

SECURITIES AND EXCHANGE COMMISSION  
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August 15, 2017

Self-Regulatory Organizations; LCH SA; Notice of Filing of Proposed Rule Change Relating to Margin Framework and Default Fund Methodology for Options on Index Credit Default Swaps

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 (“Act”),<sup>1</sup> and Rule 19b-4 thereunder,<sup>2</sup> notice is hereby given that on August 1, 2017, Banque Centrale de Compensation, which conducts business under the name LCH SA (“LCH SA”), filed with the Securities and Exchange Commission (“Commission”) the proposed rule change described in Items I, II, and III below, which Items have been prepared primarily by LCH SA. The Commission is publishing this notice to solicit comments on the proposed rule change from interested persons.

I. Clearing Agency’s Statement of the Terms of Substance of the Proposed Rule Change

LCH SA is proposing to amend its (i) Reference Guide: CDS Margin Framework (“CDSClear Margin Framework” or “Framework”) and (ii) CDSClear Default Fund Methodology (“Default Fund Methodology”) to incorporate terms and to make conforming and clarifying changes to allow options on index credit default swaps (“CDS Options”) to be cleared by LCH SA.<sup>3</sup> A separate proposed rule change has been submitted concurrently (SR-LCH SA-2017-006) with respect to amendments to LCH SA’s rule book and other relevant procedures to incorporate terms and to make conforming and clarifying changes to allow options on index credit default swaps

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<sup>1</sup> 15 U.S.C. 78s(b)(1).

<sup>2</sup> 17 CFR 240.19b-4.

<sup>3</sup> All capitalized terms not defined herein have the same definition as the Framework or Default Fund Methodology, as applicable.

("CDS") to be cleared by LCH SA. The launch of clearing CDS Options will be contingent on LCH SA's receipt of all necessary regulatory approvals, including the approval by the Commission of the proposed rule change described herein and SR-LCH-SA-2017-006.

II. Clearing Agency's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

In its filing with the Commission, LCH SA included statements concerning the purpose of and basis for the proposed rule change and discussed any comments it received on the proposed rule change. The text of these statements may be examined at the places specified in Item IV below. LCH SA has prepared summaries, set forth in sections A, B, and C below, of the most significant aspects of these statements.

A. Clearing Agency's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

1. Purpose

In connection with the clearing of CDS Options, LCH SA proposes to modify its CDSClear Margin Framework and Default Fund Methodology to manage the risk arising from clearing CDS Options and to streamline the descriptions in the existing CDSClear Margin Framework and Default Fund Methodology to take into account CDS Options and improve the organization and clarity of the CDSClear Margin Framework and Default Fund Methodology.

(i). CDSClear Margin Framework

The CDSClear Margin Framework will be reorganized to include a new introductory section covering the overall new structure of the Framework, which will include a description of the CDSClear pricing methodology and margin methodologies for single-name CDS, index CDS, and CDS Options. The margin methodologies used to

calculate total initial margin will consist of seven components, *i.e.*, self-referencing margin, spread margin, short charge, wrong way risk margin, interest rate risk margin, recovery rate margin, and vega margin. In addition, the Framework will also cover liquidity margin to account for liquidation cost or potential losses as a result of concentrated or illiquid positions, credit event margin to account for the risk of recovery rate changes during the credit event processes, and variation margin to account for observed mark-to-market changes as additional margin charges. Finally, the methodology for FX rate adjustments that are necessary for US dollar denominated products cleared by LCH SA is described in relevant sections of the Framework.

a. Pricing Methodology

A new section on CDSClear pricing methodology is created as new Section 2 in the Framework to cover both CDS pricing (section 2.1) and CDS Options pricing (section 2.2). LCH SA does not propose any change to the methodology currently used to price CDS under Section 2.1 but because pricing is an input used by various margin components to calculate total initial margin, LCH SA believes it is appropriate to remove the CDSClear pricing methodology from the existing spread margin section and incorporate it under the new Section 2.

New section 2.2 describes the methodology that will be used to price CDS Options. LCH SA proposes to adopt a market standard model which makes certain adjustments to address the limitations of the classic Black-Scholes model and that is made available on Bloomberg (the “Bloomberg Model”) and is commonly used by both dealers and buy-side participants in order to facilitate communication on index swaptions. The limitations of the classic Black-Scholes model include the inability to reflect the

contractual cash flow exchanged upfront upon the exercise of the option. Neglecting the upfront cash flow exchange would have a significant impact for deeply in-the-money payer options because setting the underlying par spread curve flat at the strike level would considerably reduce the risk duration and, therefore, the potential profits and losses (“P&Ls”) resulting from the option exercise with respect to such options. In addition, if a credit event occurs with respect to the underlying index CDS after the option was traded but before its expiry, the resulting loss would be settled if and only if the option is exercised, and settlement would occur on the day of exercise. Finally, the strike and spot for price-based CDS Options are expressed in price terms rather than in spread terms and, therefore, require price-to-spread conversion before using the Bloomberg Model. LCH SA proposes to incorporate the upfront cash flow amount to be exchanged upon exercise and the cash payment resulting from the settlement of credit events that would occur between the trade date and the expiry into the payoff amount at expiry in the CDS Option price definition. In addition, consistent with the Bloomberg Model, LCH SA also proposes to implement an adjusted spread in the log normal distribution by calibrating the spread to match the implied forward price, based on market quoted spreads, with certain assumptions made to improve the calibration in order to be able to price CDS Indices with a closed formula as the Bloomberg Model.

Revised section 2.3 covers the market data for CDS and CDS Options. Section 2.3.1 describes the market data LCH SA uses to build the database for single-name CDS covering the 10-year look-back period, which is the same as the description in the existing CDSClear Margin Framework with very minor technical edits to improve headings and to correct typographical errors.

New section 2.3.2 addresses implied volatility in the pricing of CDS Options. LCH SA proposes to rely on the stochastic volatility inspired or “SVI” model to construct volatility surfaces and to use the model to price or reprice a CDS Option as well as to interpolate the various implied volatilities obtained from the Bloomberg Model described above in a consistent manner. The choice of the SVI model is based upon considerations that the model is an appropriate fit with the historical data and that it guarantees a volatility surface free of static arbitrage (such as calendar and butterfly arbitrage) if the appropriate parameters are selected.

New section 2.3.3 describes the sources of historical data for CDS Option prices used by LCH SA to construct the database covering the 10-year look-back period. These sources consist of Markit’s history of composite prices and specific dealers’ history of prices. LCH SA will then use this data to extract historical implied volatility. In order to ensure that only SVI parameterizations that model the shape of the volatility curves well would be used in the construction of the time series, LCH SA would use a pre-defined coefficient of determination to measure how well the data fits the statistical model. Section 2.3.3 also describes other data to be used for purposes of constructing historical implied volatility in the case of missing at-the-money (“ATM”) volatility and SVI data points in the historical time series. If an option price cannot be obtained through members’ contribution (as described below) or Markit, LCH SA may use the price from the then on-the-run series or use a proxy to determine the ATM volatility returns from other similar options or from the index spread returns.

Finally, new section 2.3.4 provides the source of new daily pricing data for CDS Options that will be used to update implied volatility on a daily basis. Similar to the

current end-of-day pricing mechanism for CDS, LCH SA will require members to contribute prices on options for all strikes that are a multiple of five bps for iTraxx Europe Main or 25 bps for iTraxx Europe Crossover of a given expiry when the members have at least an open position on one strike for that expiry. Members' contributed prices will be used for marking the options book if a quorum of three distinct contributions (underlying, expiry, strike) is recorded per option. Otherwise, LCH SA will fall back to Markit's composite prices or use pre-defined rules to fill in missing data.

b. Total Initial Margin

A new Section 3 is created to provide the total initial margin framework. New section 3.1 provides a summary of the total initial margin framework, including a brief description of each of the seven components of the total initial margin.

New section 3.2 provides an overview of the risks captured by each margin component and the additional margin charges, as well as cash-flow specific considerations and adjustments made to the margin framework specific to U.S. dollar denominated CDS contracts. This re-organized overview is substantively consistent with the description in existing section 3.1.1 of the CDSClear Margin Framework except for the addition of the new vega margin which is proposed in connection with the clearing of CDS Options.

i. Self-Referencing Margin

New Section 3.3 sets forth self-referencing margin, a component of the total initial margin, for both CDS and CDS Options. In the case of CDS, self-referencing margin is designed to cover the specific wrong way risk relating to a Clearing Member selling protection on itself through a CDS index or a client selling protection on the

Clearing Member. Self-referencing margin reflects the P&L impact resulting from the Clearing Member defaulting on a sold-protection position in CDS referencing its own name with zero recovery. In the case of CDS Options, the P&L impact resulting from a Clearing Member defaulting on a sold-protection position in CDS referencing its own name can be calculated by taking the difference between the current option value and the option value incorporating a loss amount in the underlying CDS index.

ii. Spread Margin

New Section 3.4 sets forth spread margin for both CDS and CDS Options. There is no change proposed to the spread margin calculation for CDS, which would continue to be calculated using a value-at-risk model to build a distribution of potential losses from simulated scenarios based on the joint credit spread and volatility variations observed in the past. LCH SA then determines the expected shortfall based on a quantile of the worst losses that could happen in the case of unfavorable credit spread and volatility fluctuations within each 5-day scenario and takes the difference in P&Ls of each portfolio between the average of the prices beyond the 99.7 percent quantile of the portfolio and the current mark-to-market price of the portfolio as the expected shortfall. In addition, because the European Market Infrastructure Regulation (EMIR) limits margin reduction from portfolio margining to no greater than 80 percent of the sum of the margins for each product calculated on an individual basis, LCH SA would determine the spread margin to be the maximum between the expected shortfall of the portfolio and 20 percent of the sum of the expected shortfalls across instruments.

The methodology for calculating spread margin would be the same for CDS Options, with two adjustments. First, in addition to simulated credit spreads, simulated

volatilities would be calculated by defining a shifted volatility curve for each option expiry date. Both simulated credit spreads and simulated volatilities would be used to produce simulated option values as an input in the value-at-risk model to generate the expected shortfall. Second, in order to properly account for the impact of CDS Options which expire within the 5-day margin period of risk, LCH SA proposes to add to the Section 3.4 spread margin provisions regarding an assessment of whether a CDS Option would be exercised on expiry by considering the present value of an option on the date of expiry. If the assessment determines that the option would be exercised, LCH SA would take the resulting index CDS position into account in the expected shortfall calculation for the following days within the margin period of risk.

LCH SA is also proposing to move the discussion of margin impact related to clearing CDX IG/HY contracts to Section 3.4 without any substantive change and to delete the current Section 3 on “CDX IG/HY Specificity” in the CDSClear Margin Framework. This reorganization of the CDSClear Margin Framework is intended to streamline the presentation because the same spread margin methodology that applies to European CDS contracts would equally apply to U.S. dollar denominated contracts, with certain considerations given to the use of U.S. interest rate benchmarks, FX adjustment, use of shifted FX rate for computing historical expected shortfalls, and an FX haircut, as described in Section 3 of the current CDSClear Margin Framework.

iii. Short Charge

New Section 3.5 sets forth short charge for both CDS and CDS Options, which replaces the former Section 4.1. As with the existing Framework, the purpose of the short charge is to address the jump-to-default risk, *i.e.*, the P&L impact, when liquidating

a defaulting member's portfolio, as a result of one or more reference entities in the portfolio experiencing a default. The definition of the short charge remains the greater of (x) the "global short charge," derived from the Clearing Member's largest, or "top," net short exposure (in respect of any CDS contracts) and its top net short exposure amongst the three "riskiest" reference entities (in respect of any entity type) that are most probable to default in its portfolio, and (y) a "high yield short charge," ("HY short charge") derived from a member's top net short exposure (in respect of high yield CDS) and its top two net short exposures amongst the three "riskiest" reference entities (in the high yield category) in its portfolio. In addition, because wrong way risk margin considers the P&L impact as a result of the Clearing Member's top two net short exposures in respect of senior financial CDS, it is relevant to calculate a financial short charge to reflect the jump-to-default P&L impact resulting from the default of the two financial entities with the largest net short exposures.

The steps for determining the net short exposure and default probability per entity also remain the same with respect to CDS portfolios. LCH SA would define the net short exposure at the portfolio level, aggregating net notional by entity, applying a recovery rate and subtracting the variation margin already collected with respect to each entity, either as a single name or as part of an index. Because there are various transaction types and contract terms based on different ISDA definitions, LCH SA would calculate each reference entity's net exposure based on transaction types and contract terms across various possible scenarios, sum the exposures together according to the scenarios, and retain the worst scenario as the reference entity's net short exposure.

With respect to the determination of the short exposure for CDS Options, LCH SA believes that it would be appropriate to consider the P&L impact of a credit event experienced by a constituent of an index CDS underlying the CDS Option on the value of the option. Rather than repricing the option each day based on the spread level of the underlying index and the ATM volatility level, LCH SA proposes to adopt an approximation approach to define the change in the option price relative to the total loss in the underlying index so as to expedite the calculation. The amount of such change would represent the impact on the option premiums as a function of the loss amount to be delivered at the option expiry if the option is exercised. Such change in option price would then be calibrated on a loss interval for each eligible option as a polynomial function and the calculation of this loss function would be performed at the option instrument level.

The total short exposures with respect to each reference entity would be the sum of (i) the net short exposure for the CDS contracts referencing such entity and (ii) the losses resulting from the CDS Options on index CDS with such entity as a constituent. A total short exposure will be calculated for each entity except for an entity experiencing a credit event or an entity that is a member or member's affiliate with respect to which a self-referencing margin is imposed. LCH SA will then be able to select the entity or entities for purposes of calculating the global short charge, HY short charge, and financial short charge.

In order to accommodate the addition of CDS Options to CDSClear's clearing services, LCH SA proposes to make certain adjustments to the short charge calculation. First, when calculating the total short exposure for each reference entity, including an

entity that is a constituent of an index CDS underlying an option, the total short exposure would be calculated for each day within the 5-day margin period of risk using a simulated credit spread and ATM volatility data for both CDS and CDS options, instead of using the current spread as is the case for CDS only in the existing Framework.

Second, after entities are selected for calculating the global short charge, HY short charge and financial short charge, if a portfolio includes CDS Options, as a result of the non-linearity of options products, the total short exposure would not be the sum of the P&L impacts of each individual entity's default. Therefore, LCH SA proposes to calculate each of the global short charge, HY short charge and financial short charge by considering the combined P&L impacts of simultaneous defaults of the selected entities.

Third, because the total short exposure for each reference entity would be calculated using a simulated credit spread and ATM volatility data for both CDS and CDS Options, the global short charge, HY short charge and financial short charge derived from the selected entities' total short exposures would represent the jump-to-default risk and the market risk (*i.e.*, spread moves) from both the CDS contracts and the CDS Options contracts at the portfolio level on each day within the 5-day margin period of risk in the simulated scenario. In order to calculate the short charge margin that reflects the P&L impact of the jump-to-default risk only at the portfolio level and the spread margin that reflects the P&L impact that comes from spread and ATM volatility moves, LCH SA would compare three expected shortfall amounts at the portfolio level: (i) the expected shortfall reflecting the P&Ls consisting of spread margin, the global short charge, the HY short charge and the financial short charge ( $ES_1$ ), (ii) the expected shortfall reflecting the P&Ls consisting of spread margin, global short charge and HY short charge ( $ES_2$ ), and

(iii) the expected shortfall reflecting the P&Ls consisting of spread margin (ES<sub>3</sub>). If ES<sub>1</sub> exceeds ES<sub>2</sub>, the excess amount would be the result of the financial short charge, which is the jump-to-default component of the wrong way risk and should be allocated to the wrong way risk margin. If ES<sub>2</sub> exceeds ES<sub>3</sub>, the excess amount would represent the jump to default risk and should be allocated to the short charge margin. In addition, as stated above, EMIR limits the effect of margin reduction from portfolio margining to no greater than 80 percent of the sum of the margins for each product calculated on an individual basis. Thus, LCH SA would also calculate an expected shortfall reflecting the P&L impact of the spread and ATM volatility moves (ES<sub>4</sub>) at a product level and then use 20 percent of ES<sub>4</sub> as the minimum floor for the spread margin.

Finally, new Section 3.5 will also consider the impact of option expiry on the P&L as part of the short charge calculation. In this respect, LCH SA would consider two cases: (i) the option exercise decision occurs before the occurrence of two credit events, and therefore, the credit events would have no impact on the option exercise decision and would only impact the P&L if the option is exercised upon expiry; and (ii) the two credit events occur before the option exercise decision and therefore, would have impact on the option exercise. LCH SA would use the worst case in the short charge calculation.

iv. Interest Rate Risk Margin / Recovery Risk Margin / Wrong-Way Risk Margin / Vega Margin

New Section 3.6 sets forth interest rate risk margin for both CDS and CDS Options, which replaces the former Section 7 in the existing CDSClear Margin Framework. The methodology for calculating interest rate risk margin remains the same, except to provide for repricing CDS Option positions using the same “bump” parameters

up and down computed by taking the 99.7 quantile of the interest rate return based on the same sample of dates in the spread historical database.

New Section 3.7 sets forth recovery rate risk margin for CDS, which replaces Section 6 in the existing CDSClear Margin Framework. The methodology for calculating recovery rate risk margin is the same as the existing Framework. Because recovery rate risk margin applies to only single-name CDS, no adjustment or change is necessary to accommodate the addition of CDS Options to the CDSClear services because the options are on index CDS.

New Section 3.8 sets forth wrong way risk margin, which replaces Section 5 in the existing CDSClear Margin Framework. The methodology for calculating wrong way risk margin is the same as the existing Framework with minor revisions to streamline the description and to improve readability.

New Section 3.9 sets forth a new margin component, *i.e.*, vega margin, which would apply to CDS Options only. Because LCH SA uses ATM options to calculate volatility returns in all volatility scenarios, the derived expected shortfall would not fully capture the risk of volatility changes in the options premium relative to the strikes, *i.e.*, the skew risk and the risk of changes in the volatility of volatility. Therefore, LCH SA is proposing to add vega margin to the total initial margin in order to capture the skew risk and the volatility of volatility risk. The vega margin would first calculate the risk of skew and volatility of volatility independently by estimating option premium changes when the skew is shifted by an extreme move, which is calibrated as a quantile of the distribution of each parameter in the historical data set gathered by LCH SA, for each time series of an available parameter. LCH SA would then define shifts of the skew by

multiplying a standard deviation of the returns of historical skews by a percentile for a given probability threshold. Then, LCH SA would also consider similar shocks on the volatility of volatility alone. Finally, LCH SA would also consider scenarios of combined risk of skew and volatility of volatility and choose the worst P&L for the index family produced in these scenarios as the total vega margin charge.

c. Additional Margins

LCH SA proposes to create a new Section 4 in the CDSClear Margin Framework, which would cover (i) liquidity and concentration risk margin from Section 8 of the existing CDSClear Margin Framework, (ii) accrued coupon liquidation risk margin from Section 9 of the existing CDSClear Margin Framework, and (iii) credit event margin from Section 10 of the existing CDSClear Margin Framework.

i. Liquidity and Concentration Risk Margin

New Section 4.1 sets forth liquidity and concentration risk margin, which is moved from Section 8 of the existing CDSClear Margin Framework. Liquidity and concentration risk margin is designed to mitigate the P&L impact as a result of an illiquid or concentrated position in a defaulting member's portfolio. The methodology for calculating liquidity and concentration risk margin for CDS contracts is the same as the existing Framework with minor revision to streamline the description and to improve readability. In order to accommodate the addition of CDS Options to the existing clearing services, LCH SA proposes changes to the existing liquidity and concentration risk margin methodology to cover portfolios containing CDS Options.

To calculate the liquidity charge for portfolios including CDS Options, LCH SA would consider the options separately from CDS in the portfolio. Given that the market

will require options to be liquidated as a delta-hedged package, LCH SA would delta-hedge the positions underlying the options and most likely auction the options as a package separate from the remainder of the portfolio. LCH SA will attempt to source the hedges from the CDS part of the defaulting member's portfolio using a delta hedging algorithm to ensure minimal hedging costs before sourcing the hedges from the market.

After the options package is delta-hedged, from the bidders' perspective, the pricing of the auction package would consist of hedging the vega of the delta-neutral options package at different resolutions consecutively until the portfolio is fully unwound. The cumulative costs incurred in the successive vega hedging would reflect the liquidity charge for the options.

The liquidity charge for the entire portfolio will be the sum of the liquidity charge computed for the CDS component of the portfolio and the liquidity charge computed for the options component of the portfolio.

ii. Accrued Coupon Liquidation Risk Margin

New Section 4.2 sets forth accrued coupon liquidation risk margin for both CDS and CDS Options. The accrued coupon liquidation risk margin with respect to CDS remains the same as section 9 of the existing CDS Clear Margin Framework with minor edits to improve clarity and readability. In addition, changes are proposed to address the accrued coupon liquidation risk for CDS Options. Because accrued coupon liquidation risk margin is designed to cover the accrued coupon payment during the 5-day liquidation period, LCH SA would be exposed to a coupon payment risk for an option only if the option expiry falls within the 5-day liquidation period and the option is exercised. Therefore, accrued coupon for options contracts with an expiry more than 5 days away

will be zero and accrued coupon for options contracts with expiry falling within the 5-day liquidation period will be the accrued coupon for 5 days if the options are exercised.

LCH SA would consider the option exercise decision based on the current spread level +/- 1/2 of the bid-offer on the underlying to reflect the cost of monetizing an in-the-money option.

### iii. Credit Event Margin

New Section 4.3 sets forth credit event margin, which is moved from section 10 of the existing CDSClear Margin Framework. The overall approach to the calculation of the credit event margin remains the same with certain revisions to streamline the presentation and to improve clarity and readability. With respect to “hard” credit events, because the recovery rate is unknown before the auction occurs, LCH SA would impose credit event margin to cover an adverse 25 percent absolute recovery rate move from the credit event determination date to, and including, the auction date. After the auction, when the recovery rate is known, Credit Event Margin is no longer required, and cash flows are exchanged in advance through the Variation Margin to extinguish any risk of the future payment not being made. However, because of the addition of CDS Options, LCH SA proposes a number of changes to the calculation of credit event margin. First, if several credit events occur, LCH SA proposes to calculate the credit event margin with respect to each affected CDS and CDS Option contract by considering adverse recovery moves that could be a combination of upwards, downwards and flat on the different entities depending on the portfolio, instead of summing the credit event margin covering adverse 25 percent adverse recovery rate move for each reference entity as in the case of linear CDS. The aggregation of the P&L at the affected CDS and CDS Option contracts

level would be the credit event margin at the portfolio level. After the credit event margin is calculated for each portfolio, the combination of adverse recovery rate moves retained for a particular Clearing Member's portfolio would also be used in the spread margin calculation in order to virtually shift the strikes of all option contracts experiencing the credit event. Second, currently, LCH SA separates credit event margin calculations with respect to the portfolio of a Clearing Member that is the protection seller of the CDS experiencing a credit event and the portfolio of a Clearing Member that is the protection buyer of the CDS experiencing a credit event. The protection seller would be required to pay a credit event margin and the protection buyer would pay a so-called "IM Buyer", which corresponds to a margin charged to the buyer in the event of a credit event and is calculated in the same way as the calculation of the credit event margin with the only difference being the change in the direction of the shocks. With the addition of CDS Options, LCH SA proposes to use one terminology "credit event margin" calculated using the same methodology as the existing credit event margin calculation with respect to a Clearing Member's portfolio containing a contract affected by the credit event regardless of whether the Clearing Member is a protection buyer or protection seller.

Finally, with respect to restructuring events or so-called "soft" credit events, because different auctions may be held depending on the maturity of the contracts and therefore, the recovery rate could be different across all the contracts with various maturity dates, LCH SA proposes to consider each maturity separately instead of netting all positions with the same reference entity. For each given reference entity experiencing

a restructuring event with respect to a given maturity, the calculation of the credit event margin is similar to that used for hard credit events.

d. Cash Flows, Contingency Variation Margin and Extraordinary Margin

New Sections 5, 6 and 7 set forth cash flow exchanges (in the form of variation margin, price alignment interest, quarterly coupon payments or upfront payments), contingency variation margin, and extraordinary margin. These sections are moved from Sections 11, 12 and 3.4 of the existing CDSClear Margin Framework without substantive change and with minor revisions to eliminate redundancy and improve clarity and readability.

e. Appendix

The new Section 8 Appendix sets forth the settlement agent and FX provider, FX haircut and quanto with respect to CDX IG/HY contracts. These are moved from Section 3.1.2, 3.3.2 and 3.3.3 of the existing CDSClear Margin Framework without substantive change.

(ii). Default Fund Methodology

LCH SA also proposes to modify its Default Fund Methodology to incorporate terms for CDS Options and to make certain clarifying and conforming changes to the Default Fund Methodology.

Section 1 of the Default Fund Methodology, which outlines the stress risk framework, would be amended in Sections 1.1, 1.2, 1.3, and 1.4 to make formatting changes and clarifying changes to the text for readability.

Section 2 of the Default Fund Methodology sets forth the methodology used to calculate default fund, which is designed to cover the potential impact of the default of

two or more Clearing Members in stressed market conditions in excess of initial margin held by LCH SA. Section 2.1 currently provides an overview of the framework for such methodology. The fundamental piece of the methodology is to identify stress testing scenarios to introduce market moves in so-called “extreme but plausible” market conditions beyond those applied to the margin calculation. Such stress testing scenarios would then be applied to Clearing Members’ portfolios to calculate the P&L impacts and the sum of the two highest stress testing losses over initial margin (“STLOIM”) across all Clearing Members’ portfolios. From there, LCH SA adds a 10 percent buffer to be the size of the default fund. Because of the addition of CDS Options, LCH SA proposes to amend Section 2.1 to take into account the new vega margin designed to address the skew risk and volatility of volatility risk particular to CDS Options that are not covered in the spread margin calculation. As a result, a stressed vega margin (in addition to the existing stressed spread margin and stressed short charge) would be calculated under the stress test scenarios. LCH SA would then calculate stress test losses (*i.e.*, the sum of the stressed spread margin, stressed short charge and stressed vega margin) over initial margin components designed to cover the market risk and default risk (*i.e.*, the spread margin, short charge, wrong way risk margin and vega margin). Clarification changes are also made to the explanation of stressed spread margin and stress short charge.

Section 2.2 of the Default Fund Methodology would be modified to separate the description of the methodology for calculating P&L from the description of the stress testing scenarios. The description of the stress scenarios would be retained in Section 2.2 with certain clarifying changes for readability, and the description of the methodology for calculating the P&L for purposes of spread moves and short charge would be removed

from Section 2.2 and replaced with new Sections 2.3 and 2.4. The various scenarios considered for the Default Fund Methodology would also be renumbered under new subsections 2.2.1 (Standard Scenarios), 2.2.2 (Dislocation Scenarios), 2.2.3 (SPAN Scenarios), 2.2.4 (2x Lehman Scenarios), 2.2.5 (Black Monday Scenario), 2.2.6 (Theoretical Scenarios), 2.2.7 (Theoretical 4x Bear Sterns Scenario), and 2.2.8 (Correlation Breakdown). A new set of scenarios would also be added in Section 2.2.9 (Volatility Scenarios), which considers movements in the implied ATM volatilities of index families, in both historical and theoretical stress scenarios.

New Section 2.3 of the Default Fund Methodology sets forth the new calculation of the stressed spread margin component of the STLOIM. Consistent with the changes made to the CDSClear Margin Framework, the new calculation of stressed spread margin would consider ATM implied volatility moves for options and the stressed spread margin would be calculated in two scenarios: (i) historical scenarios covering credit spread moves and ATM implied volatility movements in combination, and (ii) theoretical scenarios covering credit spread movements and ATM implied volatility moves independently. For CDS, only scenarios covering spread moves would be considered.

New Section 2.4 of the Default Fund Methodology would set forth the stressed short charge component of the STLOIM calculation and would incorporate terms to account for the addition of CDS Options. The new stressed short charge calculation would follow the methodology of the short charge calculation as part of the total initial margin to take into account the non-linear nature of options, except that the number of default entities assumed is higher for stressed short charge than the number of defaults assumed for normal short charge. As under the existing Default Fund Methodology, the

stressed short charge will cover the greater of (i) a “Global Stressed Short Charge,” which considers the entity having the largest exposure and the two highest exposures among the three entities most likely to default in the Clearing Member’s portfolio, (ii) a “Financial Stressed Short Charge,” which considers the two entities having the largest exposure among senior financial entities and the highest exposure among the three senior financial entities most likely to default in the Clearing Member’s portfolio, and (iii) a “High Yield Stressed Short Charge,” which considers the two entities having the largest exposure among entities in the high yield index family and the two highest exposures among the three entities among the high yield entities most likely to default in the Clearing Member’s portfolio.

New Section 2.5 of the Default Fund Methodology would add a new stressed vega margin component to the STLOIM calculation. As noted above with respect to the CDSClear Margin Framework, vega margin is included with respect to CDS Options to address skew risk and volatility of volatility risk. The stressed vega margin component of the STLOIM calculation would be calculated in the same manner as the vega margin component of the CDSClear Margin Framework, but would use a higher quantile than the regular vega margin calculation.

New Section 2.6 of the Default Fund Methodology, entitled Exercise Management, would account for the impact of CDS Options which expire within the 5-day liquidation period. If the time to expiry with respect to an option in a defaulting member’s portfolio is less than or equal to five days, LCH SA would consider the impact of option exercise in four permutations for each stress scenario to account for the default and extreme spread moves occurring before or after option expiry. LCH SA would then

select the permutation generating the largest loss for any particular scenario. Section 2.6.1 of the Default Fund Methodology then sets forth the calculations for the exercise decision in respect of CDS Options and 2.6.2 describes the impact of the exercise decision. For options that are expiring, if the option is deemed exercised, the “bumped” price will not be calculated in respect of the CDS option, but on the underlying index into which the CDS option would be exercised. With respect to these options exercised and converted to index CDS contracts, Section 2.6.3 of the Default Fund Methodology then provides that the resulting index contracts will lead to a change in the consideration of net short exposures and therefore, the global, financial and HY stressed net short exposures need to be calculated, which would affect the determination of the stressed short charge.

New Section 2.7 would set forth the P&L scenarios that are considered as part of the Default Fund Methodology. New Section 2.7.1 would set forth the stressed spread margin calculation with respect to specific products. In the case of CDS Options, the product is identified with the index family and series of the underlying index, such that the option P&L for each product can be added to the P&L for linear contracts and offsets may be made between the two groups. If the P&L at the product level is positive, a haircut is applied. Sections 2.7.2 then provides for a stressed short charge that is a component of the stressed initial margin calculation in Section 2.7.3. Under Section 2.7.4, the stressed initial margin calculation is then compared across historical scenarios, theoretical spread scenarios, and theoretical implied volatility scenarios.

Finally, the sections on Credit Quality Margin and Default Fund Additional Margin would be renumbered as new sections 3.1 and 3.2, respectively, and would be

updated to incorporate terms for CDS Options and to account for the imposition of vega margin in respect of CDS Options.

2. Statutory Basis.

LCH SA believes that the proposed rule change in connection with the clearing of CDS Options is consistent with the requirements of Section 17A of the Act and the regulations thereunder, including the standards under Rule 17Ad-22.<sup>4</sup> Section 17(A)(b)(3)(F)<sup>5</sup> of the Act requires, among other things, that the rules of a clearing agency be designed to promote the prompt and accurate clearance and settlement of securities transactions and derivative agreements, contracts, and transactions and to assure the safeguarding of securities and funds which are in the custody or control of the clearing agency or for which it is responsible. As noted above, the proposed rule change is designed to manage the risk arising from the clearing of CDS Options and to streamline the description of the existing margin framework and default fund methodology for CDS to take into account CDS Options and improve the organization and clarity of the CDSClear Margin Framework and Default Fund Methodology.

LCH SA believes that the proposed changes to the CDSClear Margin Framework and the Default Fund Methodology satisfy the requirements of Rule 17Ad-22(b)(2), (b)(3), (e)(1), (e)(4) and (e)(6).<sup>6</sup>

Rule 17Ad-22(b)(2) requires a clearing agency to use margin requirements to limit its credit exposures to participants under normal market conditions and to use risk-

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<sup>4</sup> 17 CFR 240.17Ad-22.

<sup>5</sup> 15 U.S.C. 78q-1(b)(3)(F).

<sup>6</sup> 17 CFR 240.17Ad-22(b)(2), (b)(3), (e)(1), (e)(4), and (e)(6).

based models and parameters to set margin requirements.<sup>7</sup> Rule 17Ad-22(b)(3) requires each clearing agency acting as a central counterparty for security-based swaps to maintain sufficient financial resources to withstand, at a minimum, a default by the two participant families to which it has the largest exposure in extreme but plausible market conditions (the “cover two standard”). Rule 17Ad-22(e)(4) requires a covered clearing agency to effectively identify, measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing and settlement processes by maintaining sufficient financial resources,<sup>8</sup> and Rule 17Ad-22(e)(6) requires a covered clearing agency that provides central counterparty services to cover its credit exposures to its participants by establishing a risk-based margin system that meets certain minimum requirements.<sup>9</sup>

As described above, LCH SA proposes to amend its margin framework to manage the risks associated with clearing CDS Options. Specifically, the proposed rule change amends the existing spread margin and short charge components of the total initial margin to take into account implied volatility in the calculation of the spread margin and short charge as well as updating interest rate risk margin, recovery rate risk margin and wrong-way risk margin components of total initial margin to incorporate CDS Options. In addition, the proposed rule change adds the new vega margin to account for the skew risk and volatility of volatility risk specific to CDS Options. These changes are designed to use a risk-based model to set margin requirements and use such margin requirements to limit LCH SA’s credit exposures to participants in clearing CDS

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<sup>7</sup> 17 CFR 240.17Ad-22(b)(22).

<sup>8</sup> 17 CFR 240.17Ad-22(e)(4)(i).

<sup>9</sup> 17 CFR 240.17Ad-22(e)(6)(i).

and/or CDS Options under normal market conditions, consistent with Rule 17Ad-22(b)(2). LCH SA also believes that its risk-based margin methodology takes into account, and generates margin levels commensurate with, the risks and particular attributes of each of the CDS and CDS Options at the product and portfolio levels, appropriate to the relevant market it serves, consistent with Rule 17Ad-22(e)(6)(i) and (v). In addition, LCH SA believes that the margin calculation under the revised CDSClear Margin Framework would sufficiently account for the 5-day liquidation period for house account portfolio and 7-day liquidation period for client portfolio and therefore, is reasonably designed to cover LCH SA's potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default, consistent with Rule 17Ad-22(e)(6)(iii). LCH SA also believes that the new pricing methodology with respect to CDS Options, based on widely accepted and used Bloomberg Model with appropriate adjustments, as supplemented by methodology for circumstances in which pricing data are not readily available, would generate reliable data set to enable LCH SA to calculate spread margin, consistent with Rule 17Ad-22(e)(6)(iv).

Further, Rule 17Ad-22(b)(3) requires a clearing agency acting as a central counterparty for security-based swaps to establish policies and procedures reasonably designed to maintain the cover two standard.<sup>10</sup> Similarly, Rule 17Ad-22(e)(4)(ii) requires a covered clearing agency that provides central counterparty services for security-based swaps to maintain financial resources additional to margin to enable it to cover a wide range of foreseeable stress scenarios that include, but are not limited to,

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<sup>10</sup> 17 CFR 240.17Ad-22(b)(3).

meeting the cover two standard.<sup>11</sup> LCH SA believes that its Default Fund Methodology, with the modifications described herein, will appropriately incorporate the risk of clearing CDS Options, which, together with the proposed changes to the CDSClear Margin Framework, will be reasonably designed to ensure that LCH SA maintains sufficient financial resources to meet the cover two standard, in accordance with Rule 17Ad-22(b)(3) and (e)(4)(ii).<sup>12</sup>

LCH SA also believes that the proposed rule change is consistent with Rule 17Ad-22(e)(1), which requires each covered clearing agency's policies and procedures reasonably designed to provide for a well-founded, clear, transparent, and enforceable legal basis for each aspect of its activities in all relevant jurisdictions. As described above, the proposed rule change would streamline the description of margin methodology and default fund sizing methodology in CDSClear Margin Framework and Default Fund Methodology. LCH SA believes that these change would improve the organization and clarity of these policies and provide for a clear and transparent legal basis for LCH SA's margin requirements and default fund contributions, consistent with Rule 17Ad-22(e)(1).

For the reasons stated above, LCH SA believes that the proposed rule change with respect to CDSClear Margin Framework and Default Fund Methodology in connection with clearing of CDS Options are consistent with the requirements of prompt and accurate clearance and settlement of securities transactions and derivative agreements, contracts and transactions, and assuring the safeguarding of securities and

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<sup>11</sup> 17 CFR 240.17Ad-22(e)(4)(ii).

<sup>12</sup> 17 CFR 240.17Ad-22(b)(3) and (e)(4)(ii).

funds in the custody or control of the clearing agency or for which it is responsible, in accordance with 17(A)(b)(3)(F) of the Act.<sup>13</sup>

B. Clearing Agency's Statement on Burden on Competition

Section 17A(b)(3)(I) of the Act requires that the rules of a clearing agency not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act.<sup>14</sup> LCH SA does not believe that the proposed rule change would impose burdens on competition that are not necessary or appropriate in furtherance of the purposes of the Act. Specifically, the proposed changes to CDSClear Margin Framework and Default Fund Methodology would apply equally to all Clearing Members whose portfolio includes CDS and/or CDS Options. Because the margin methodology and default fund sizing methodology are risk-based, consistent with the requirements in Rule 17Ad-22(b)(2) and (e)(6), depending on a Clearing Member's portfolio, each Clearing Member would be subject to a margin requirement and default fund contribution commensurate with the risk particular to its portfolio. Such margin requirement and default fund contribution impose burdens on a Clearing Member but such burdens would be necessary and appropriate to manage LCH SA's credit exposures to its CDSClear participants and to maintain sufficient financial resources to withstand a default of two participant families to which LCH SA has the largest exposures in extreme but plausible market conditions, consistent with the requirements under the Act as described above. Therefore, LCH SA does not believe that the proposed rule change would impose a burden on competition not necessary or appropriate in furtherance of the purposes of the Act.

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<sup>13</sup> 15 U.S.C. 78q-1(b)(3)(F).

<sup>14</sup> 15 U.S.C. 78q-1(b)(3)(I).

C. Clearing Agency's Statement on Comments on the Proposed Rule Change Received from Members, Participants or Others

Written comments relating to the proposed rule change have not been solicited or received. LCH SA will notify the Commission of any written comments received by LCH SA.

III. Date of Effectiveness of the Proposed Rule Change and Timing for Commission Action

Within 45 days of the date of publication of this notice in the Federal Register or within such longer period up to 90 days (i) as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the self-regulatory organization consents, the Commission will:

(A) by order approve or disapprove such proposed rule change, or

(B) institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

Interested persons are invited to submit written data, views, and arguments concerning the foregoing, including whether the proposed rule change is consistent with the Act. Comments may be submitted by any of the following methods:

Electronic Comments:

- Use the Commission's Internet comment form (<http://www.sec.gov/rules/sro.shtml>); or
- Send an e-mail to [rule-comments@sec.gov](mailto:rule-comments@sec.gov). Please include File Number SR-LCH SA-2017-007 on the subject line.

Paper Comments:

- Send paper comments in triplicate to Secretary, Securities and Exchange Commission, 100 F Street, N.E., Washington, D.C. 20549-1090.

All submissions should refer to File Number SR-LCH SA-2017-007. This file number should be included on the subject line if e-mail is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet website (<http://www.sec.gov/rules/sro.shtml>). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street, N.E., Washington, D.C. 20549 on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of the filing also will be available for inspection and copying at the principal office of LCH SA and on LCH SA's website at <http://www.lch.com/asset-classes/cdsclear>.

All comments received will be posted without change; the Commission does not edit personal identifying information from submissions. You should submit only information that you wish to make available publicly. All submissions should refer to File Number SR-LCH SA-2017-007 and should be submitted on or before [insert date 21 days from publication in the Federal Register].

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.<sup>15</sup>

Eduardo A. Aleman  
Assistant Secretary

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<sup>15</sup> 17 CFR 200.30-3(a)(12).