to be collateralized by the positions and margin of such Cross-Margining Participant held by the guarantor.

F. It is understood that FICC may enter into other cross-margining agreements similar or identical to this Agreement in the future that shall be added to Appendix A upon written notice thereof by FICC to CME as provided herein. This Agreement and all such other agreements are intended to be an integrated Cross-Margining Arrangement. FICC Clearing Members that are, or that have Affiliates that are, Clearing Members of CME and one or more of such other clearing organizations may participate simultaneously in the Cross-Margining Arrangement as contemplated in this Agreement

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*\* As amended by Amendment No. 1, dated October 11, 2005, Amendment No. 2, dated February 5, 2007, Amendment dated February 28, 2011, and Amendment dated June 9, 2014. Appendix A was most recently amended June 9, 2014. The notice provisions for FICC and CME were amended on February 28, 2011. The notice provisions for FICC and CME were further amended on February 3, 2016 and March 11, 2016, respectively.*

and in such other cross-margining agreements. Each such other clearing organization shall be referred to hereafter as an "Other CO". Notwithstanding the above, it is understood that for purposes of this Agreement, CME Eligible Positions will be offset against FICC Eligible Positions and not against Eligible Positions at Other COs unless FICC and CME mutually agree otherwise. Except as disclosed on Appendix A (as amended from time to time), no other FICC cross-margining and loss sharing arrangements shall affect the obligations of the parties to this Agreement.

G. It is understood that CME is currently a party to other cross-margining and loss sharing agreements that are listed on Appendix A and may enter into additional cross-margining or loss sharing agreements in the future that shall be added to Appendix A upon written notice thereof by CME to FICC as provided herein. It is intended that CME's calculation of its Available Margin under this Agreement will be subject to CME's prior satisfaction of its obligations under such other cross-margining and loss sharing agreements that are listed on Appendix A as having priority over this Agreement. Except as described in the previous sentence, the CME's other cross-margining and loss sharing agreements shall not affect the obligations of the parties to this Agreement. Except as disclosed on Appendix A (as amended from time to time), no other CME cross-margining and loss sharing agreements shall affect the obligations of the parties to this Agreement.

H. It is understood that FICC is currently a party to other loss sharing agreements (e.g., portfolio margining arrangements and cross-guarantee agreements), and may enter into additional loss sharing or cross-margining agreements in the future that shall be added to Appendix A upon written notice thereof by FICC to CME as provided herein. It is intended that FICC's calculation of its Available Margin under this Agreement will be subject to FICC's prior satisfaction of its obligations under such other cross-margining and loss sharing agreements that are listed on Appendix A as having priority over this Agreement. Except as disclosed on Appendix A (as amended from time to time), no other cross-margining and loss sharing arrangements shall affect the obligations of the parties to this Agreement.

## **AGREEMENTS**

In consideration of the premises and mutual covenants contained herein, the parties hereto agree as follows:

1. **Definitions.** In addition to the terms defined above, certain other terms used in this Agreement shall be defined as follows:

"Adjustment Payment" means the payment that is required to be made in accordance with Section 7(f) of this Agreement when the worse off party (as defined in Section 7(d) of this Agreement) computes an Aggregate Net Surplus.

"Affiliate" means, when used in respect of a particular Clearing Member of one Clearing Organization, a Clearing Member of the other Clearing Organization that directly or indirectly controls such particular Clearing Member, or that is directly or indirectly controlled by or under common control with such particular Clearing Member. Ownership of 50 percent or more of the common stock of the relevant entity will conclusively be deemed control of that entity for purposes of this definition.

“Aggregate Net Loss” means the sum of any (1) Cross Margin Loss and (2) Available Margin if the Available Margin is less than the Cross Margin Loss (expressed as a positive number). In calculating their Aggregate Net Loss, the Clearing Organizations shall take into account any Preliminary Payment Obligation received.

“Aggregate Net Surplus” means, as applicable, (x) the sum of any Cross Margin Gain and Available Margin, or (y) if a positive number, Available Margin less any Cross Margin Loss. In calculating their Aggregate Net Surplus, the Clearing Organizations shall take into account any Preliminary Payment Obligation received.

“Applicable Residual Margin Amount” means the amount derived, as described in Section 5(a), from applying the lower of the CME Margin Rate or the FICC Margin Rate to the Residual Position in each Offset Class.

“Applicable Residual Margin Amount Used” means, in the cross-margining offset between a pair of Offset Classes at the Clearing Organizations as contemplated by Section 5(b) of this Agreement, the smaller of the long (short) Applicable Residual Margin Amount or the short (long) Applicable Residual Margin Amount in the pair of Offset Classes.

“Available Margin” means, when used in respect of the liquidation of a Clearing Member of FICC, the amount, if any, of: (i) the Clearing Member's Margin deposits, (ii) proceeds of, and obligations under, such Clearing Member's positions (other than proceeds from the liquidation of the Used Positions), and (iii) other collateral, credit support and proceeds thereof of such Clearing Member deposited with or held by FICC, that remains after all obligations of the Clearing Member to FICC (including, but not limited to, all liabilities to FICC arising as the result of the default of the Clearing Member and the satisfaction of obligations arising out of the agreements listed on Appendix A as taking priority to this Agreement) have been satisfied. "Available Margin" means, when used in respect of the liquidation of a Clearing Member of CME, the amount, if any, of: (i) the Margin deposited by such Clearing Member for its proprietary account(s) at CME, (ii) proceeds of, and obligations under, positions (other than proceeds from the liquidation of the Used Positions) in such Clearing Member's proprietary account(s), and (iii) excess margin, variation margin, option premia, other collateral, credit support and proceeds thereof related to such Clearing Member's proprietary account(s) deposited with or held by CME, including but not limited to performance bond and asset value of long option positions, that remains after all obligations of the Clearing Member to CME (including, but not limited to, all liabilities to CME arising as the result of the default of the Clearing Member and the satisfaction of obligations arising out of the agreements listed on Appendix A as taking priority to this Agreement) have been satisfied. In the case of either FICC or CME, "Available Margin" shall not include funds or property to the extent that such funds or property may not lawfully be applied by such Clearing Organization without violating any law or regulation by which such Clearing Organization is legally bound.

“Base Amount of the Guaranty” means the amount of the Cross-Margining Reduction as determined by Sections 8A(f) and 8B(f) that is in effect at any particular point in time without regard to any loss sharing.

“Business Day” means, unless otherwise expressly stated in the Agreement, a day on which trading in Eligible Products is conducted and on which FICC and CME both conduct money settlements.

“CBOT Eligible Products” means certain futures contracts and options on futures contracts cleared by CME that are traded on the CBOT as identified on Appendix B.

“Clearing Member” means any member of the netting system of the Government Securities Division of FICC deemed eligible for cross-margining by FICC or any clearing member firm of CME, including any CBOT member that has been designated by the CME as a Special CME Clearing Member, deemed eligible for cross-margining by CME.

“Clearing Organization” means either FICC, acting through its Government Securities Division, or CME.

“CME Eligible Products” means certain futures contracts and options on futures contracts cleared by CME that are traded on the CME as identified on Appendix B

“Cross Margin Gain” means, with respect to a Clearing Organization, the amount of any net gain realized in the liquidation of the Used Positions without regard to Available Margin.

“Cross Margin Loss” means, with respect to a Clearing Organization, the amount of any net loss incurred in the liquidation of the Used Positions without regard to Available Margin.

“Cross-Margining Affiliate,” means, as used in respect of a Cross-Margining Participant of a particular Clearing Organization, an Affiliate of such Cross-Margining Participant that is a Cross-Margining Participant of the other Clearing Organization.

“Cross-Margining Arrangement” means the arrangement between FICC and the CME as set forth in this Agreement, together with similar arrangements between FICC and Other COs.

“Cross-Margining Participant” means a Clearing Member that has become a participant in the Cross-Margining Arrangement as between FICC and CME under the terms of this Agreement. The term "Cross-Margining Participant" shall, where the context requires, refer collectively to the Cross-Margining Participant and its Cross-Margining Affiliate, if any.

“Cross-Margining Reduction” means the maximum amount by which a Cross-Margining Participant's Margin requirement at one Clearing Organization may be reduced (irrespective of the amount by which it is actually reduced) as calculated in accordance with Section 5 of this Agreement. The Cross-Margining Reduction at each Clearing Organization is equal to the sum of the Margin Offsets at that Clearing Organization.

“Default Event” shall have the meaning given to that term in Section 7(a) of this Agreement.

“Defaulting Member” shall have the meaning given to that term in Section 7(a) of this Agreement.

“Disallowance Factor” means the specified percentage, as determined by the parties from time to time, that is applied to reduce the Applicable Residual Margin Amount Used to derive the Margin Offset.

“Effective Date” means the date established pursuant to Section 15(j) of this Agreement.

“Eligible Position” means, when used in respect of a particular FICC Eligible Product, a dollar amount of the particular FICC Eligible Product held by a Cross-Margining Participant in a net long or short cash position at the Government Securities Division of FICC. “Eligible Position” means, when used in respect of a particular CBOT Eligible Product or CME Eligible Product, a net long or short position in futures or options on futures contracts at CME; provided, however, that the nominal principal amount of such CBOT Eligible Product or CME Eligible Product covered by futures contracts or options on futures contracts, shall be expressed as a dollar amount of U.S. Government securities using the conversion methodology set forth in Appendix C1 (for CME Eligible Products) or Appendix C2 (for CBOT Eligible Products).

“Eligible Product” means, collectively, the CME Eligible Products, CBOT Eligible Products and FICC Eligible Products identified on Appendix B and any other products mutually agreed to in the future between the parties by amendment to Appendix B .

“FICC Eligible Products” means certain Government Securities cleared by FICC as identified on Appendix B.

“Figure-of-Merit” means, with respect to an Eligible Position in a CME Eligible Product, a factor calculated by the CME pursuant to the formula set forth in Appendix C that will be used to determine the applicable CME Offset Class.

“Futures” means contracts for future delivery traded on or pursuant to the rules of a contract market, and cleared by a derivatives clearing organization subject to the provisions of the CEA. The term “Futures” shall be deemed to include options on futures contracts.

“Guaranty” means the obligation of FICC to CME, or of CME to FICC, as in effect at a particular time with respect to a particular Cross-Margining Participant as set forth in Sections 8A and 8B of this Agreement. The term "Guaranties" refers to both the Guaranty of CME to FICC and the Guaranty of FICC to CME, including, without limitation, the obligation to make the Preliminary Payment Obligation as well as the Adjustment Payment.

“Margin” means any type of performance bond or initial margin, including deposits or pledges of CME original margin, FICC clearing fund, CME performance bond, or other margin collateral, whether in the form of cash, securities, letters of credit or other assets of a specific Cross-Margining Participant, required or held by or for the account of either Clearing Organization to secure the obligations of such Cross-Margining Participant.

“Margin Offset” means the difference between (i) the Applicable Residual Margin Amount Used and (ii) the product of (A) the Applicable Residual Margin Amount Used and (B) the greater of (1) the applicable Disallowance Factor or (2) the Minimum Margin Factor, as the case may be.

“Margin Rate” means, in the case of FICC, the percentage, defined for each offset class as two (2) times the standard deviation of returns from a historical index for that offset class, that would be applied to the Residual Position in each Offset Class in the absence of Cross-Margining, and, in the case of CME, the effective percentage which is derived by dividing the CME’s long (short) Residual Margin Amount by the CME’s long (short) Residual Position in each respective Offset Class.

“Mark-to-Market Payment” as used in respect of an Eligible Position means a "variation" payment or other similar payment made by a Clearing Member to a Clearing Organization or vice versa representing the difference between (i) either the current market price of such Eligible Position or, if the Eligible Position has been closed out, the price at which it was closed out, and (ii) either the price of the Eligible Position upon which the most recent Market-to-Market Payment was based or, if there was none, the price at which the Eligible Position was entered into.

“Maximization Payment” shall mean the additional payment(s), if any, that are required to be made by FICC to CME, or vice versa, pursuant to Section 8C of this Agreement after payments are made under the Guaranty.

“Maximization Payment Guaranty” means the obligation of FICC to CME, or of CME to FICC, to make a Maximization Payment with respect to a particular Cross-Margining Participant.

“Maximization Reimbursement Obligation” means the obligation, as set forth in Section 8C(d), of a Cross-Margining Participant to a Clearing Organization that is obligated to make a Maximization Payment on behalf of such Cross-Margining Participant or its Cross-Margining Affiliate pursuant to a Maximization Payment Guaranty.

“Minimum Margin Factor” means the specified percentage, as agreed to between the parties from time to time, that is applied to reduce the Applicable Residual Margin Amount Used.

“Offset Class” means a specific group of Eligible Products in a Clearing Organization. CME Eligible Products shall be organized into rolling year Offset Classes 1 through 20, as described in Appendix B. CBOT Eligible Products shall be organized into Offset Classes, as described in Appendix B. FICC Eligible Products shall be organized into Offset Classes A through G, as described in Appendix B.

“Preliminary Payment Obligation” means the amount that is determined by applying the loss sharing principles set forth in Section 7(d) of this Agreement to the results of the liquidation of the Used Positions.

“Pro Rata Share” means a fraction calculated as described in Section 5(c) of this Agreement.

“Reimbursement Obligation” means the obligation, as set forth in Section 7(h) of this Agreement, of a Cross-Margining Participant to a Clearing Organization that is obligated to make a payment on behalf of such Cross-Margining Participant or its Cross-Margining Affiliate pursuant to a Guaranty.

“Residual Margin Amount” means the long Margin amount or the short Margin amount, as the case may be, in each Offset Class that is available for cross-margining after all internal offsets are conducted within and between offset classes at a particular Clearing Organization, as contemplated in Section 5 of this Agreement. With respect to the CME, Residual Margin Amount only includes the “risk” portion of margin held by the CME. The “risk” portion of margin held with respect to a futures contract is the entire margin requirement, whereas the ‘risk’ portion of margin held with respect to an option on a future excludes the option value.

“Residual Position” means the amount of an Eligible Position in each Offset Class that remains after internal offsets.

“Rules” means the rules, policies and procedures of the Government Securities Division of FICC, and interpretations thereof, as they may be in effect from time to time, and for CME, the by-laws, rules and policies and procedures of CME, and interpretations thereof, as they may be in effect from time to time.

“Used Position” means that portion of a Residual Position that is associated with the Applicable Residual Margin Amount Used in determining the Margin Offset with respect to each pair of Offset Classes.

## 2. Participation.

(a) FICC and CME shall each determine which of its Clearing Members is eligible to become a Cross-Margining Participant; provided that in order to become a Cross-Margining Participant, a Clearing Member of either such Clearing Organization must be, or have an Affiliate that is, a Clearing Member of the other Clearing Organization that such other Clearing Organization has determined to be eligible to be a Cross-Margining Participant. A common Clearing Member of FICC and CME shall become a Cross-Margining Participant upon acceptance by FICC and CME of an agreement in the form of Appendix D hereto. A Clearing Member of FICC or CME and its Affiliate that is a Clearing Member of the other Clearing Organization shall become Cross-Margining Participants and Cross-Margining Affiliates of one another upon acceptance by FICC and CME of an agreement in the form of Appendix E hereto. Either FICC or CME may require a Cross-Margining Participant to provide an opinion of counsel as to the enforceability of the provisions of this Agreement and the Rules of the applicable Clearing Organization with respect to such Cross-Margining Participant and its Cross-Margining Affiliate, if any. FICC shall notify CME, and CME shall notify FICC, upon acceptance of a Clearing Member as a Cross-Margining Participant, and the Clearing Organizations shall mutually agree on a start date for the Cross-Margining Participant.

(b) In addition to the rights of each Clearing Organization discussed in Section 7 of this Agreement, either FICC or CME may terminate the participation of a particular Cross-Margining Participant upon two Business Days' prior written notice to the other Clearing Organization; provided, however, that no such termination pursuant to this subsection (b) shall be effective with respect to any Reimbursement

Obligation or Guaranty, or any Maximization Reimbursement Obligation or Maximization Payment Guaranty, with respect to that Cross-Margining Participant or its Cross-Margining Affiliate that is incurred prior to the effectiveness of any such termination.

3. Positions Subject to Cross-Margining. All positions in FICC Eligible Products maintained by a Cross-Margining Participant in its account at FICC and all positions in CBOT Eligible Products and CME Eligible Products maintained by a Cross-Margining Participant in its proprietary account(s) at CME shall be deemed to be Eligible Positions for purposes of this Agreement. In the event that all necessary regulatory approvals are obtained, the Clearing Organizations shall promptly take steps (including the amendment of the agreements between the Clearing Organizations and their Cross-Margining Participants) to permit positions in CME Eligible Products or CBOT Eligible Products maintained by a Cross-Margining Participant in customer accounts at CME to be deemed to be Eligible Positions for purposes of this Agreement.

4. Offset Classes, Disallowance Factors, Minimum Margin Factor, and Figure-of-Merit. For purposes of calculating the Cross-Margining Reduction for Eligible Positions at FICC and CME in accordance with Section 5 of this Agreement, FICC and CME shall agree upon the categorization of Eligible Products into Offset Classes and shall agree upon the Disallowance Factors and the Minimum Margin Factor to be applied to the Applicable Residual Margin Amount Used to derive the Margin Offset between each possible pair of Offset Classes. Except to the extent that the Clearing Organizations mutually agree otherwise in writing, the Offset Classes shall be as set forth on Appendix B. An example of a schedule containing Disallowance Factors is set forth in Appendix B. The Clearing Organizations shall mutually agree in writing from time to time on the Disallowance Factors and the Minimum Margin Factor that shall be used in this Cross-Margining Arrangement. The methodology for calculating the Figure-of-Merit, which will be used to determine the applicable CME Offset Class with respect to CME Eligible Products, is set forth on Appendix C1. The methodology for the conversion of CBOT futures contracts to Treasury equivalents is set forth on Appendix C2. These agreed upon factors and the Figure-of-Merit methodology do not limit FICC or CME's rights under Section 5(d) of this Agreement to determine their own actual Margin requirements with respect to a Cross-Margining Participant's Eligible Positions.

5. Calculation of the Cross-Margining Reduction. *[amended June 2014]*

(a) On each Business Day on and after the Effective Date, and with respect to each Cross-Margining Participant, each of FICC and CME will calculate a long (short) Residual Position and the associated Residual Margin Amount in each Offset Class. The Residual Positions shall be derived after first internally offsetting, any Eligible Positions. CME's Residual Margin Amounts shall be calculated in accordance with the CME's SPAN margining system. FICC's Residual Margin Amounts shall be calculated as specified in this Agreement and shall be adjusted, if necessary, to correct for differences between the methodology of calculating the Residual Margin Amount as described in this Agreement and FICC's value-at-risk methodology.

CME shall then inform FICC of (1) the long or short Residual Position computed in each Offset Class and (2) the long (short) Residual Margin Amount associated with such Residual Position. FICC



shall calculate the CME effective Margin Rate for the particular Offset Class which shall be determined by dividing (2) by (1) above.

Based on the amounts computed in the previous two paragraphs of this subsection (a), FICC shall determine the Applicable Residual Margin Amounts by multiplying:

- The long or the short Residual Position in each Offset Class, and
- The lesser of the FICC Margin Rate for the applicable Offset Class or the CME Margin Rate for the applicable Offset Class. For purposes of this comparison of Margin Rates as between an FICC Offset Class and a CME Offset Class, if the applicable Offset Class is a FICC Offset Class, the rates that shall be compared are: (i) FICC's Margin Rate applicable to that Offset Class and (ii) the CME Margin Rate applicable to the particular FICC Offset Class as determined by Appendix B (which, in effect, is equal to the FICC Margin Rate for the particular Offset Class). If the applicable Offset Class is a CME Offset Class, the rates that shall be compared are: (i) CME's effective Margin Rate and (ii) the FICC Margin Rate applicable to the particular Offset Class as determined by Appendix B.

FICC shall inform CME, and CME shall inform FICC, of the exact methodology used to calculate its Residual Positions. FICC shall inform CME, and CME shall inform FICC, of any non-emergency change in the methodology used to make such calculations no less than 30 calendar days prior to implementation of such change, with the understanding that this obligation to provide advance notice of changes in margin methodology used in calculating Residual Positions shall not limit either Clearing Organization's right under Section 5(d) to determine its actual Margin requirements with respect to a Cross-Margining Participant's Eligible Positions. CME shall inform FICC in advance (and to the extent practicable, not less than 30 calendar days in advance) of any non-emergency change to the contract specifications of CBOT Eligible Products and CME Eligible Products. FICC shall inform CME in advance (and to the extent practicable, not less than 30 calendar days in advance) of any non-emergency changes to the remaining maturity buckets in the list of FICC Eligible Products. In addition, both FICC and CME shall promptly inform each other of changes to either their Margin Rates or Margin amounts required per Eligible Position.

Notwithstanding any other provision of this Agreement, each of FICC and CME may unilaterally determine, on any Business Day, to reduce (including to reduce to zero) the Residual Positions and the corresponding Residual Margin Amounts that it makes available for cross-margining with respect to an individual Cross-Margining Participant or with respect to all Cross-Margining Participants. The effect of such action on the Guaranties shall be governed by Sections 8A(f) and 8B(f).

(b) If a Cross-Margining Participant has only long Applicable Residual Margin Amounts at FICC and CME or only short Applicable Residual Margin Amounts at FICC and CME, then there will be no Applicable Residual Margin Amounts Used.

To the extent that the Cross-Margining Participant has long Applicable Residual Margin Amounts at FICC in one or more Offset Classes and short Applicable Residual Margin Amounts at CME in one or more Offset Classes, or vice versa, then the Applicable Residual Margin Amount Used shall be determined as follows:

Offset will first occur between the pair of Offset Classes with the lowest Disallowance Factor . Subsequent unused offsets, if any, will generally occur between pairs of Offset Classes in order of increasing Disallowance Factors. The Applicable Residual Margin Amount Used at each Clearing Organization in the cross-margining offset between a pair of Offset Classes shall be the smaller of the long Applicable Residual Margin Amount or the short Applicable Residual Margin Amount in the pair of Offset Classes. Such Applicable Residual Margin Amounts Used shall be reduced by the product of the Applicable Residual Margin Amount Used and the greater of the applicable Disallowance Factor or the Minimum Margin Factor to derive the Margin Offset with respect to each pair of Offset Classes.

The Cross-Margining Reduction for a Cross-Margining Participant at each Clearing Organization shall be equal to the sum of the Margin Offsets and shall be the same amount at each Clearing Organization.

(c) The following shall occur in the case of a Cross-Margining Participant of CME that is also a Cross-Margining Participant of one or more Other COs:

In order to determine the Applicable Residual Margin Amount Used, the Applicable Residual Margin Amounts of the Cross-Margining Participant in Offset Classes at FICC shall be allocated in order of increasing Disallowance Factors, subject to Section 5(e) of this Agreement. In the event that more than one Other CO, including for this purpose CME, has Applicable Residual Margin Amounts with equally beneficial Disallowance Factors, FICC shall generally allocate its Applicable Residual Margin Amounts on a pro-rated basis based on the Applicable Residual Margin Amounts computed by FICC for each such clearing organization in relation to the aggregate Applicable Residual Margin Amounts computed by FICC for all clearing organizations for that particular Disallowance Factor. The proportion of the Cross-Margining Participant's Applicable Residual Margin Amounts at FICC that is offset against the Cross-Margining Participant's Applicable Residual Margin Amounts at CME shall be referred to hereafter as CME's "Pro Rata Share" for such Cross-Margining Participant per Offset Class. The Pro Rata Share for each Other CO shall be similarly determined. Such Applicable Residual Margin Amounts Used shall be reduced by the product of the Applicable Residual Margin Amount Used and the greater of the applicable Disallowance Factor or the Minimum Margin Factor to derive the Margin Offset with respect to each pair of Offset Classes. An illustrative example of FICC's allocation of its Applicable Residual Margin Amounts is shown in Appendix F hereto. The example is intended as an aid to interpretation of the verbal description of the allocation as set forth in this Agreement. In the event of an inconsistency between the provisions of the main part of this Agreement and Appendix F, the provisions of the main part of this Agreement shall govern.

Notwithstanding any other provision of this Agreement, FICC reserves the right to disregard the foregoing prioritization based on increasing Disallowance Factors and/or the pro rata allocation among CME and Other COs and to increase or decrease, including to decrease to zero, the Applicable Residual Margin Amounts that it allocates to CME with respect to one or more Cross-Margining Participants if, in FICC's sole discretion, such increase or decrease is appropriate in view of unusual circumstances affecting CME, an Other CO, the Cross-Margining Participant or its Cross-Margining Affiliate, the Eligible Positions at CME or an Other CO, or otherwise. In such an event, the CME's Pro Rata Share shall be the proportion of the Cross-Margining Participant's Applicable Residual Margin Amounts at FICC that is actually offset against the Cross-Margining Participant's Applicable Residual Margin Amounts at CME. The effect of such action on the Guaranties shall be governed by Sections 8A(f) and 8B(f) of this Agreement.

(d) Although it is contemplated that FICC and CME may reduce a Cross-Margining Participant's Margin requirement in respect of Eligible Positions by the amount of the Cross-Margining Reduction in reliance upon the Guaranty of the other as set forth in Sections 8A and 8B below, nothing in this Agreement will be construed as requiring any such reduction. Notwithstanding any other provision of this Agreement, each Clearing Organization may unilaterally determine its actual Margin requirements in respect of a Cross-Margining Participant's Eligible Positions taking into consideration market conditions, the financial condition of a Cross-Margining Participant (or its Cross-Margining Affiliate), the size of positions carried by a Cross-Margining Participant (or its Cross-Margining Affiliate) or any other factor or circumstance deemed by it to be relevant, but in no event shall a Clearing Organization reduce the actual Margin requirement of a Cross-Margining Participant by more than the Cross-Margining Reduction. Without limiting the generality of the foregoing, FICC shall have the right to reduce the Cross-Margining Reduction of a FICC Cross-Margining Participant to compensate for risks associated with the time value of any options on futures that may be included within the Used Positions. In addition to any notices required under Sections 6(a) and 7 of this Agreement, each Clearing Organization shall promptly notify the other in the event that it chooses not to reduce a Cross-Margining Participant's Margin requirement by the amount of the Cross-Margining Reduction. Such action by one or both of the Clearing Organizations shall not affect the Guaranty as in effect at that time with respect to the particular Cross-Margining Participant as set forth in Sections 8A and 8B.

CME and FICC shall each determine to its own satisfaction that the Margin it requires in respect of a Cross-Margining Participant's Residual Positions, together with the Guaranty of the other Clearing Organization, is adequate to protect itself. Absent gross negligence or willful misconduct, no Clearing Organization shall have liability to any other Clearing Organization or to any other person based solely upon the fact that any information given or calculated by such Clearing Organization pursuant to this Section 5 of the Agreement was inaccurate or inadequate. As used in the preceding sentence, the term "Clearing Organization" means FICC, CME, and Other COs. The liability of CME and FICC to any Cross-Margining Participant, Cross-Margining Affiliate or third party shall be as further provided in the CME Rules and the FICC Rules.

(e) Any calculation of a Cross-Margining Reduction, including without limitation any order of offset between possible pairs of Offset Classes (including offsets between FICC and CME Offset Classes and between FICC and Other CO Offset Classes) provided for in Section 5 of this Agreement shall not result in any guarantee to any Cross-Margining Participant that such calculation will yield any, or the highest possible, Cross-Margining Reduction.

(f) Illustrative examples of the calculation of Cross-Margining Reductions are set forth on Appendix G hereto. The examples are intended as an aid to interpretation of the verbal description of those calculations as set forth in this Agreement. In the event of an inconsistency between the provisions of the main part of this Agreement and Appendix G, the provisions of the main part of this Agreement shall govern.

#### 6. Daily Procedures for Exchange of Cross-Margining Data.

(a) All daily settlements of funds and securities, including the collection of Margin payments and the release or payment of excess Margin with respect to Eligible Positions and transactions relating to

Eligible Positions shall be conducted on each Business Day (and shall be conducted by the Clearing Organization that is open for business on each day that is a business day for it and not for the other Clearing Organization) in accordance with the ordinary settlement procedures of each Clearing Organization. FICC and CME shall establish procedures, including time frames, to exchange on each Business Day such information as may reasonably be required in order to calculate the Cross-Margining Reduction for each Cross-Margining Participant. The initial procedures and timeframes for such exchange of information are set forth on Appendix H hereto. Each Clearing Organization shall furnish to the other such additional information as the other Clearing Organization may reasonably request in relation to the Cross-Margining Agreement.

FICC and CME agree that each will notify the other Clearing Organization promptly if an event occurs that reflects, in the sole discretion of the notifying Clearing Organization, a material problem with respect to a Cross-Margining Participant. Examples of such an event shall include, but shall not be limited to, the events requiring notice pursuant to Section 14(a) of this Agreement.

(b) On any day that the CME is open for business and FICC is not, or vice versa, the Guaranties as determined by Sections 8A(f) and 8B(f) shall be in effect until new Guaranties are established pursuant to Sections 8A(f) and 8B(f), respectively the next Business Day when both Clearing Organizations conduct a settlement cycle. Days that are holidays for either FICC or CME, or both, and therefore not Business Days under this Agreement, are as published by each Clearing Organization for each particular calendar year.

7. Suspension and Liquidation of a Cross-Margining Participant. *[amended June 2014]*

(a) Either FICC or CME may at any time exercise any rights under its Rules to terminate, suspend or otherwise cease to act for or limit the activities of a Cross-Margining Participant (a "Defaulting Member") and, subject to the provisions of the next sentence, to liquidate the positions and Margin of such Cross-Margining Participant. Upon such event (the "Default Event"), the terminating or suspending Clearing Organization shall immediately by telephone or in person, and thereafter in writing, notify the other Clearing Organization of such event and both such Clearing Organizations shall promptly and prudently liquidate (through market transactions or other commercially reasonable means) all Used Positions of such Defaulting Member (or its Cross-Margining Affiliate, as the case may be) at such Clearing Organizations except to the extent that FICC and CME mutually agree to delay liquidation of all or any portion of the Used Positions or except to the extent that either determines unilaterally not to liquidate all or any portion of the Used Positions as provided below. Except to the extent that one Clearing Organization has determined unilaterally not to liquidate, FICC and CME shall use reasonable efforts to coordinate the liquidation of the Used Positions so that offsetting or hedged positions can be closed out simultaneously. Any funds received by a Clearing Organization as a result of the liquidation of the Used Positions of a Cross-Margining Participant pursuant to this Section 7 shall be applied in accordance with the following paragraphs of this Section.

In liquidating the Used Positions of their respective Cross-Margining Participants, FICC and CME shall each determine as soon as practicable, but in any event within 15 calendar days from the day of the Default Event, the Cross Margin Gain or Cross Margin Loss at that Clearing Organization.

FICC shall notify CME, and CME shall notify FICC, of the amount of its own Cross Margin Gain or Cross Margin Loss and, in such detail as may reasonably be requested, the means by which such calculation was made.

(b) In liquidating the Used Positions of their respective Cross-Margining Participants, FICC and CME shall each apply any proceeds of closing out positions as follows:

- CME shall compute proceeds from the long side of market positions (long futures, long calls and short puts) separately from the short side of market positions (short futures, short calls and long puts).
- FICC shall compute proceeds from long Government Securities positions separately from short Government Securities positions.

Only the proceeds from the side of market that was offset pursuant to this Agreement at the last margin cycle (“the Isolated Side”) will be allocated to determine the Cross Margin Gain or Cross Margin Loss.

- At CME, with regard to CME Eligible Products, the proceeds from the Isolated Side from each Offset Class *without regard to any Margin or Available Margin* will be allocated based on the following fraction: the number of Eurodollar delta equivalents which comprise the Used Positions for that Offset Class for the last cross-margining cycle, divided by the total number of Eurodollar delta equivalents from the side of market that was offset.
- At CME, with regard to CBOT Eligible Products, the proceeds from the Isolated Side from each Offset Class *without regard to any Margin or Available Margin* will be allocated based on the following fraction: the value of futures contracts and options on futures contracts that were offset pursuant to this Agreement for that Offset Class, divided by the total market value of futures contracts and options on futures contracts in the Offset Class from the side of the market that was offset.
- At FICC, the proceeds from the Isolated Side from each Offset Class *without regard to any Margin or Available Margin* will be allocated based on the following fraction: the market value of Government Securities that was offset pursuant to this Agreement for that Offset Class, divided by the total market value of Government Securities in the Offset Class from the side of market that was offset.

In the event that (i) the sum of any allocated proceeds of the liquidation of the Used Positions on the Isolated Side of the market realized by such Clearing Organization (including securities deliverable to, and amounts receivable in respect of securities deliverable by, such Cross-Margining Participant in settlement of the Used Positions) and any Mark-to-Market Payments or other settlement amounts due from such Clearing Organization in respect of the Isolated Side of the Used Positions exceeds (ii) the sum of the allocated Mark-to-Market Payments or other settlement amounts owed to such Clearing Organization in respect of, or as a result of the closeout of, the Used Positions on the Isolated Side of the Market (including securities deliverable by, or amounts payable in respect of securities deliverable to, such Cross-Margining Participant in respect of the Used Positions), plus any interest expense, fees, commissions or other costs reasonably incurred in such close-out or otherwise arising from

such Used Positions, then the amount of such excess shall be deemed to be the Cross Margin Gain. In the event that the sum referred to in clause (i) of the preceding sentence is less than the amount referred to in clause (ii), the difference shall be the Cross Margin Loss.

(c) Notwithstanding the foregoing, in the case of a Cross-Margining Participant that is, or that has a Cross-Margining Affiliate that is, a Cross-Margining Participant of one or more Other COs, such Cross-Margining Participant's Cross Margin Gain or Cross Margin Loss at FICC shall be allocated among the CME and Other COs in accordance with the Pro Rata Share fraction computed in Section 5 above with respect to each Offset Class.

(d) If neither FICC nor CME has a Cross Margin Loss, no payment will be due to either Clearing Organization in respect of the Guaranties between FICC and CME referred to in Sections 8A and 8B below (although a payment may be due under Section 8C of this Agreement). If FICC and CME each has a Cross Margin Loss that exceeds the Cross-Margining Reduction, or each has an equal Cross Margin Loss, such Guaranties will offset one another and no payment will be due to either Clearing Organization (although a payment may be due under Section 8C of this Agreement).

If either FICC or CME has a Cross Margin Loss (hereinafter the “worse off party”) and the other has a smaller Cross Margin Loss, no Cross Margin Loss or a Cross Margin Gain (hereinafter the “better off party”), then the worse off party shall be entitled to receive a payment from the better off party known as the Preliminary Payment Obligation and equal to the smallest of the following:

- (i) the Cross Margin Loss of the worse off party;
- (ii) the higher of (a) the Base Amount of the Guaranty or (b) Cross Margin Gain of the better off party;
- (iii) the amount required to equalize FICC’s and CME’s Cross Margin Gains (Losses); or
- (iv) the amount by which the Base Amount of the Guaranty exceeds the better off party’s Cross Margin Loss if both parties have Cross Margin Losses.

For purposes of the foregoing determination of the Preliminary Payment Obligation owed by one Clearing Organization to another, a Clearing Organization that has elected unilaterally not to suspend or liquidate any of the Used Positions of the Defaulting Member or its Cross-Margining Affiliate (the “Non-Liquidating CO”) shall be deemed to have a Cross Margin Gain equal to the Cross Margin Loss of the Clearing Organization that liquidated all of the Used Positions of the Defaulting Member or its Cross-Margining Affiliate (the “Liquidating CO”). Notwithstanding the previous sentence, the Non-Liquidating CO shall not be deemed to have a Cross Margin Gain that is less than the Base Amount of the Guaranty. Notwithstanding the previous sentences, in the event a Clearing Organization is directed not to suspend or liquidate the Defaulting Member or its Cross-Margining Affiliate by a regulatory authority in order to promote safety and soundness, the Clearing Organization shall be deemed to have a Cross Margin Gain equal to the Base Amount of the Guaranty.

A Clearing Organization that has elected to liquidate a portion, but not all, of the Used Positions of the Defaulting Member or its Cross-Margining Affiliate (the “Partially Liquidating CO”) shall be deemed to have a Cross Margin Gain or Loss equal to the gain or loss on the liquidated portion plus a gain equal to a pro rated amount of the Cross Margin Loss of the Liquidating CO, pro rated based on the

portion of the Used Positions that the Partially Liquidating CO did not liquidate. Notwithstanding the previous sentences, the Partially Liquidating CO shall not be deemed to have, with respect to the unliquidated portion of the Used Positions, a gain which is less than the pro rated amount of the Base Amount of the Guaranty, pro rated based on the unliquidated portion of the Used Positions. Notwithstanding the previous sentences, in the event a Clearing Organization is directed to partially liquidate a Defaulting Member or its Cross-Margining Affiliate by a regulatory authority in order to promote safety and soundness, the Clearing Organization shall be deemed to have a Cross Margin Gain or Loss equal to the gain or loss on the liquidated portion plus a gain equal to a pro rated amount of the Base Amount of the Guaranty, pro rated based on a portion of the Used Positions that the Clearing Organization did not liquidate. The Clearing Organization that determines to liquidate a portion, but not all of, the Used Positions shall do so in good faith based on legitimate business reasons or because it is directed to do so by a regulatory authority in order to promote safety and soundness.

(e) If FICC is obligated to make a payment of the Preliminary Payment Obligation to CME, or CME is obligated to make a payment of the Preliminary Payment Obligation to FICC, in respect of a Guaranty, the Clearing Organization obligated to make such payment shall do so promptly and in no event later than the third Business Day following the calculation by both Clearing Organizations of their Cross Margin Gain or Cross Margin Loss pursuant to Section 7(a) of this Agreement. Such payment shall be made in immediately available funds.

(f) The worse off party shall be required to return all or a portion of the Preliminary Payment Obligation in the form of an Adjustment Payment under the circumstances set forth in this paragraph. In order to establish whether the Preliminary Payment Obligation shall be returned, in whole or in part, to the better off party, each Clearing Organization shall compute its Aggregate Net Loss (Aggregate Net Surplus) and shall do so promptly and in no event later than 15 calendar days from the day on which the better off party paid the Preliminary Payment Obligation to the worse off party. If the worse off party computes an Aggregate Net Surplus, it shall make a payment to the better off party, in respect of a Guaranty, known as the Adjustment Payment and equal to the lesser of: (i) the worse off party's Aggregate Net Surplus or (ii) the Preliminary Payment Obligation. Such Adjustment Payment shall be made promptly and in no event later than the third Business Day following the calculation of the Aggregate Net Surplus (Aggregate Net Loss) by both Clearing Organizations. Such payment shall be made in immediately available funds.

(g) If at any time within 90 calendar days following the Default Event, either Clearing Organization determines that any amount paid to or received from the other Clearing Organization pursuant to Sections 7(e) and/or 7(f) of this Agreement in respect of a Guaranty was incorrect either because of errors in calculation at the time or because new information relevant to the determination of such amount was discovered after the determination of such amount, the Clearing Organization that discovered the error or new information shall notify the other Clearing Organization. In such event, the Clearing Organizations shall: (i) cooperate with one another to recalculate the appropriate amount of any Guaranty payments to be made promptly and in no event later than 15 calendar days from the day on which the Clearing Organization that discovered the error or new information notified the other Clearing Organization, and (ii) make any necessary payments to one another to correct the error within 3 Business Days following agreement on such recalculation by both Clearing Organizations. Such payment(s) shall be made in immediately available funds.

(h) In the event that either Clearing Organization (the "Guarantor") becomes obligated to make a Guaranty payment to the other Clearing Organization (the "Beneficiary") in respect of the obligation of a Defaulting Member or its Cross-Margining Affiliate to the Beneficiary, the Defaulting Member and such Affiliate shall thereupon immediately be obligated, whether or not the Guarantor has then made the Guaranty payment to the Beneficiary, to reimburse the Guarantor for the amount of the Guaranty payment as determined by the Guarantor, and the Guarantor shall be subrogated to all of the rights of the Beneficiary against the Defaulting Member or its Cross-Margining Affiliate. Such obligation (the "Reimbursement Obligation") shall be due immediately upon a demand by the Guarantor to the Defaulting Member or its Cross-Margining Affiliate specifying the amount of such obligation. In the event that the final amount of the Guaranty Payment is greater or less than the amount originally determined, the Reimbursement Obligation shall be adjusted accordingly and payment of the difference shall be made between the Guarantor and the Defaulting Member or its Cross-Margining Affiliate, as appropriate. It is understood and agreed that any payment or obligation to make payment between the Guarantor or its Cross-Margining Participant and the Beneficiary with respect to the Guaranty, and any payment or obligation to make payment between the Defaulting Member or its Cross-Margining Affiliate and the Guarantor, is a "margin payment" or "settlement payment" or an obligation to make a "margin payment" or "settlement payment" as defined in the Bankruptcy Code, as the case may be. In the event that the Guarantor had an Aggregate Net Surplus in respect of the Defaulting Member or its Cross-Margining Affiliate, such Aggregate Net Surplus shall constitute cash, securities, or other property held by or due from the Guarantor within the meaning of Section 362 of the Bankruptcy Code, and the Reimbursement Obligation of the Defaulting Member or its Cross-Margining Affiliate shall be netted and set off against such Aggregate Net Surplus, and any remaining Aggregate Net Surplus shall be returned to the Defaulting Member or its representative or otherwise disposed of in accordance with the Rules of the Guarantor, subject to Section 8C. Each Guarantor has a security interest in the Aggregate Net Surplus as security for the Reimbursement Obligation, and has all rights of a secured creditor under the New York Uniform Commercial Code.

For purposes of Title IV, Subtitle A of the Federal Deposit Insurance Corporation Improvement Act of 1991 (12 USC 4401-4407), this Agreement, together with the FICC Rules, the CME Rules and any other agreements between FICC, CME and a Cross-Margining Participant or any Affiliate thereof, is a "netting contract" and all payments made or to be made hereunder, including payments made in accordance with this Agreement in connection with the liquidation of a Cross-Margining Participant are "covered contractual payment obligations" or "covered contractual payment entitlements," as the case may be, as well as "covered clearing obligations."

(i) A narrative description of the loss-sharing process is set forth on Appendix I hereto. Numerical examples of the calculation of Cross Margin Gain or Cross Margin Loss in liquidating the Used Positions of a Defaulting Member, and the related calculation of the amount of any payments under the Guaranty are set forth on Appendix J hereto. The examples are intended as an aid to interpretation of the verbal description of those calculations as set forth in this Agreement. In the event of an inconsistency between the provisions of the main part of this Agreement and Appendix I and/or J, the main provisions of this Agreement shall govern.

#### 8A. Guaranty of FICC to CME.

(a) FICC hereby unconditionally guaranties the prompt payment when due (whether at maturity, by declaration, by demand or otherwise), and at any and all times thereafter, of all indebtedness and other



obligations of every kind and nature of each Cross-Margining Participant or its Cross-Margining Affiliate (hereafter referred to, in either case, as "CME's Debtor") to CME, direct or indirect, absolute or contingent, due or to become due, whether now or hereafter existing arising from or related to the Used Positions or the liquidation thereof, but limited to the amounts determined in accordance with Section 7 of this Agreement (all such indebtedness and other obligations being hereinafter collectively called the "Indebtedness to CME"). FICC further agrees to pay any and all reasonable costs and expenses (including counsel fees and expenses) incurred by CME in enforcing its rights against FICC under this Section 8A.

(b) The creation or existence from time to time of Indebtedness to CME (whether or not such Indebtedness may be in excess of the amounts determined in accordance with Section 7 of this Agreement to which the right of recovery under this Guaranty is limited) is hereby authorized without notice to FICC and shall in no way affect or impair this Guaranty.

(c) The liability of FICC under this Guaranty shall be unconditional and irrespective of (i) any lack of enforceability of any Indebtedness to CME or any guaranty thereof, (ii) any change of the time, manner or place of payment, or any other term, of any Indebtedness to CME or any guaranty thereof, (iii) any taking, exchange, subordination, release or non-perfection of any collateral securing payment of any Indebtedness to CME; (iv) the acceptance of additional parties or the release of anyone primarily or secondarily liable on the Indebtedness to CME; (v) any law, rule, regulation or order of any jurisdiction or any governmental, regulatory or administrative authority of any kind, whether now or hereafter in effect, affecting any term of any Indebtedness to CME or any guaranty or security therefor or CME's rights with respect thereto; and (vi) any other circumstance which might otherwise constitute a defense available to, or a discharge of, CME's Debtor or a guarantor. FICC waives promptness, diligence, and notices with respect to any Indebtedness to CME and this Guaranty and any requirement that CME exhaust any right or take any action against CME's Debtor or any other person or entity or with respect to any guaranty or collateral security therefor and any duty on CME's part to disclose to FICC any matter, fact or thing related to the business, operations or conditions (financial or otherwise) of CME's Debtor or its affiliates or its property, whether now or hereafter known by CME. FICC acknowledges that this Guaranty is a guaranty of payment not collection and that FICC has made and will continue to make its own investigations with respect to all matters regarding CME's Debtor.

(d) In the event that FICC makes any payment to CME under this Guaranty, and to the extent such payment is not returned to FICC in whole or in part pursuant to Section 7(f) of this Agreement, FICC shall be subrogated to the rights of CME against the Cross-Margining Participant or its Cross-Margining Affiliate in respect of whose Indebtedness to CME such payment was made and to the rights of CME against any other guarantor or other third party with respect to such Indebtedness to CME.

(e) All of CME's rights and remedies provided for herein or otherwise available to CME at law or otherwise shall be cumulative to the extent permitted by law.

(f) The Base Amount of FICC's Guaranty to CME under paragraph (a) of this Section 8A with respect to each of CME's Debtors shall be equal to the Cross-Margining Reduction as calculated by FICC with respect to each such CME Debtor and such Base Amount shall become effective as follows:

(i) An increase in the Cross-Margining Reduction shall become effective at the time at which FICC provides CME with a valid cross-margining output file reflecting such increase.

(ii) A decrease in the Cross-Margining Reduction, including to zero, shall become effective at 11:00 a.m. New York time on the Business Day following the Business Day for which the decrease was calculated.

In the event that either Clearing Organization cannot complete its settlement on any Business Day because of an event of force majeure and thus is not able to act upon the decrease in the Cross-Margining Reduction by 11:00 a.m. New York time, then subsection (ii) above shall not apply and the Clearing Organizations shall confer with one another and agree upon a course of action that will protect both Clearing Organizations.

An illustrative example of the timing of the effectiveness of the Base Amount of the Guaranty is shown in Appendix K hereto. The example is intended as an aid to interpretation of the verbal description of the timing as set forth in this section of the Agreement. In the event of an inconsistency between the provisions of the main part of this Agreement and Appendix K, the provisions of the main part of this Agreement shall govern.

#### 8B. Guaranty of CME to FICC

(a) CME hereby unconditionally guaranties the prompt payment when due (whether at maturity, by declaration, by demand or otherwise), and at any and all times thereafter, of all indebtedness and other obligations of every kind and nature of each Cross-Margining Participant or its Cross-Margining Affiliate (hereafter referred to, in either case, as "FICC's Debtor") to FICC, direct or indirect, absolute or contingent, due or to become due, whether now or hereafter existing arising from or related to Used Positions or the liquidation thereof, but limited to the amounts determined in accordance with Section 7 of this Agreement (all such indebtedness and other obligations being hereinafter collectively called the "Indebtedness to FICC"). CME further agrees to pay any and all reasonable costs and expenses (including counsel fees and expenses) incurred by FICC in enforcing its rights against CME under this Section 8B.

(b) The creation or existence from time to time of Indebtedness to FICC (whether or not such Indebtedness may be in excess of the amounts determined in accordance with Section 7 of this Agreement to which the right of recovery under this Guaranty is limited) is hereby authorized without notice to CME and shall in no way affect or impair this Guaranty.

(c) The liability of CME under this Guaranty shall be unconditional and irrespective of (i) any lack of enforceability of any Indebtedness to FICC or any guaranty thereof, (ii) any change of the time, manner or place of payment, or any other term, of any Indebtedness to FICC or any guaranty thereof, (iii) any taking, exchange, subordination, release or non-perfection of any collateral securing payment of any Indebtedness to FICC; (iv) the acceptance of additional parties or the release of anyone primarily or secondarily liable on the Indebtedness to FICC; (v) any law, rule, regulation or order of any jurisdiction or any governmental, regulatory or administrative authority of any kind, whether now or hereafter in effect, affecting any term of any Indebtedness to FICC or any guaranty or security therefor or FICC's rights with respect thereto; and (vi) any other circumstance which might otherwise constitute a defense available to, or a discharge of, FICC's Debtor or a guarantor. CME waives promptness, diligence, and notices with respect to any Indebtedness to FICC and this Guaranty and any

requirement that FICC exhaust any right or take any action against FICC's Debtor or any other person or entity or with respect to any guaranty or collateral security therefor and any duty on FICC's part to disclose to CME any matter, fact or thing related to the business, operations or conditions (financial or otherwise) of FICC's Debtor or its affiliates or its property, whether now or hereafter known by CME. CME acknowledges that this Guaranty is a guaranty of payment not collection and that CME has made and will continue to make its own investigations with respect to all matters regarding FICC's Debtor.

(d) In the event that CME makes any payment to FICC under this Guaranty, and to the extent such payment is not returned to CME in whole or in part pursuant to Section 7(f) of this Agreement, CME shall be subrogated to the rights of FICC against the Cross-Margining Participant or its Cross-Margining Affiliate in respect of whose Indebtedness to FICC such payment was made and to the rights of FICC against any other guarantor or other third party with respect to such Indebtedness to FICC.

(e) All of FICC's rights and remedies provided for herein or otherwise available to FICC at law or otherwise shall be cumulative to the extent permitted by law.

(f) The Base Amount of CME's Guaranty to FICC under paragraph (a) of this Section 8A with respect to each of FICC's Debtors shall be equal to the Cross-Margining Reduction as calculated by FICC with respect to each such FICC Debtor and such Base Amount shall become effective as follows:

(i) An increase in the Cross-Margining Reduction shall become effective at the time at which FICC provides CME with a valid cross-margining output file reflecting such increase.

(ii) A decrease in the Cross-Margining Reduction, including to zero, shall become effective at 11:00 a.m. New York time on the Business Day following the Business Day for which the decrease was calculated.

In the event that either Clearing Organization cannot complete its settlement on any Business Day because of an event of force majeure and thus is not able to act upon the decrease in the Cross-Margining Reduction by 11:00 a.m. New York time, then subsection (ii) above shall not apply and the Clearing Organizations shall confer with one another and agree upon a course of action that will protect both Clearing Organizations.

An illustrative example of the timing of the effectiveness of the Base Amount of the Guaranty is shown in Appendix K hereto. The example is intended as an aid to interpretation of the verbal description of the timing as set forth in this section of the Agreement. In the event of an inconsistency between the provisions of the main part of this Agreement and Appendix K, the provisions of the main part of this Agreement shall govern.

#### 8C. Maximization Payment

(a) If, after payment is made under the Guaranty referred to in Sections 8A and 8B of this Agreement, FICC has an Aggregate Net Surplus, FICC's Aggregate Net Surplus shall:

- First be distributed among the clearing organizations that are parties to the agreements listed in Appendix A by FICC as having priority over this Agreement in accordance with the terms of those agreements,

- The remainder of FICC's Aggregate Net Surplus shall be divided among CME and Other COs on a pro rated basis based upon the Base Amount of the Guaranty (or comparable amounts under such other cross-margining agreements) in effect prior to the Default Event of the Defaulting Member that was computed by FICC for each such clearing organization in relation to the aggregate Base Amounts of the Guaranties (or other comparable amounts under such other cross-margining agreements) in effect prior to the Default Event of the Defaulting Member that were computed by FICC for such clearing organizations pursuant to their applicable cross-margining agreements until either all Aggregate Net Losses of CME and the Other COs are fully satisfied or FICC's Aggregate Net Surplus has been used up.

(b) If, after payment is made under the Guaranty referred to in Sections 8A and 8B of this Agreement, CME computes an Aggregate Net Surplus, CME's Aggregate Net Surplus shall

First be distributed among the clearing organizations that are parties to the agreements listed in Appendix A by CME as having priority over this Agreement in accordance with the terms of those agreements,

The remainder of CME's Aggregate Net Surplus shall be divided among FICC and the other clearing organizations with which CME has signed cross-margining agreements on a pro rated basis based upon the Base Amount of the Guaranty (or comparable amounts under such cross-margining agreements) in effect prior to the Default Event of the Defaulting Member in relation to the aggregate Base Amount of the Guaranties (or comparable amounts under such cross-margining agreements) until either all Aggregate Net Losses of FICC and such other clearing organizations are fully satisfied or CME's Aggregate Net Surplus has been used up.

(c) In the event of any order or judgment of a court of competent jurisdiction (the "Court") that any amount of the Maximization Reimbursement Obligation relating to any Maximization Payment paid pursuant to this Section 8C by a Clearing Organization (the "Payor Clearing Organization") to the other Clearing Organization (the "Payee Clearing Organization") may not be recovered by the Payor Clearing Organization from the Aggregate Net Surplus, the Payee Clearing Agency shall repay that amount to the Payor Clearing Organization; provided, however, that (i) if the Payee Clearing Organization is ordered by the Court to pay to the Defaulting Member (or to any person on behalf of the Defaulting Member) the Maximization Payment paid by the Payor Clearing Organization to the Payee Clearing Organization, then such amount shall be paid by the Payee Clearing Organization to the Defaulting Member (or to such other person on behalf of the Defaulting Member) and such payment shall discharge any obligation of the Payor Clearing Organization to the Defaulting Member and any obligation of the Payee Clearing Organization to the Payor Clearing Organization for such amount, and (ii) if the Payee Clearing Organization is ordered by the Court to pay to the Defaulting Member (or to any person on behalf of the Defaulting Member) only a portion of the Maximization Payment paid by the Payor Clearing Organization to the Payee Clearing Organization, then (A) such amount shall be paid by the Payee Clearing Organization to the Defaulting Member (or to such other person on behalf of the Defaulting Member) and such payment shall discharge any obligation of the Payor Clearing Organization to the Defaulting Member and any obligation of the Payee Clearing Organization to the Payor Clearing Organization for such amount and (B) the excess which is not paid to the Defaulting Member (or to any other person on behalf of the Defaulting Member) shall be retained by the Payee Clearing Organization or repaid to the Payor Clearing Organization in accordance with their rights and obligations under this Section 8C. The parties hereto shall cooperate with each other, including in any action or proceeding in any Court, to endeavor to prevent any redundant payments to the Defaulting Member.

(d) In the event that either Clearing Organization (the "Maximization Payment Guarantor") becomes obligated to make a Maximization Payment pursuant to the Maximization Payment Guaranty to the other Clearing Organization (the "Maximization Payment Beneficiary") in respect of the obligation of a Defaulting Member or its Cross-Margining Affiliate to the Maximization Payment Beneficiary, the Defaulting Member and such Affiliate shall thereupon immediately be obligated, whether or not the Maximization Payment Guarantor has then made the Maximization Payment to the Maximization Payment Beneficiary, to reimburse the Maximization Payment Guarantor for the amount of the Maximization Payment as determined by the Maximization Payment Guarantor, and the Maximization Payment Guarantor shall be subrogated to all of the rights of the Maximization Payment Beneficiary against the Defaulting Member or its Cross-Margining Affiliate. Such obligation (the "Maximization Reimbursement Obligation") shall be due immediately upon a demand by the Maximization Payment Guarantor to the Defaulting Member or its Cross-Margining Affiliate specifying the amount of such obligation. In the event that the final amount of the Maximization Payment is greater or less than the amount originally determined, the Maximization Reimbursement Obligation shall be adjusted accordingly and payment of the difference shall be made between the Maximization Payment Guarantor and the Defaulting Member or its Cross-Margining Affiliate, as appropriate. It is understood and agreed that any payment or obligation to make payment between the Maximization Payment Guarantor or its Cross-Margining Participant and the Maximization Payment Beneficiary with respect to the Maximization Payment Guaranty, and any payment or an obligation to make a payment between the Defaulting Member or its Cross-Margining Affiliate and the Maximization Payment Guarantor, is a "margin payment" or "settlement payment" or an obligation to make a "margin payment" or "settlement payment" as defined in the Bankruptcy Code. In the event that the Maximization Payment Guarantor had an Aggregate Net Surplus in respect of the Defaulting Member or its Cross-Margining Affiliate, such Aggregate Net Surplus shall constitute cash, securities, or other property held by, or due from, the Maximization Payment Guarantor within the meaning of Section 362 of the Bankruptcy Code, and the Maximization Reimbursement Obligation of the Defaulting Member or its Cross-Margining Affiliate shall be netted and set off against such Aggregate Net Surplus, and any remaining Aggregate Net Surplus shall be returned to the Defaulting Member or its representative or otherwise disposed of in accordance with the Rules of the Guarantor. Each Maximization Payment Guarantor has a security interest in the Aggregate Net Surplus as security for the Maximization Reimbursement Obligation, and has all rights of a secured creditor under the New York Uniform Commercial Code.

(e) (i) FICC hereby unconditionally guaranties (such guaranty being the Maximization Payment Guaranty) the prompt payment when due (whether at maturity, by declaration, by demand or otherwise), and at any and all times thereafter, of all indebtedness and other obligations of every kind and nature of each Cross-Margining Participant or its Cross-Margining Affiliate (hereafter referred to, in either case, as "CME's Debtor") to CME, direct or indirect, absolute or contingent, due or to become due, whether now or hereafter existing, but limited to the amounts determined in accordance with Section 8C(a) of this Agreement (all such indebtedness and other obligations being hereinafter collectively called the "Maximization Indebtedness to CME"). FICC further agrees to pay any and all reasonable costs and expenses (including counsel fees and expenses) incurred by CME in enforcing its rights against FICC under this Section 8A, subject to Section 8C(c) of this Agreement.

(ii) The creation or existence from time to time of Maximization Indebtedness to CME (whether or not such Maximization Indebtedness may be in excess of the amounts determined in accordance with Section 8C(a) of this Agreement to which the right of recovery under this Maximization Payment Guaranty is limited) is hereby authorized without notice to FICC and shall in no way affect or impair this Maximization Payment Guaranty.

(iii) Subject to Section 8C(c) of this Agreement, the liability of FICC under this Maximization Payment Guaranty shall be unconditional and irrespective of (i) any lack of enforceability of any Maximization Indebtedness to CME or any guaranty thereof, (ii) any change of the time, manner or place of payment, or any other term, of any Maximization Indebtedness to CME or any guaranty thereof, (iii) any taking, exchange, subordination, release or non-perfection of any collateral securing payment of any Maximization Indebtedness to CME; (iv) the acceptance of additional parties or the release of anyone primarily or secondarily liable on the Maximization Indebtedness to CME; (v) any law, rule, regulation or order of any jurisdiction or any governmental, regulatory or administrative authority of any kind, whether now or hereafter in effect, affecting any term of any Maximization Indebtedness to CME or any guaranty or security therefor or CME's rights with respect thereto; and (vi) any other circumstance which might otherwise constitute a defense available to, or a discharge of, CME's Debtor or a guarantor. FICC waives promptness, diligence, and notices with respect to any Maximization Indebtedness to CME and this Maximization Payment Guaranty and any requirement that CME exhaust any right or take any action against CME's Debtor or any other person or entity or with respect to any guaranty or collateral security therefor and any duty on CME's part to disclose to FICC any matter, fact or thing related to the business, operations or conditions (financial or otherwise) of CME's Debtor or its affiliates or its property, whether now or hereafter known by CME. FICC acknowledges that this Maximization Payment Guaranty is a guaranty of payment not collection and that FICC has made and will continue to make its own investigations with respect to all matters regarding CME's Debtor.

(iv) In the event that FICC makes a Maximization Payment to CME under this Maximization Payment Guaranty, FICC shall be subrogated to the rights of CME against the Cross-Margining Participant or its Cross-Margining Affiliate in respect of whose Maximization Indebtedness to CME such payment was made and to the rights of CME against any other guarantor or other third party with respect to such Maximization Indebtedness to CME.

(v) All of CME's rights and remedies provided for herein or otherwise available to CME at law or otherwise shall be cumulative to the extent permitted by law.

(f) (i) CME hereby unconditionally guaranties (such guaranty being the Maximization Payment Guaranty) the prompt payment when due (whether at maturity, by declaration, by demand or otherwise), and at any and all times thereafter, of all indebtedness and other obligations of every kind and nature of each Cross-Margining Participant or its Cross-Margining Affiliate (hereafter referred to, in either case, as "FICC's Debtor") to FICC, direct or indirect, absolute or contingent, due or to become due, whether now or hereafter existing, but limited to the amounts determined in accordance with Section 8C(b) of this Agreement (all such indebtedness and other obligations being hereinafter collectively called the "Maximization Indebtedness to FICC"). CME further agrees to pay any and all reasonable costs and expenses (including counsel fees and expenses) incurred by FICC in enforcing its rights against CME under this Section 8A, subject to Section 8C(c) of this Agreement.

(ii) The creation or existence from time to time of Maximization Indebtedness to FICC (whether or not such Maximization Indebtedness may be in excess of the amounts determined in accordance with Section 8C(b) of this Agreement to which the right of recovery under this Maximization Payment Guaranty is limited) is hereby authorized without notice to CME and shall in no way affect or impair this Maximization Payment Guaranty.

(iii) Subject to Section 8C(c) of this Agreement, the liability of CME under this Maximization Payment Guaranty shall be unconditional and irrespective of (i) any lack of enforceability of any Maximization Indebtedness to FICC or any guaranty thereof, (ii) any change of the time, manner or place of payment, or any other term, of any Maximization Indebtedness to FICC or any guaranty thereof, (iii) any taking, exchange, subordination, release or non-perfection of any collateral securing payment of any Maximization Indebtedness to FICC; (iv) the acceptance of additional parties or the release of anyone primarily or secondarily liable on the Maximization Indebtedness to FICC; (v) any law, rule, regulation or order of any jurisdiction or any governmental, regulatory or administrative authority of any kind, whether now or hereafter in effect, affecting any term of any Maximization Indebtedness to FICC or any guaranty or security therefor or FICC's rights with respect thereto; and (vi) any other circumstance which might otherwise constitute a defense available to, or a discharge of, FICC's Debtor or a guarantor. CME waives promptness, diligence, and notices with respect to any Maximization Indebtedness to FICC and this Maximization Payment Guaranty and any requirement that FICC exhaust any right or take any action against FICC's Debtor or any other person or entity or with respect to any guaranty or collateral security therefor and any duty on FICC's part to disclose to CME any matter, fact or thing related to the business, operations or conditions (financial or otherwise) of FICC's Debtor or its affiliates or its property, whether now or hereafter known by FICC. CME acknowledges that this Maximization Payment Guaranty is a guaranty of payment not collection and that CME has made and will continue to make its own investigations with respect to all matters regarding FICC's Debtor.

(iv) In the event that CME makes a Maximization Payment to FICC under this Maximization Payment Guaranty, CME shall be subrogated to the rights of FICC against the Cross-Margining Participant or its Cross-Margining Affiliate in respect of whose Maximization Indebtedness to FICC such payment was made and to the rights of FICC against any other guarantor or other third party with respect to such Maximization Indebtedness to FICC.

(v) All of FICC's rights and remedies provided for herein or otherwise available to FICC at law or otherwise shall be cumulative to the extent permitted by law.

## 9. Confidentiality.

(a) Except as expressly authorized in this Agreement and except with respect to information that is disclosed to an Other CO in connection with a Cross-Margining Arrangement, each Clearing Organization shall maintain in confidence, and shall not disclose to any third party, any information obtained by it from the other Clearing Organization in connection with (i) this Agreement, or (ii) the transactions or activities contemplated herein with respect to any Clearing Organization, or (iii) the positions, transactions or financial condition of any Clearing Member ("Confidential Information"). The foregoing shall not apply to: (i) any information which is or becomes generally known to the public, other than through an action or failure to act by such Clearing Organization or Clearing

Member, or (ii) the disclosure of Confidential Information to a third party to whom such information was previously known. This Section 9 shall not prohibit either party from furnishing Confidential Information to: (a) the CFTC or the SEC or, any other regulator or supervisory authority with oversight authority over a Clearing Organization or any of its members, (b) pursuant to any surveillance agreement or similar arrangement to which such party is a party, (c) to any "self-regulatory organization" within the meaning of the CEA or the Exchange Act or to any foreign government or regulatory body, or (d) to a Representative of such Clearing Organization with a "need to know" the Confidential Information who has been instructed to maintain the confidentiality of such Confidential information in accordance with the provisions of this Agreement and who has agreed to do so. The term "Representative" shall mean, with respect to a Clearing Organization, such Clearing Organization's directors, officers, employees, agents, consultants and professional advisers.

(b) In the event that either party is required by subpoena, or by any other order of court, law or regulation to disclose any Confidential Information in the possession of such party, it is agreed that the party which is subject to such requirement shall provide the other party with prompt notice of such requirement so that the other party may seek an appropriate protective order and/or waive compliance with the provisions of this Section with respect to such required disclosure. In the event that such other party determines to seek a protective order, the party subject to the requirement shall cooperate to the extent reasonably requested by the other. It is further agreed that if in the absence of a protective order or the receipt of a waiver hereunder, the party subject to the requirement is nonetheless, in the reasonable opinion of its counsel, compelled to disclose such Confidential Information to any tribunal or regulatory agency or else stand liable for contempt or suffer other censure or penalty, such party may produce such Confidential Information without liability under this Section 9.

#### 10. Indemnification.

(a) Each of FICC and CME (the "Indemnitor") shall indemnify, defend and hold harmless the other, its directors, officers, employees, agents and each person, if any, who controls the indemnified Clearing Organization (each an "Indemnified Party") against any Claims and Losses (as defined below) incurred by an Indemnified Party as the result, or arising from allegations, of any act or failure to act by the Indemnitor in connection with this Agreement or the cross-margining procedures contemplated under this Agreement if such act or failure to act constitutes either (i) gross negligence or willful misconduct on the part of the Indemnitor; or (ii) a material breach of this Agreement, or any obligation undertaken in connection with this Agreement, any Rule of the Indemnitor (except to the extent that such Rule is inconsistent with the provisions of this Agreement), or any law or governmental regulation applicable to the Indemnitor.

(b) As used in this Section 10, the term "Claims and Losses" means any and all losses, damages and expenses whatsoever arising from claims of third parties including, without limitation, liabilities, judgments, damages, costs of investigation, reasonable attorneys' fees and other expenses and amounts paid in settlement (with the consent of the Indemnitor, which consent shall not be unreasonably withheld) in connection with any action, suit, litigation, claim or proceeding to which an Indemnified Party is made a party defendant, or is threatened to be made such a party.

(c) Promptly after receipt by an Indemnified Party of notice of the commencement of any action or the assertion of any claim against such Indemnified Party, such Indemnified Party shall, if a claim in respect thereof is to be made against the Indemnitor, notify the Indemnitor in writing of the



commencement of such action or assertion of such claims, but the omission so to notify the Indemnitor will not relieve the Indemnitor from any liability which it may have to any Indemnified Party except to the extent that the Indemnitor has been prejudiced by the lack of prompt notice and shall in any event not relieve the Indemnitor of any liability which it may have to an Indemnified Party otherwise than under this Section 10. In case any such action is brought against any Indemnified Party, and such party promptly notifies the Indemnitor of the commencement thereof, the Indemnitor will be entitled to participate in, and, to the extent that it may wish, to assume and control the defense thereof, with counsel chosen by it that is acceptable to the Indemnified Party, which acceptance shall not be unreasonably withheld, and, after notice from the Indemnitor to such Indemnified Party of its election so to assume the defense thereof, the Indemnitor will not be liable to such Indemnified Party under this Section 10 for any legal or other expenses subsequently incurred by such Indemnified Party in connection with the defense thereof other than reasonable costs of investigation, but the Indemnified Party may, at its own expense, participate in such defense by counsel chosen by it, without, however, impairing the Indemnitor's control of the defense. In any action in which the named parties include the Indemnitor and one or more Indemnified Parties, the Indemnitor shall have the right to assume control of any legal defenses that are available to it and any of the Indemnified Parties. Notwithstanding the foregoing, in any action in which the named parties include both the Indemnitor and an Indemnified Party and in which the Indemnified Party shall have been advised by its counsel that there may be legal defenses available to the Indemnified Party that are different from or additional to those available to the Indemnitor, the Indemnitor shall not have the right to assume such different or additional legal defenses, and provided further that the Indemnitor shall not, in connection with one action or separate but substantially similar actions arising out of the same general allegations or circumstances, be liable for more than the reasonable fees and disbursements of one separate firm of attorneys for all of the Indemnified Parties for the purpose of conducting such different or additional legal defenses. The Indemnitor may negotiate a compromise or settlement of any such action or claim provided that such compromise or settlement does not require a contribution by, or otherwise adversely affect the rights of, the Indemnified Party.

11. Rules of the Clearing Organizations. FICC and CME each shall propose and use all reasonable efforts to obtain any regulatory approvals necessary to adopt and maintain in effect such provisions in its Rules as are reasonably necessary to implement the provisions of this Agreement. Without limiting the generality of the foregoing, such Rules shall provide that Cross-Margining Participants of the Clearing Organization shall be bound by the provisions of this Agreement and that the Clearing Organization may use its clearing fund, including any rights of assessments against its Clearing Members, to make payment under any Guaranty given by such Clearing Organization pursuant to Section 8A or 8B of this Agreement.

FICC and CME shall give each other reasonable prior notice of the intended effectiveness of any rule or rule amendment (other than an emergency rule or rule amendment, as to which notice shall be given promptly) adopted by such Clearing Organization if such rule or rule amendment relates in any way to such Clearing Organization's clearing fund, contributions to capital, or rights of assessment against its Clearing Members.

12. Representations and Warranties.

(a) CME represents and warrants to FICC, and FICC represents and warrants to CME, as of the date hereof and as of the Effective Date as follows:

(i) Good Standing. It is a corporation duly organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation, has the power and authority to own its assets and to transact the business in which it is now engaged or proposed to be engaged and is duly qualified and authorized to do business as a corporation and is in good standing under the laws of each jurisdiction in which failure to so qualify could have a material adverse effect on its financial condition, business or operations.

(ii) Corporate Power and Authority. It has all requisite corporate power and authority to enter into this Agreement and the agreements referenced in this Agreement, as applicable, and full power and authority to take all actions required of it pursuant to such agreements. This Agreement will constitute, when executed and delivered, valid and binding obligations of such Clearing Organization, and the execution, delivery and performance of all of its obligations under this Agreement have been duly authorized by all necessary corporate action on the part of such Clearing Organization.

(iii) No Violation. Except for provisions as to which waivers have been obtained, and except to the extent representations made hereunder as of the date hereof may be subject to the regulatory approvals referred to in paragraph (b) hereof, the execution and delivery of this Agreement by the Clearing Organization and the performance of its obligations under this Agreement: (i) do not result in a violation or breach of, do not conflict with or constitute a default under, and will not accelerate or permit the acceleration of performance required by, any of the terms and provisions of its certificate or articles of incorporation, by-laws, rules or other governing documents, any note, debt instrument, or any other agreement to which it is a party or to which any of its assets or properties is subject, and will not be an event which after notice or lapse of time or both will result in any such violation, breach, conflict, default or acceleration; and (ii) do not result in a violation or breach of any law, judgment, decree, order, rule or regulation of any governmental authority or court, whether federal, state or local, at law or in equity, applicable to it or any of its assets or properties.

(iv) Operational Capability: It has adequate personnel, physical facilities, systems, and internal procedures to enable it to satisfactorily communicate with the other Clearing Organization and fulfill all anticipated obligations arising under this Agreement with the necessary promptness and accuracy.

(b) CME represents and warrants to FICC, and FICC represents and warrants to CME, as of the Effective Date that all authorizations, permits, approvals or consents required to be obtained from, and all notifications and filings required to be made with, all governmental authorities and regulatory bodies and third parties to permit such Clearing Organization to place into effect this Agreement and to perform its obligations under this Agreement have been obtained.

(c) These representations and warranties shall be deemed to be repeated each day during the term of the Agreement.

### 13. Termination.

(a) FICC may terminate this Agreement without cause by delivering written notice of termination to CME specifying a termination date not less than 30 days following the date on which such notice is sent.

(b) CME may terminate this Agreement without cause by delivering written notice of termination to FICC specifying a termination date not less than 30 days following the date on which such notice is sent.

(c) In the event that either FICC or CME fails to perform any material obligation under this Agreement and such failure is not promptly cured after written notice thereof is sent to such Clearing Organization, the non-defaulting Clearing Organization may terminate this Agreement by delivering written notice of such termination to the other party.

(d) In the event that a termination date is established under paragraphs (a), (b) or (c) above, each Clearing Organization shall promptly notify all of its Cross-Margining Participants. Each Clearing Organization shall cooperate fully in exchanging all necessary data, records, computer files and other information, and in executing documents and taking other action necessary or appropriate to effect transfers, releases, etc. in order to effect termination of the Cross-Margining Arrangement as to the terminating parties. In the event that a liquidation of a Cross-Margining Participant is pending on the termination date, the provisions of this Agreement pertaining to such liquidation shall survive the termination until such liquidation has been completed and any payment due under the Guaranty due from one Clearing Organization to the other in respect of such liquidation has been paid.

(e) All obligations arising under this Agreement prior to the termination thereof that remain unsatisfied shall survive the termination of this Agreement, including any rights of subrogation under Sections 8A and 8B of this Agreement. In addition, the provisions of Section 9 shall survive the termination of this Agreement to the extent that they apply to Confidential Information received by a Clearing Organization prior to the termination of this Agreement and the provisions of Section 10 shall survive the termination of this Agreement to the extent that the event giving rise to an obligation of indemnification occurs prior to the termination of this Agreement.

#### 14. Information Sharing.

(a) FICC and CME hereby agree to provide one another with the following information regarding their respective Cross-Margining Participants:

(i) If either Clearing Organization applies any special surveillance procedures to a particular Cross-Margining Participant or places such Cross-Margining Participant on remedial action status or higher as provided in such Clearing Organization's Rules, such Clearing Organization will promptly inform the other Clearing Organization of that fact.

(ii) If either Clearing Organization requires more frequent reporting of financial information by a particular Cross-Margining Participant, that Clearing Organization will promptly inform the other Clearing Organization of that fact and the period of reporting.

(iii) If either Clearing Organization increases the capital requirement for a particular Cross-Margining Participant, that Clearing Organization will promptly notify the other Clearing Organization of that fact, the amount of the additional capital required and the deadline for meeting the requirement.

(iv) If either Clearing Organization imposes higher Margin requirements with respect to a particular Cross-Margining Participant, or issues a special intra-day call for Margin or settlement variation in respect of a Cross-Margining Participant, that Clearing Organization shall promptly notify the other Clearing Organization of that fact and the amount of the additional Margin required.

(v) Each Clearing Organization shall, upon request by the other Clearing Organization, promptly furnish to such other Clearing Organization the following information with respect to each account carried by a Cross-Margining Participant with the Clearing Organization from whom the information is requested: (A) Margin required and on deposit in respect of such account, and (B) the dollar amount of any current settlement obligations owed to or by the Cross-Margining Participant that have been determined for such account, including, but not limited to, variation margin, premiums, option exercises and any other settlements. CME shall, upon request by FICC, promptly furnish to FICC the conversion factor(s) used in implementing the conversion set forth in Appendix C2.

(vi) Each Clearing Organization shall promptly notify the other Clearing Organization of any disciplinary action (other than an appeal from an administrative fine) taken by its governing board, or committee or subcommittee thereof against a Cross-Margining Participant involving material non-compliance with financial or financial reporting requirements, or material violation of its Rules.

(vii) Each Clearing Organization shall promptly notify the other in the event that the notifying Clearing Organization learns of any major processing difficulties (including, but not limited to, back-office or bank computer problems) or any major operational errors of a Cross-Margining Participant.

(viii) Each Clearing Organization agrees to promptly notify each other Clearing Organization in the event that a Cross-Margining Participant defaults materially in any settlement obligation.

(ix) If either Clearing Organization suspends, terminates, ceases to act for, or liquidates any Clearing Member, that Clearing Organization will promptly notify the other Clearing Organization of that fact.

(x) In the case of any notice given pursuant to paragraphs (i), (ii), (iii), (iv), (vii), or (viii) above, the Clearing Organization giving such notice shall also notify the recipient when the condition giving rise to such notice is terminated.

(b) FICC agrees to inform CME, and CME agrees to inform FICC, as requested, of the total size of or a material change in the total size of, and aggregate amount of required contributions to, such Clearing Organization's clearing or guaranty fund, as applicable.

(c) Any notice required to be given pursuant to this Section 14 shall be given by facsimile, telephone, or e-mail promptly upon the occurrence of the event giving rise to the requirement of notification. Any notice given by telephone or e-mail shall be promptly confirmed in writing. Notices shall be deemed given when received. Each such notice shall be directed as follows:

If to FICC: *[amended February 28, 2011; further amended February 3, 2016]*

Mr. Murray Pozmanter  
Managing Director, Head of Clearing Agency Services  
Telephone: (212) 855-7522  
Fax: (212) 855-4163  
E-mail: [mpozmanter@dtcc.com](mailto:mpozmanter@dtcc.com)

and

Ms. Nikki Poulos  
Managing Director and FICC General Counsel  
Telephone: (212) 855-7633  
Fax: (201) 533-6632  
E-mail: [npoulos@dtcc.com](mailto:npoulos@dtcc.com) with a copy to [GCOcontractnotices@dtcc.com](mailto:GCOcontractnotices@dtcc.com)

and

Mr. Joe Brennan  
Managing Director, Global Operations & Client Services  
Telephone: (212) 855-7695  
Fax: (212) 855-7599  
E-mail: [jbrennan@dtcc.com](mailto:jbrennan@dtcc.com)

If to CME: *[amended March 11, 2016]*

Chicago Mercantile Exchange Inc.  
20 S. Wacker Drive  
Chicago, IL 60606  
Attention: President, CME Clearing  
Chief Risk Officer, CME Clearing  
Telephone: (312) 648-3888  
Fax: (312) 930-3187  
E-mail: [ClearingHouseRiskTeam@cmegroup.com](mailto:ClearingHouseRiskTeam@cmegroup.com)

With a copy to:

Chicago Mercantile Exchange Inc.  
20 S. Wacker Drive  
Chicago, IL 60606  
Attn: General Counsel, Legal Department  
E-mail: [legalnotices@cmegroup.com](mailto:legalnotices@cmegroup.com)

Either Clearing Organization may amend or supplement the notice information set forth above by providing notice in writing given by facsimile or hand delivery to the other Clearing Organization. Such notice shall be effective upon receipt.

(d) In the event that notification is given by a Clearing Organization pursuant to this Section, such Clearing Organization shall furnish to the other upon request such additional information or documents relating to the circumstances leading to the notification as may reasonably be requested

by it. Notices shall be deemed given when received.

15. General Provisions.

(a) Further Assurances. Each party agrees, without additional consideration, to execute and deliver such instruments and take such other actions as shall be reasonably required or as shall be reasonably requested by the other party in order to carry out the transactions, agreements and covenants contemplated by this Agreement.

(b) Amendment, Modification and Waiver. Unless otherwise expressly provided herein, this Agreement may be permanently modified, amended or supplemented only by mutual written agreement of the parties. A party may temporarily waive or modify any condition intended to be for its benefit provided such waiver shall be in writing signed by the party or parties to be charged. Any delay or failure of a party hereto at any time to require performance by the other party of any provision of this Agreement shall in no way affect the right of such party to require future performance of that or any other provision of this Agreement and shall not be construed as a waiver of any subsequent breach of any provision, a waiver of this provision itself or a waiver of any other right under this Agreement. Either party hereto may amend Appendix A with respect to itself only upon written notice to the other party hereto. The parties shall inform their respective Cross-Margining Participants of any amendments or modifications made to this Agreement.

(c) Governing Law. This Agreement shall be governed by and construed in accordance with the laws (without regard to principles of conflicts of laws) of the State of New York.

(d) Notices. Unless otherwise expressly provided in this Agreement, all notices to be given by any party under this Agreement shall be in writing and shall be given by facsimile, hand delivery, recognized courier delivery service, or by confirmed telecopy, to the other parties at the following addresses (or such other addresses as any party may furnish to the others in writing for such purpose):

*[amended February 2, 2016]*

If to FICC: Fixed Income Clearing Corporation  
55 Water Street  
New York, NY 10041-0099  
Attention: Head of Clearing Agency Services  
Fax No.: 212-855-4163

Copy to: Fixed Income Clearing Corporation  
55 Water Street  
New York, NY 10041-0099  
Attention: FICC General Counsel  
Fax No.: 201-533-6632

Copy to: Fixed Income Clearing Corporation  
55 Water Street  
New York, NY 10041-0099  
Attn.: Managing Director, Global Operations & Client Services  
Fax No.: 212-855-7599

*[amended March 11, 2016]*

If to CME: Chicago Mercantile Exchange Inc.  
20 S. Wacker Drive  
Chicago, IL 60606  
Attention: President, CME Clearing  
Chief Risk Officer, CME Clearing  
Telephone: 312-648-3888  
Fax No.: 312-930-3187  
E-mail: ClearingHouseRiskTeam@cmegroup.com

Copy to: Chicago Mercantile Exchange Inc.  
20 S. Wacker Drive  
Chicago, IL 60606  
Attention: General Counsel, Legal Department  
E-mail: legalnotices@cmegroup.com

All notices given pursuant to this Agreement shall be effective upon receipt.

(e) Assignment. This Agreement and all of the provisions hereof shall be binding upon and inure to the benefit of the parties hereto and their respective successors and permitted assigns, but neither this Agreement nor any of the rights, interests or obligations hereunder shall be assigned by either party hereto without the prior written consent of the other party, nor is this Agreement intended to confer any rights or remedies upon any person except the parties hereto.

(f) Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

(g) Headings. The section and paragraph headings contained in this Agreement are solely for the purpose of reference, are not part of the agreement of the parties and shall not affect in any way the meaning or interpretation of this Agreement.

(h) Entire Agreement. Except as set forth expressly herein or in another instrument in writing signed by the party to be bound thereby which makes reference to this Agreement, this Agreement, including the exhibits hereto, embodies the entire agreement and understanding of the parties hereto in respect of the subject matter contained herein, and no other restrictions, promises, representations, warranties, covenants, or undertakings in relation thereto exist among the parties. This Agreement supersedes all prior agreements and understandings between the parties with respect to such subject matter.

(i) Invalid Provision. In the event that any provision, or any portion of any provision, of this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision, or any other portion of any provision, of this Agreement, and this Agreement shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein.

(j) Effective Date. This Agreement shall become effective on the date stated in the first paragraph of

this Agreement unless otherwise mutually agreed to by FICC and CME. The Effective Date shall be not earlier than the date on which all necessary regulatory approvals have been received by FICC and CME.

(k) Force Majeure. Notwithstanding any other provision of this Agreement, no party hereto shall be liable for any failure to perform or delay in performing its obligations hereunder if such failure or delay is caused by fire, strike, power failure, riot or other civil commotion, acts of nature, acts of federal, state or municipal public authorities, governmentally ordered business or banking moratoria or orders to refrain from using power (whether or not such moratoria or orders are legally authorized), or any other condition or event beyond the reasonable control of the party whose performance is prevented or delayed. Each party agrees to notify the other promptly upon learning that any such condition or event has occurred and shall cooperate with the other, upon request, in arranging alternative procedures and in otherwise taking reasonable steps to mitigate the effects of any inability to perform or any delay in performing.

#### 16. Arbitration.

(a) Any controversy or claim arising out of or relating to this Agreement, as it may be amended or modified from time to time, including any claim or controversy arising out of or relating to the alleged breach, termination or invalidity thereof and any claim based on federal or state statute, shall be settled by arbitration in accordance with the then current Commercial Arbitration Rules of the American Arbitration Association (the "AAA") to the extent that such Rules do not conflict with any provisions of this section. The parties do not, however, appoint the AAA as administrator of the arbitration.

(b) The arbitration shall be held at a mutually agreed place or at the offices of AAA in New York City if no agreement is reached. It shall be held before a panel of three arbitrators: one appointed by each Clearing Organization and one neutral arbitrator to be appointed by agreement of the party-appointed arbitrators. The neutral arbitrator shall be an attorney with not less than an aggregate of 12 years of experience in legal practice, legal teaching or adjudication. The neutral arbitrator shall act as chairman.

(c) A party (the "Claimant") may initiate arbitration under this Agreement by sending to the other party or parties ("Respondents"), by overnight courier, a written demand for arbitration containing a description in reasonable detail of (i) the nature of the claim, dispute or controversy it desires to arbitrate, and (ii) the remedy or remedies sought including Claimant's best current information as to the amount of money, if any, sought to be recovered. The arbitration shall be deemed commenced on the date Respondent receives the demand (the "Commencement Date").

(d) Within seven days after the Commencement Date, Respondent may send to Claimant any written responsive statement to the demand it wishes. Within that time period, Respondent shall send to Claimant or Claimant's counsel, by overnight courier, return receipt requested, a written demand for arbitration of any claims Respondent then wishes to arbitrate against Claimant, containing the same information as in an initial demand.

(e) Claimants and Respondents may freely amend, restate, clarify or supplement their claims in writing until a reasonable time, not less than 21 days, prior to the first arbitration hearing, except that no wholly new claim may be submitted after selection of the arbitrators without the arbitrators' consent.

(f) Any award, order or judgment pursuant to such arbitration shall be deemed final and may be entered and enforced in any state or federal court of competent jurisdiction located in the State of New York. Each party agrees to submit to the jurisdiction of any such court for purposes of the enforcement of any such award, order or judgment.



(g) Any award of damages pursuant to such arbitration shall be included in a written decision which shall state the reasons upon which the award was based, including all the elements involved in the calculation of any award of damages.

(h) Any arbitration proceeding hereunder shall be conducted on a confidential basis.

(i) Notwithstanding any other provision of this Agreement, each party shall have the right to apply to any court of competent jurisdiction for temporary injunctive or other preliminary relief.

(j) (1) There shall be no pre-hearing written interrogatories, written requests for admission, or discovery depositions. The arbitrator may require the parties to respond to limited and reasonable requests for production of documents from the opposing party.

(2) In considering the extent of pre-hearing document discovery to be permitted, the arbitrators shall consider that reduced time, expense and burden are principal reasons the parties have chosen to resolve their disputes through arbitration rather than court proceedings, and shall require pre-hearing document production only where necessary to avoid injustice. The arbitrator shall require that a party requesting pre-hearing production of documents shall reimburse the producing party for the costs of copying and for the time and fees of the producing party's employees and attorneys in locating, reviewing, organizing and copying requested documents.

(3) With the approval of the arbitrators, evidence depositions may be taken of witnesses who cannot be subpoenaed to testify at the hearing. The arbitrator may require advance disclosure by the parties of evidence to be offered at the hearing in order to avoid unfair surprise.

(k) No arbitration arising out of or relating to this Agreement shall include, by consolidation, joinder or in any other manner, any additional person not a party to this Agreement except by written consent containing a specific reference to this Agreement and signed by the Clearing Organizations. Any such written consent to arbitration involving an additional person or persons shall not constitute consent to arbitration of any dispute not described therein or with any person not named or described therein.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed and delivered as of the date first above written.

FIXED INCOME CLEARING CORPORATION

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

CHICAGO MERCANTILE EXCHANGE INC.

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

**APPENDIX A** *[amended June 2014]*

**Cross-Margining or Other Loss Sharing Arrangements of CME:**

Agreement	With or Without Priority Over this Agreement After Guaranty Payment is Made
CME/OCC/NYCC Cross-Margining Agreement dated June 7, 1993.	With priority.

**Cross-Margining or Other Loss Sharing Arrangements of FICC:**

Agreement	With or Without Priority Over this Agreement After Guaranty Payment is Made
DTC/FICC/NSCC/OCC Multilateral Netting Contract and Limited Cross Guaranty Agreement dated January 1, 2003.	With priority.
Portfolio margining arrangement between the FICC Government Securities Division and the FICC Mortgage-Backed Securities Division (upon SEC approval)	With priority.

## APPENDIX B

### *Example of Disallowance Factor Schedule Applicable to CME Eligible Products and FICC Eligible Products*

The methodology for the conversion of Eurodollar Futures into Treasury Equivalents (TE) is described in Appendix C1.

Eurodollar TE Offset Classes 1-10 contain “conforming strips” associated with Rolling Years 1-10, respectively. “Conforming strips” are defined in Appendix C. Eurodollar Offset Classes 11-20 contain “**non-conforming**” strips associated with Rolling Years 1-10, respectively. Treasury Cash Offset Classes A-G and AA-GG are defined below.

<i>Read ED Offset Class Down</i>	<b>A/AA</b>	<b>B/BB</b>	<b>C/CC</b>	<b>D/DD</b>	<b>E/EE</b>	<b>F/FF</b>	<b>G/GG</b>
<b>1</b>	<b>65.0%</b>	<b>45.0%</b>	<b>30.0%</b>	<b>35.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>2</b>	<b>65.0%</b>	<b>40.0%</b>	<b>25.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>40.0%</b>	<b>100.0%</b>
<b>3</b>	<b>100.0%</b>	<b>40.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>35.0%</b>	<b>40.0%</b>
<b>4</b>	<b>100.0%</b>	<b>40.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>40.0%</b>
<b>5</b>	<b>100.0%</b>	<b>100.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>35.0%</b>
<b>6</b>	<b>100.0%</b>	<b>100.0%</b>	<b>35.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>35.0%</b>
<b>7</b>	<b>100.0%</b>	<b>100.0%</b>	<b>40.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>35.0%</b>
<b>8</b>	<b>100.0%</b>	<b>100.0%</b>	<b>40.0%</b>	<b>35.0%</b>	<b>30.0%</b>	<b>30.0%</b>	<b>30.0%</b>
<b>9</b>	<b>100.0%</b>	<b>100.0%</b>	<b>45.0%</b>	<b>40.0%</b>	<b>35.0%</b>	<b>30.0%</b>	<b>30.0%</b>
<b>10</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>45.0%</b>	<b>40.0%</b>	<b>35.0%</b>	<b>30.0%</b>
<b>11</b>	<b>70.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
<b>12</b>	<b>70.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>100.0%</b>
<b>13</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>14</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>15</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>16</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>17</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>18</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>19</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>
<b>20</b>	<b>100.0%</b>	<b>100.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>50.0%</b>	<b>60.0%</b>

## APPENDIX B (continued)

### Example of Disallowance Factor Schedule Applicable to CBOT Eligible Products and FICC Eligible Products

The methodology for the conversion of CBOT Futures into Treasury Equivalents (TE) is described in Appendix C2.

	A/AA	B/BB	C/CC	D/DD	E/EE	F/FF	G/GG	e/ee	f/ff
TU	100%	100%	25%	30%	35%	40%	100%	35%	40%
FV	100%	100%	30%	25%	25%	30%	40%	25%	30%
TY	100%	100%	40%	30%	25%	25%	30%	25%	25%
US	100%	100%	100%	40%	35%	30%	25%	35%	30%
DZ	100%	100%	30%	25%	25%	30%	40%	25%	30%
DQ	100%	100%	40%	30%	25%	25%	30%	25%	25%

## APPENDIX B (Continued)

### *CME Eligible Products by Offset Class*                      *Margin Rate Mappings*

CME Offset Classes	Description of Product	FICC Offset Classes For Margin Rate Comparison
1	Conforming Euro Dollar Strip – 1 Year	B/BB
2	Conforming Euro Dollar Strip – 2 Years	C/CC
3	Conforming Euro Dollar Strip – 3 Years	D/DD
4	Conforming Euro Dollar Strip – 4 Years	D/DD
5	Conforming Euro Dollar Strip – 5 Years	E/EE
6	Conforming Euro Dollar Strip – 6 Years	E/EE
7	Conforming Euro Dollar Strip – 7 Years	E/EE
8	Conforming Euro Dollar Strip – 8 Years	F/FF
9	Conforming Euro Dollar Strip – 9 Years	F/FF
10	Conforming Euro Dollar Strip – 10 Years	F/FF
11	Non - Conforming Euro Dollar Strip – 1 Year	B/BB
12	Non - Conforming Euro Dollar Strip – 2 Years	C/CC
13	Non - Conforming Euro Dollar Strip – 3 Years	D/DD
14	Non - Conforming Euro Dollar Strip – 4 Years	D/DD
15	Non - Conforming Euro Dollar Strip – 5 Years	E/EE
16	Non - Conforming Euro Dollar Strip – 6 Years	E/EE
17	Non - Conforming Euro Dollar Strip – 7 Years	E/EE
18	Non - Conforming Euro Dollar Strip – 8 Years	F/FF
19	Non - Conforming Euro Dollar Strip – 9 Years	F/FF
20	Non - Conforming Euro	F/FF

	Dollar Strip – 10 Years	
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**CBOT Eligible Products\***

\*The delivery months for CBOT’s futures are: March, June, September, and December.

**Treasuries**

<b>“Two Year”</b>	Offset Class TU: Two Year U.S. Treasury Note Futures contract and options thereon.
<b>“Five Year”</b>	Offset Class FV: Five Year U.S. Treasury Note Futures contract and options thereon.
<b>“Ten Year”</b>	Offset Class TY: Ten Year U.S. Treasury Note Futures contract and options thereon.
<b>“U.S. Bond”</b>	Offset Class US: Thirty Year U.S. Treasury Bond Futures contract and options thereon.

**Agencies**

<b>“Five Year Agency”</b>	Offset Class DZ: Five Year Agency Note Futures contracts that are Non-callable Fannie Mae Benchmark Notes or Freddie Mac Reference Notes
<b>“Ten Year Agency”</b>	Offset Class DQ: Ten Year Agency Note Futures contracts that are Non-callable Fannie Mae Benchmark Notes or Freddie Mac Reference Notes

**APPENDIX B (continued)**

***FICC Eligible Products that are Treasuries -- by Offset Class***

FICC Offset Classes*	Description of Product	CME Offset Classes For Margin Rate Comparison
A          AA	FICC netting eligible Treasury securities with Remaining Maturity of: 1 day to 6 months +15 days.  FICC GCF Repo® products of the same Remaining Maturity as Offset Class A	N/A
B          BB	FICC netting eligible Treasury securities with Remaining Maturity of: 6 months + 16 days to 1 year + 15 days.  FICC GCF Repo products of the same Remaining Maturity as Offset Class B	1, 11
C          CC	FICC netting eligible Treasury securities with Remaining Maturity of: 1 year + 16 days to 2 years + 15 days.  FICC GCF Repo products of the same Remaining Maturity as Offset Class C	2, 12
D          DD	FICC netting eligible Treasury securities with Remaining Maturity of: 2 years + 16 days to 4 years + 15 days.  FICC GCF Repo products of the same	3, 4, 13, 14



	Remaining Maturity as Offset Class D	
E	FICC netting eligible Treasury securities with Remaining Maturity of: 4 years + 16 days to 7 years + 15 days.	5, 6, 7, 15, 16, 17
EE	FICC GCF Repo products of the same Remaining Maturity as Offset Class E	
F	FICC netting eligible Treasury securities with Remaining Maturity of: 7 years + 16 days to 15 years + 15 days.	8, 9, 10, 18, 19, 20
FF	FICC GCF Repo products of the same Remaining Maturity as Offset Class F	
G	FICC netting eligible Treasury securities with Remaining Maturity of: 15 years + 16 days or greater	N/A
GG	FICC GCF Repo products of the same Remaining Maturity as Offset Class G	

\*Each FICC Offset Class includes residual positions in the corresponding products that may result from cash (buy-sell) trades, repurchase and reverse repurchase agreements, when-issued trading and auction awards. The residual positions may consist of current-day and/or forward settling trades. Products that may fall within the above remaining-maturity ranges but are nonetheless **excluded** from cross-margining with CME pursuant to this Agreement are **STRIPS**.

## APPENDIX B (continued)

### *FICC Eligible Products that are Agencies-- by Offset Class*

FICC Offset Classes*	Description of Product
“Five Year Agency”	<p>Offset Class e: FICC netting eligible securities (Agency Notes) with Remaining Maturity of: 4 years + 16 days to 5 years + 15 days.</p> <p>Offset Class ee: FICC GCF Repo products of the same Remaining Maturity as Offset Class e</p>
“Ten Year Agency”	<p>Offset Class f: FICC netting eligible securities (Agency Notes and Bonds) with Remaining Maturity of: 7 years +16 days to 10 years + 15 days.</p> <p>Offset Class ff: FICC GCF Repo products of the same Remaining Maturity as Offset Class f</p>

\*Each FICC Offset Class includes residual positions in the corresponding products that may result from cash (buy-sell) trades, repurchase and reverse repurchase agreements, when-issued trading and auction awards. The residual positions may consist of current-day and/or forward settling trades. Products that may fall within the above remaining-maturity ranges but are nonetheless **excluded** from cross-margining with CME pursuant to this Agreement are **STRIPS**.

## APPENDIX C1

### ***CME CALCULATION PROCESS TO CONVERT EURODOLLAR FUTURES AND OPTIONS INTO TREASURY CASH EQUIVALENTS AND TO DETERMINE THE APPLICABLE CME OFFSET CLASSES***

1. CME shall convert all futures and options positions to delta equivalents. The delta equivalent position of a futures contract position is the number of contracts in that position. CME shall convert all options to delta equivalents using each option's SPAN delta. The delta equivalent of an options position is obtained by multiplying the number of contracts underlying the options positions by the SPAN delta value of that options position. The SPAN delta value is a probability-weighted delta value. The SPAN delta value used in the calculation process of this Appendix shall be calculated in the same manner that CME uses in CME's internal spreading processes.
2. CME shall net the delta equivalents such that the net delta equivalents of each quarterly contract expiration are all on the same side of the market, i.e., all long or all short. CME will combine delta equivalents into composite strips. CME shall then calculate the Figure-of-Merit of each strip. A Conforming Strip shall be a strip whose Figure-of-Merit is greater than or equal to the Critical Value. A Non-Conforming Strip shall be a strip whose Figure-of-Merit is less than the Critical Value. The Rolling Year (RY) of the strip is the rolling year of the most long-dated contract in the strip. Rolling years range from 1 to 10.
3. The Critical Value is an amount to be agreed upon by both parties. As market conditions warrant, the Critical Value may be changed from time to time by mutual consent of CME and FICC.
4. The Figure-of-Merit is:

$$\text{FOM} = \left[ \frac{2}{N(D+1)} \right] \times \sum_{i=1}^D n_i q_i$$

where FOM is the Figure-of-Merit, N is the total number of delta equivalents in the strip, D is the depth of the strip, n is the number of delta equivalents in the ith expiry month, and q is the serial number of the ith expiry quarter (q ranges from 1 to a maximum of 40). The depth of a strip is the serial number of the expiry quarter of the most-deferred contract in the strip. The Treasury Equivalent (TE) of the jth long strip is:

$$\text{TE}_j = (\$1,000,000 \times 0.25 \times N) / \text{RY}_j$$

## APPENDIX C1 (Continued)

### *Example of Figure-of-Merit Calculations*

Summary:

Quantity	Strip 1	Strip 2
TE, Treasury Equivalent	\$10MM 2-Year	\$10MM 2-Year
N, Number of Delta Equivalents	80	80
D, Depth	8	8
FOM	.99	.49
Status (assuming a .90 critical value)	Conforming	Non-Conforming
Offset Class	2	12

Details:

Expiry	Quarter Serial No.	Contents	Net Delta Eqv.	Delta X Quarter
DEC 00	1	20 DEC 00	20.0	20.0
MAR 01	2		0.0	0.0
JUN 01	3	Futures: 5 JUN 01 Options: 11 JUN 01, (DELTA= .5), 4 JUN01 (DELTA=.25)	11.5	34.5
SEP 01	4	10 SEP 01	10.0	40.0
DEC 01	5	Futures: 8 DEC 01 Options: 1 DEC 01, (DELTA= .5)	8.5	42.5
MAR 02	6		0.0	0.0
JUN 02	7	20 JUN 02	20.0	140.0
SEP 02	8	10 SEP 02	<u>10.0</u>	<u>80.0</u>
		TOTAL	80.0	357.0

$\text{FOM} = [(8+1) \times 2/(80)] \times 357.0 = 0.992$
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## APPENDIX C1 (Continued)

### *Example of Figure-of-Merit Calculations*

Summary:

Quantity	Strip 1	Strip 2
TE, Treasury Equivalent	\$10MM 2-Year	\$10MM 2-Year
N, Number of Delta Equivalents	80	80
D, Depth	8	8
FOM	.99	.49
Status	Conforming	Non-Conforming
Offset Class	2	12

Details:

Expiry	Quarter Serial No.	Contents	Net Delta Eqv.	Delta X Quarter
DEC 00	1	40 DEC 00	40	40.0
MAR 01	2	20 MAR 01	20	40.0
JUN 01	3	10 JUN 01	10	30.0
SEP 01	4		0	0.0
DEC 01	5	5 DEC 01	5	25.0
MAR 02	6		0	0.0
JUN 02	7		0	0.0
SEP 02	8	5 SEP 02	5	40.0
		TOTAL	80.0	175.0

$\text{FOM} = [(8+1) \times 2/(80)] \times 175.0 = 0.486$
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## APPENDIX C2

### Conversion of Futures Contracts to Treasury Equivalents

CME and FICC shall consider cross margining certain futures contracts and options on those futures contracts against certain offsetting cash Treasury products. Contract eligibility is specified in Appendix B. To facilitate cross margining with FICC, CME shall convert CME's residual futures and options positions to Treasury Equivalents according to the methods described in this Appendix. Each residual position may consist of one and only one eligible futures contract type and options on that futures contract type. For purposes of this Agreement, futures contracts of a certain type have the same specifications for deliverable instruments, quantity, and exchange, but may vary in their specified delivery months.

The Treasury Equivalent (TE) of a residual futures and/or options position shall be computed according to the following formula:

where

$$TE = TNCE \times NSC \times S \times C$$

TNCE = Total number of contract equivalents.

NSC = The contract size of the underlying futures contract type, in US dollars.

S = Settlement price of the underlying futures contract, expressed as a decimal.

C = Conversion factor.

To determine the TNCE, CME shall use CME's standard and customary procedures for netting and for converting options into delta equivalents. Delta equivalents with respect to futures contracts shall be equal to the number of contracts. Delta equivalents with respect to options contracts shall be equal to the product of the option delta and the number of underlying contracts. The contract size, as specified by CME, shall be the standard contract size. The settlement price shall be the settlement price of the futures contract expiring in the nearest active delivery month. The conversion factor used upon the implementation of the cross-margining program shall be one (1). From time to time, CME and FICC may change the conversion factor by mutual agreement.

## **APPENDIX D**

### **FIXED INCOME CLEARING CORPORATION/ CHICAGO MERCANTILE EXCHANGE INC.**

#### **CROSS-MARGINING PARTICIPANT AGREEMENT (COMMON MEMBER)**

The undersigned ("Member") is a Government Securities Division netting member of Fixed Income Clearing Corporation ("FICC") and a clearing member of Chicago Mercantile Exchange Inc. ("CME"). The term "Clearing Organization" means either FICC or CME. Member hereby elects to become a Cross-Margining Participant in the Cross-Margining Arrangement between FICC and CME.

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Member agrees to be bound by the FICC Rules and the CME Rules applicable to Clearing Members and Cross-Margining Participants and by the provisions of the Cross-Margining Agreement between FICC and CME (the "Cross-Margining Agreement"), as any of the foregoing may be in effect from time to time.

Without limiting the generality of the foregoing, Member agrees that all of its positions, margin deposits and other property in the possession or subject to the control of FICC shall be subject to the security interest and right of setoff of FICC as set forth in FICC's Rules and in the Cross-Margining Agreement, and Member agrees that all of its positions, margin deposits and other property in the possession or subject to the control of CME shall be subject to the security interest and right of setoff of CME as set forth in CME's Rules and in the Cross-Margining Agreement.

Without limiting the generality of the foregoing, Member agrees that each of FICC and CME has a security interest in the Aggregate Net Surplus as security for the Reimbursement Obligation and the Maximization Reimbursement Obligation, and has all rights of a secured creditor under the New York Uniform Commercial Code. Member unconditionally promises immediate payment of any Reimbursement Obligation or Maximization Reimbursement Obligation to a Clearing Organization as set forth in the Cross-Margining Agreement. Member further agrees that, if a Clearing Organization has declared a Default Event with respect to Member, then the other Clearing Organization may declare the Member to be in default under its Rules (such default also shall be considered a "Default Event").

Member agrees that Clearing Data (as hereinafter defined) regarding the Member may be disclosed by FICC to CME and by CME to FICC. Clearing Data means transactions and other data that is received by FICC or CME in its clearance and/or settlement processes, and such data, reports or summaries thereof which may be produced as a result of processing such data, including data regarding Member's positions, margin requirements and deposits.

Neither FICC nor CME guarantees to Member that the calculation of the Cross-Margining Reduction pursuant to the Cross-Margining Agreement will yield any, or the highest possible, Cross-Margining Reduction.

Member represents and warrants to and for the benefit of the Clearing Organizations that: (i) it has full power and authority to execute and deliver this agreement and to perform its obligations hereunder; (ii) its execution and delivery of this agreement and the performance of its obligations hereunder have been duly authorized by all requisite action; (iii) all authorizations of and exemptions, actions, approvals and consents by, and all notices to or filings with, any governmental or other authority or other persons that are necessary to enable it to execute and deliver this agreement and to perform its obligations hereunder have been obtained or made and are in full force and effect, and it has complied with all of the conditions thereof; (iv) this agreement has been duly executed and delivered by it; (v) this agreement is a legal, valid, and binding obligation on its part, enforceable against it in accordance with its terms; and (vi) its execution, delivery and performance of this agreement do not violate or conflict with any law, regulation, rule of self-regulatory organization or judicial or governmental order or decree to which it is subject, any provision of its constitutional or governing documents, or any term of any agreement or instrument to which it is a party, or by which its property or assets is bound or affected.

Without limiting any provision of FICC's Rules, CME's Rules or any other agreement between Member and FICC or CME, any transfer by the Member of any rights it may have in the Aggregate Net Surplus (or any component thereof) shall be null and void and, in any event, subject to the prior payment in full of all Reimbursement Obligations and Maximization Reimbursement Obligations under the Cross-Margining Agreement.

This Agreement shall be effective, when accepted by both FICC and CME. This Agreement may be terminated by the Member upon two Business Days' notice to FICC and CME and such termination shall be effective upon written acknowledgement by both FICC and CME. Either FICC or CME may terminate this agreement immediately upon notice to the Member. Notwithstanding the previous two sentences, the Member's obligations under this Agreement and the Cross-Margining Agreement shall survive the termination of this Agreement. Capitalized terms used in this Agreement that are undefined shall have the meanings given to them in the Cross-Margining Agreement.

This Agreement may be executed in counterparts, each of which shall be deemed to be an original, and all which taken together shall be deemed one and the same agreement.

This Agreement shall be governed by and construed in accordance with the laws of the State of New York .

**Member**

**Name of Member:** \_\_\_\_\_

**By:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Accepted By:**



**Fixed Income Clearing Corporation**

**By:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Chicago Mercantile Exchange Inc.**

**By:** \_\_\_\_\_

**Print Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Date:** \_\_\_\_\_

This Agreement is dated as of \_\_\_\_\_.  
[To be filled in upon acceptance of FICC and CME.]

## APPENDIX E

### **FIXED INCOME CLEARING CORPORATION/ CHICAGO MERCANTILE EXCHANGE INC.**

#### **CROSS-MARGINING PARTICIPANT AGREEMENT (AFFILIATED MEMBERS)**

The undersigned "FICC Member" is a Government Securities Division netting member of Fixed Income Clearing Corporation ("FICC"). The undersigned "CME Member" is a clearing member of Chicago Mercantile Exchange Inc. ("CME"). The term "Clearing Organization" means either FICC or CME. FICC Member hereby elects to become a Cross-Margining Participant of FICC, and CME Member hereby elects to become a Cross-Margining Participant of CME, for purposes of the Cross-Margining Arrangement between FICC and CME.

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, FICC Member agrees to be bound by the FICC Rules applicable to Clearing Members and Cross-Margining Participants; CME Member agrees to be bound by the CME Rules applicable to Clearing Members and Cross-Margining Participants; and FICC Member and CME Member both agree to be bound by the provisions of the Cross-Margining Agreement between FICC and CME (the "Cross-Margining Agreement"), as any of the foregoing may be in effect from time to time.

Without limiting the generality of the foregoing, FICC Member agrees that all of its positions, margin deposits and other property in the possession or subject to the control of FICC shall be subject to the security interest and right of setoff of FICC as set forth in the FICC Rules and the Cross-Margining Agreement, and CME Member agrees that all of its positions, margin deposits and other property in the possession or subject to the control of CME shall be subject to the security interest and right of setoff of CME as set forth in CME's Rules and the Cross-Margining Agreement.

Without limiting the generality of the foregoing, FICC Member and CME Member agree that each of FICC and CME has a security interest in the Aggregate Net Surplus as security for the Reimbursement Obligation and the Maximization Reimbursement Obligation, and has all rights of a secured creditor under the New York Uniform Commercial Code. FICC Member and CME Member each unconditionally promises immediate payment of any Reimbursement Obligation and Maximization Reimbursement Obligation to a Clearing Organization as set forth in the Cross-Margining Agreement. FICC Member and CME Member further agree that, (i) if FICC has declared a Default Event with respect to FICC Member, then CME may declare CME Member to be in default under its Rules (such default also shall be considered a "Default Event") and (ii) if CME has declared a Default Event with respect to CME Member, then FICC may declare FICC Member to be in default under its Rules (such default also shall be considered a "Default Event").

FICC Member and CME Member agree that Clearing Data may be disclosed by FICC to CME and by CME to FICC. Clearing Data means transactions and other data that is received by FICC or CME in its clearance and/or settlement processes, and such data, reports or summaries thereof, which may be produced as a result of processing such data, including data regarding a Member's positions, margin requirements and deposits.

Neither FICC nor CME guarantees to FICC Member or CME Member that the calculation of the methodology used to determine the Cross-Margin Reduction pursuant to the Cross-Margining Agreement will yield any, or the highest possible, Cross-Margining Reduction for either FICC Member or CME Member.

Each of FICC Member and CME Member represents and warrants to and for the benefit of the Clearing Organizations that: (i) it has full power and authority to execute and deliver this agreement and to perform its obligations hereunder; (ii) its execution and delivery of this agreement and the performance of its obligations hereunder have been duly authorized by all requisite action; (iii) all authorizations of and exemptions, actions, approvals and consents by, and all notices to or filings with, any governmental or other authority or other persons that are necessary to enable it to execute and deliver this agreement and to perform its obligations hereunder have been obtained or made and are in full force and effect, and it has complied with all of the conditions thereof; (iv) this agreement has been duly executed and delivered by it; (v) this agreement is a legal, valid, and binding obligation on its part, enforceable against it in accordance with its terms; and (vi) its execution, delivery and performance of this agreement do not violate or conflict with any law, regulation, rule of self-regulatory organization or judicial or governmental order or decree to which it is subject, any provision of its constitutional or governing documents, or any term of any agreement or instrument to which it is a party, or by which its property or assets is bound or affected.

Each of FICC Member and CME Member further represents and warrants to FICC and CME that they are Affiliates of one another as defined in the Cross-Margining Agreement. FICC Member and CME Member acknowledge and agree that they will be treated as Cross-Margining Affiliates for purposes of the Cross-Margining Arrangement and that, as a result, a default by FICC Member to FICC may result in a loss to CME Member, and a default by CME Member to CME may result in a loss to FICC Member.

Without limiting any provision of FICC's Rules, CME's Rules or any other agreement between FICC Member and/or CME Member and FICC or CME, any transfer by the FICC Member or the CME Member of any rights it may have in the Aggregate Net Surplus (or any component thereof) shall be null and void and, in any event, subject to the prior payment in full of all Reimbursement Obligations and Maximization Reimbursement Obligations under the Cross-Margining Agreement.

This Agreement shall be effective, when accepted by both FICC and CME. This Agreement may be terminated by FICC Member or CME Member upon two Business Days' notice to FICC and CME and such termination shall be effective upon written acknowledgement by both FICC and CME. Either FICC or CME may terminate this Agreement immediately upon notice to FICC Member and CME Member. Notwithstanding the previous two sentences, the FICC Member's and the CME Member's obligations under this Agreement and the Cross-Margining Agreement shall survive the termination of this agreement. Capitalized terms used in this agreement that are undefined shall have the meanings given to them in the Cross-Margining Agreement.

This Agreement may be executed in counterparts, each of which shall be deemed to be an original, and all of which taken together shall be deemed one and the same agreement.

This Agreement shall be governed by and construed in accordance with the laws of the State of New York.

**FICC Member**

Name of Member: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Accepted By:

**Fixed Income Clearing Corporation**

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**CME Member**

Name of Member: \_\_\_\_\_

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

**Chicago Mercantile Exchange Inc.**

By: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

This Agreement is dated as of \_\_\_\_\_.

[To be filled in upon acceptance of CME and FICC.]

## APPENDIX F

### Methodology for Allocation of Margin Based on Order of Increasing Disallowances

#### Step 1: FICC's Residual Positions, Residual Margin and Applicable Residual Margin

<u>Offset Class</u>	<u>Position</u>	<u>FICC Rate</u>	<u>FICC Residual Margin</u>	<u>As if CME Rate</u>	<u>As if CME Margin</u>
C	\$1,000,000 L	0.30%	\$ 3,000	0.30%	\$ 3,000
D	\$2,000,000 L	0.50%	10,000	0.50%	10,000
B	<u>\$3,000,000 L</u>	0.15%	<u>4,500</u>	0.15%	<u>4,500</u>
	\$6,000,000		\$17,500		\$17,500

<u>Lower Rate</u>	<u>App. Resid. Margin</u>
0.30%	3,000
0.50%	10,000
0.15%	<u>4,500</u>
	\$17,500

#### Step 2: COs' Residual Positions, Residual Margin and Applicable Residual Margin

<u>Offset Class</u>	<u>Position</u>	<u>CO Rate</u>	<u>CO Residual Margin</u>
CME 10	(\$5,000,000) S	0.40%	\$(20,000)
CME 02	(\$3,000,000) S	0.50%	(15,000)
CO 01	<u>(\$3,000,000) S</u>	0.20%	<u>(6,000)</u>
	(\$11,000,000)		\$(41,000)

<u>FICC Offset Class</u>	<u>As if FICC Rate</u>	<u>As if FICC Margin</u>	<u>Lower Rate</u>	<u>App. Resid. Margin</u>
F	0.935%	<u>\$(46,750)</u>	0.40%	<u>\$(20,000)</u>
C	0.30%	<u>(9,000)</u>	0.30%	<u>(9,000)</u>
B	0.15%	<u>(4,500)</u>	0.15%	<u>(4,500)</u>
		<u>\$(60,250)</u>		<u>\$(33,500)</u>

**Step 3: Allocation Based on Increasing Disallowance Factors (1)**

(1) Factors are not actual, but are hypothetical for purposes of this illustration. In this example, there is no minimum margin factor.

Pairs	Disallowance
FICC B - CO 01	20%
FICC C – CME 02	25%
FICC D – CME 02	30%
FICC D – CME 10	40%
FICC C – CO 01	50%
FICC C – CME 10	50%
FICC B – CME 10	50%
FICC B – CME 02	50%
FICC D – CME 10	50%

**Step 4: FICC Computes Applicable Residual Margin Amount Used for Each Pair of Offset Classes Based on Allocation Using the Lowest Disallowance Factors First**

**Round #1**

20%			
(FICC B – CO 01) App. Resid. Margin			
Offset Class	App. Resid. Margin	Used	Remaining
FICC C	3,000		3,000
FICC D	10,000		10,000
FICC B	4,500	(4,500)	0
CME 10	(20,000)		(20,000)
CME 02	(9,000)		(9,000)
CO 01	(4,500)	4,500	0

**Round #2**

25%			
(FICC C – CME 02) App. Resid. Margin			
Offset Class	App. Resid. Margin Remaining	Used	App. Resid. Margin Remaining
FICC C	3,000	(3,000)	0
FICC D	10,000		10,000
FICC B	0		0
CME 10	(20,000)		(20,000)
CME 02	(9,000)	3,000	(6,000)
CO 01	0		0

**Round #3**

30%			
Offset Class	App. Resid. Margin Remaining	(FICC D – CME 02) Used	App. Resid. Margin Remaining
FICC C	0		0
FICC D	10,000	(6,000)	4,000
FICC B	0		0
CME 10	(20,000)		(20,000)
CME 02	6,000	6,000	0
CO 01	0		0

-----

### Round #4

40%			
Offset Class	App. Resid. Margin Remaining	(FICC D – CME 10) Used	App. Resid. Margin Remaining
FICC C	0		0
FICC D	4,000	(4,000)	0
FICC B	0		0
CME 10	(20,000)	4,000	(16,000)
CME 02	0		0
CO 01	0		0

### Step 5: Summary of Information

Dis. Categ.	App. Resid. Marg. Used	Amount Disallowed	Margin Offset	Clearing Org.
20%	4,500	900	3,600	CO
25%	3,000	750	2,250	CME
30%	6,000	1,800	4,200	CME
40%	4,000	1,600	2,400	CME
50%	-	-	-	N/A
	17,500	5,050	12,450	

## Summary of Results

	<u>FICC</u>	<u>CME 10</u>	<u>CME 02</u>	<u>CO 01</u>	<u>Total COs</u>
(a) Margin Submitted	\$17,500	20,000	15,000	6,000	41,000
Applicable Resid. Marg. Available	17,500	20,000	9,000	4,500	33,500
(b) Margin Used (in Offset (in CME or CO terms)	17,500	4,000	15,000	6,000	25,000
(c) Margin Unused	-	16,000	-	-	16,000
Margin Offset	12,450	2,400	6,450	3,600	12,450
(d) Margin Disallowed	5,050	1,600	8,550	2,400	12,550
(e) Cash Equivalent Used (%)	100%	20%	100%	100%	
Cash Equivalent Used (Amt.)	6,000,000	1,000,000	3,000,000	3,000,000	7,000,000



**APPENDIX G**  
**COMPUTATION OF CROSS-MARGINING REDUCTION**

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**Step 1**      **INITIAL MARGIN REQUIREMENT (PRE CROSS-MARGINING).**

CME Residual Position	CME Margin Rate	CME Long Residual Margin Amount in the Absence of Cross-Margining
<i>Long</i> - 600 Eurodollar contracts expiring in December 2004	\$500 per contract	\$300,000 (600 contracts* \$500)

CO A Residual Position	CO A Margin Rate	CO A Long Residual Margin Amount in the Absence of Cross-Margining
<i>Long</i> – 100 T-Note contracts expiring in December 2004 - 5-year 6% Notes)	\$700 per contract	\$70,000 (100 contracts* \$700)

**Assumption:**

FICC Residual Position	FICC Margin Rate	FICC Short Residual Margin Amount in the Absence of Cross-Margining
<i>Short</i> \$10,000,000 – Class B	0.625%	\$62,500

**APPENDIX G (Continued)**

**COMPUTATION OF CROSS-MARGINING REDUCTION**

**Step 2****CONVERT THE RESIDUAL FUTURES POSITION INTO A CASH EQUIVALENT POSITION.**

CME Residual Position	Settlement Price	Conversion	Cash Equivalent Position
600 Eurodollar contracts expiring in December 2004	95	(Number of contracts) X (notional value) X (1/4) X (1/years to expiration)	\$30,000,000

CO A Residual Position	Settlement Price	Conversion	Cash Equivalent Position
100 T-Note contracts expiring in December 2004 - 5-year 6% Notes)	100	(Settlement price) X (number of contracts) x (contract size) x (conversion factor)	\$10,000,000

**Step 3****CME REPORTS DATA TO FICC**

CME reports:

- FICC Account ID..... 9738
- Source Account ID..... XXYY
- Offset class.....CME 05
- Side of the Market..... Long
- Scan Range.....\$500
- Scan Risk.....\$503
- Residual Number of Deltas ..... 300
- Cash Equivalent .....\$30,000,000
- Residual Margin Amount .....\$300,000

## APPENDIX G (Continued)

### COMPUTATION OF CROSS-MARGINING REDUCTION

**Step 4:**

**FICC CALCULATES THE EFFECTIVE MARGIN RATE AND DERIVES THE APPLICABLE RESIDUAL MARGIN AMOUNT USING THE LOWER OF FICC'S OR CME'S MARGIN RATE.**

Cash-Equivalent Position	CME Effective Margin Rate	FICC Internal Margin Rate	Applicable Long Residual Margin Amount
\$30,000,000 in Offset class CME05	1.0%	0.625%	$\$187,500 =$ (Cash Equivalent Position) X (Lower Margin Rate) $(\$30,000,000) X (0.625\%)$

**CALCULATE THE APPLICABLE RESIDUAL LONG MARGIN AMOUNT USING THE LOWER OF FICC'S OR CO A MARGIN RATE.**

Cash-Equivalent Position	CO A Effective Margin Rate	FICC Internal Margin Rate	Applicable Long Residual Margin Amount
\$10,000,000 in Offset class C	0.70%	0.625%	$\$62,500 =$ (Cash Equivalent Position) X (Lower Margin Rate) $(\$10,000,000) X (0.625\%)$

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## APPENDIX G (Continued)

### COMPUTATION OF CROSS-MARGINING REDUCTION

#### **STEP 5**

**CALCULATE THE PROPORTIONAL MARGIN ALLOCATION BASED ON APPLICABLE RESIDUAL MARGIN AMOUNT AVAILABLE TO FICC.**

*NOTE: ALLOCATION BY PRORATION IS ONLY NECESSARY WHEN FICC DOES NOT HAVE SUFFICIENT MARGIN AVAILABLE TO FULLY ABSORB ALL MARGIN PRESENTED TO IT.*

- Potential Offsets:
  - FICC Offset Class Available: B (Short)
  - CME Offset Class Available: 5 (Long)
  - CO A Offset Class Available: C (Long)
  
- Options for Offset in Priority Order
  - FICC B vs. CME 5.....30% disallowance
  - FICC B vs. CO A C.....30% disallowance
  
- Since the disallowance factors are equal, the positions presented to FICC by both CME and CO-A are equally correlated.
  
- FICC's position is prorated based on the amounts computed by FICC as "Applicable".
  
- This hypothetical example assumes there is no minimum margin factor.

Total Applicable Residual Margin Amount	CME Applicable Residual Margin Amount	CO A Applicable Residual Margin Amount	Proportion Allocable to CME	Proportion Allocable to CO A
\$250,000 : all in the 30% category	\$187,500	\$62,500	75%	25%

#### **Step 6**

**CALCULATE THE FICC RESIDUAL POSITION AND MARGIN AMOUNT ALLOCABLE TO CME AND CO A**

FICC Residual Position	FICC's Internal Margin Rate	FICC Residual Margin Amount	Residual Margin Amount Allocable to <b>CME</b> (at 75%)	FICC Residual Position Allocable to <b>CME</b> (at 75%)
Short \$10,000,000	0.625%	Short \$62,500	\$46,875	\$7,500,000

FICC Residual Position	FICC's Internal Margin Rate	FICC Residual Margin Amount	Margin Amount Allocable to <b>CO A</b> (at 25%)	FICC Residual Position Allocable to <b>CO A</b> (at 25%)
Short \$10,000,000	0.625%	Short \$62,500	\$15,625	2,500,000

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**STEP 7 FICC REPORTS RESULTS TO CME**

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**Repeated Information from the inbound file:**

- FICC Account ID..... 9738
- Source Account ID..... XXYX
- Offset class.....CME 05
- Price Scan Range..... \$500
- Scan Risk.....\$503
- Side of the Market..... Long
- Residual Number of Deltas ..... 300
- Cash Equivalent .....\$30,000,000
- Residual Margin Amount .....\$300,000

**FICC Class ID :**

- Residual Margin Used..... 75,000
- Residual Margin Unused..... 225,000
- Cash Equivalent Used.....7,500,000
- Cash Equivalent Unused..... 22,500,000
- Margin Disallowed.....42,187
- Margin Reduction..... 32,813

**Errors (if applicable):**

- Error Code
- Error Reason

**FICC Starting Position:**

- FICC Class ID.....B
- Side of the Market.....Short
- Cash Equivalent.....\$10,000,000

**Spread Formed:**

- FICC Class ID.....B
- Residual Margin Used..... 75,000
- Cash Equivalent Used.....7,500,000
- Margin Disallowed.....42,187
- Margin Reduction..... 32,813

## APPENDIX H

### *Data Elements to Be Provided by CME and Returned by FICC*

#### Cross Margining Input File – Data Elements

##### Header

1. FICC Account ID
2. Source Account ID
3. Source Class ID
4. Scan Range
5. Scan Risk
6. Side of the Market
7. Residual Number of Deltas
8. Cash Equivalent
9. Residual Margin Amount

##### Trailer

#### Cross Margining Output File– Data Elements:

##### Header

1. FICC Account ID
2. Source Account ID
3. Source Class ID
4. Side of the Market
5. Residual Number of Deltas
6. Residual Margin Amount
7. Residual Margin Used
8. Residual Margin Unused
9. Cash Equivalent Used
10. Cash Equivalent Unused
11. Margin Disallowed
12. Margin Reduction

##### Spread Formed

1. FICC Class ID
2. Residual Margin Used
3. Cash Equivalent Used
4. Margin Disallowed
5. Margin Reduction

##### FICC Positions

6. FICC Class ID
7. Side of the Market
8. Cash Equivalent

##### Error Codes and Reasons

1. Error Code
2. Error Reason

##### Trailer

## APPENDIX H (continued)

### Approximate Time Frames

Transmission	Approximate Time
CME -- Input File	11:00 p.m. (NY)
FICC -- Output File	1:00 a.m. (NY)

## APPENDIX I

### *Loss Sharing Process*

1. Determine the Cross Margin Gain (CMG) or Cross Margin Loss (CML) (isolating the side of the market that was offset) in each Offset Class (without regard to any Available Margin) for each Clearing Organization (CO), on a pro rata basis in proportion to Applicable Residual Margin Amount Used versus the total Applicable Residual Margin Amount in each such Offset Class.

When multiple COs are cross-margining with FICC, all of the calculations in this Appendix J will be applied to each FICC - CO arrangement, in accordance with each CO's pro rata share computed for each Offset Class.

The party who liquidates to a CMG or smaller CML is the "better off" party; the other party is the "worse-off" party. This designation does not change during or as a result of the loss-sharing process.

2. If neither FICC nor CME has a Cross Margin Loss, no payment will be due to either Clearing Organization. If FICC and CME each has a Cross Margin Loss that exceeds the Cross Margin Reduction, or each has an equal Cross Margin Loss, such Guaranties will offset one another and no Preliminary Payment Obligation is due. However, there may, nevertheless, be a Maximization Payment due under Section 8C of the Agreement.

3. Determine the "Preliminary Payment Obligation<sup>1</sup>" of the better off party to the worse-off party as the **lowest** of:

- (i) The CML on all Used Positions of the worse-off party;
- (ii) The higher of (a) the Base Amount of the Guaranty or (b) the CMG of the better-off party, if any;
- (iii) The amount required to equalize the two parties' Cross Margin Gains (Losses);
- (iv) The amount by which the Base Amount of the Guaranty exceeds the better-off party's CML if *both* parties have CMLs.

Payment in immediately available funds to be made within 3 Business Days following the calculation of the CMG/CML.

4. Determine whether an Adjustment Payment needs to be made, reflecting a return from the worse off party to the better off party of all or a portion of the Preliminary Payment Obligation. The amount of the Adjustment Payment will be the **lower** of :

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<sup>1</sup> Exclusively as it relates to the independent liquidation of all Used Positions in cross-margining, and without regard to any Margin.



(i) The Preliminary Payment Obligation (as determined in Step 3 above), or

(ii) The Aggregate Net Surplus (taking into account all Available Margin) of the worse off party.

Adjustment Payment to be made in immediately available funds within 3 Business Days following the calculation of the Aggregate Net Surplus (Aggregate Net Loss) amounts.

5. If, after satisfying all losses, including those unrelated to the cross-margining arrangement, one party has a remaining Aggregate Net Surplus, such Aggregate Net Surplus would be made available to the other party, subject to the priorities set forth in this Agreement, in the form a Maximization Payment, if the other party has an Aggregate Net Loss.

## APPENDIX J

### *Examples of Loss Sharing Process*

#### Assumptions Related to Applicable Residual Margin Amounts

Offset Class	Applicable Residual Margin Amounts			Applicable Residual Margin Amounts Used		
	<u>CO A</u>	<u>CO B</u>	<u>FICC</u>	<u>CO A</u>	<u>CO B</u>	<u>FICC</u>
2 Year	50,000,000 L	10,000,000 L	150,000,000 S	50,000,000 L	10,000,000 L	60,000,000 S

#### **Liquidation Results**

Offset Class	Gain/(Loss) on Residual Positions			Cross Margin Gain/ (Loss)		
	<u>CO A</u>	<u>CO B</u>	<u>FICC</u>	<u>CO A</u>	<u>CO B</u>	<u>FICC</u>
2 Year	(70,000,000)	(5,000,000)	(30,000,000)	(70,000,000)	(5,000,000)	(12,000,000)

#### **Concepts Illustrated:**

With multilateral cross margining, eligible gain/loss is proportional. (i.e. FICC allocates 40% or \$60 / \$150 to participating COs.) Accordingly, 40% of FICC's gain or loss in that Offset Class will be allocated to the participating CO. (i.e. 40% of \$30 million is \$12 million)

Cross Margin Gain / Cross Margin Loss is calculated without regard to Available Margin.

This example assumes no disallowance and no minimum margin requirements.

## APPENDIX J (Continued)

### Examples of Loss Sharing Process

**Step 1: Determine the Cross Margin Gains/Losses from Used Positions separately for each CO. in this Example CO A.**

Offset Class	Applicable Residual Margin Amounts		Applicable Residual Margin Amounts <b>Used</b>	
	CO A	FICC	CO A	FICC
2 Year	50,000,000 L	150,000,000 S	50,000,000 L	50,000,000 S (1/3 rd allocated)

### **Liquidation Results**

Offset Class	Gain/(Loss) on Residual Positions		Cross Margin Gain/(Loss)	
	CO A	FICC	CO A	FICC
2 Year	(70,000,000)	(30,000,000)	(70,000,000)	(10,000,000)  (1/3 rd allocated)

#### Concepts Illustrated:

Cross Margin Gain / Cross Margin Loss is proportional to the percentage of the Applicable Residual Margin Used.

Cross Margin Gain/Cross Margin Loss is calculated without regard to Available Margin.

This example assumes no disallowance and no minimum margin requirements.

If neither FICC nor CME has a Cross Margin Loss, no payment will be due to either Clearing Organization. If FICC and CME each has a Cross Margin Loss that exceeds the Cross-Margining Reduction, or each has an equal Cross Margin Loss, such guaranties shall offset one another and no Preliminary Payment Obligation to either Clearing Organization is due. Otherwise, proceed to Step 2.

## APPENDIX J (Continued)

### Examples of Loss Sharing Process

#### **Step 2: Determine the Preliminary Payment Obligation**

Offset Class	Applicable Residual Margin Amounts		Applicable Residual Margin Amounts <b>Used</b>		Cross Margin Reduction	
	CO A	FICC	CO A	FICC	CO A	FICC
2 Year	50,000,000 L	150,000,000 S	50,000,000 L	50,000,000 S	50,000,000 L	50,000,000 S

#### **Liquidation Results**

Offset Class	Gain/(Loss) on Residual Positions		Cross Margin Gain/(Loss)	
	CO A	FICC	CO A	FICC
2 Year	(70,000,000)	(30,000,000)	(70,000,000)	(10,000,000)

#### **The Preliminary Payment Obligation is determined based on the following formula:**

Calculate the **lowest** of:

(i) Cross Margin Loss of the “worse-off” party	70,000,000
(ii) Higher of: (a) the Base Amount of the Guaranty or, (b) any Cross Margin Gain of the “better-off” party.	50 mil not applicable
(iii) Amount required to equalize the parties’ Cross Margin Gains (Losses).	50,000,000
(iv) Amount by which the Base Amount of the Guaranty exceeds the better off party’s Cross Margin Loss if both parties have Cross Margin Losses.	30,000,000
	40,000,000

**Result: Preliminary Payment Obligation is calculated and made based on the lowest amount computed above, in this case \$30,000,000.**

**APPENDIX J (Continued)**  
**Examples of Loss Sharing Process**

**Step 3: Determine whether an Adjustment Payment needs to be made where the worse off party returns all or part of the Preliminary Payment Obligation.**

Offset Class	Applicable Residual Margin Amounts		Applicable Residual Margin Amounts Used		Cross Margin Reduction	
	CO A	FICC	CO A	FICC	CO A	FICC
2 Year	50,000,000 L	150,000,000 S	50,000,000 L	50,000,000 S	50,000,000 L	50,000,000 S

**Liquidation Results**

Offset Class	Gain/(Loss) on Residual Positions		Cross Margin Gain/(Loss)		Aggregate Net Overall Surplus/(Loss) Including All Available Margin	
	CO A	FICC	CO A	FICC	CO A	FICC
2 Year	(70,000,000)	(30,000,000)	(70,000,000)	(10,000,000)	(85,000,000)	50,000,000

**Determine the Adjustment Payment as the lesser of the:**

Preliminary Payment Obligation (as determined in Step 2 above), or \$30,000,000  
Aggregate Net Surplus (taking into account all Available Margin) of the worse-off party. \$0

**Result: No Adjustment Payment is made because the worse off party does not have excess in other products.**

**APPENDIX J (Continued)**  
**Examples of Loss Sharing Process**

**Step 4: Maximization Payment**

Offset Class	Applicable Residual Margin Amounts		Applicable Residual Margin Amounts Used		Cross Margin Reduction	
	<u>CO A</u>	<u>FICC</u>	<u>CO A</u>	<u>FICC</u>	<u>CO A</u>	<u>FICC</u>
2 Year	50,000,000 L	150,000,000 S	50,000,000 L	50,000,000 S	50,000,000 L	50,000,000 S

**Liquidation Results**

Offset Class	Gain/(Loss) on Residual Positions		Cross Margin Gain/(Loss)		<u>Aggregate Net Overall Surplus/(Loss) Including All Available Margin</u>	
	<u>CO A</u>	<u>FICC</u>	<u>CO A</u>	<u>FICC</u>	<u>CO A</u>	<u>FICC</u>
2 Year	(70,000,000)	(30,000,000)	(70,000,000)	(10,000,000)	(85,000,000)	55,000,000
Preliminary Payment Obligation					<u>30,000,000</u>	<u>(30,000,000)</u>
Aggregate Overall Surplus / Loss					<u>(55,000,000)</u>	<u>25,000,000</u>

**Maximization Payment: FICC's \$25,000,000 is subject to a pro rata allocation amongst CME and the Other COs as more completely described in the Agreement.**

## APPENDIX K

### TIMING OF THE EFFECTIVENESS OF THE BASE AMOUNT OF THE GUARANTY

<b>Business Day for which Cross-Margining Reduction is calculated</b>	<b>Cross-Margining Reduction as Reported by FICC at 1:00 a.m.*</b>	<b>Base Amount of the Guaranty Equals:</b>
<u>Monday</u>	<u>\$10 million</u>	<u>On Tuesday at 1:00 a.m. = \$10 million</u> <u>On Tuesday at 11:00 a.m. = \$10 million</u>
<u>Tuesday</u>	<u>\$9 million</u>	<u>On Wednesday at 1:00 a.m. = \$10 million</u> <u>On Wednesday at 11:00 a.m. = \$9 million</u>
<u>Wednesday</u>	<u>\$9 million</u>	<u>On Thursday at 1:00 a.m. = \$9 million</u> <u>On Thursday at 11:00 a.m. = \$9 million</u>
<u>Thursday</u>	<u>\$7 million</u>	<u>On Friday at 1:00 a.m. = \$9 million</u> <u>On Friday at 11:00 a.m. = \$7 million</u>
<u>Friday</u>	<u>\$10 million</u>	<u>On Saturday at 1:00 a.m. = \$10 million</u> <u>On Monday at 11:00 a.m. = \$10 million</u>

\* All times are in New York time.