

LCH.Clearnet LLC

Disclosure under the Principles for Financial Market Infrastructures

Responding institution: LCH.Clearnet LLC

Jurisdictions in which LCH.Clearnet LLC operates: United States¹

Authority regulating, supervising, or overseeing LCH.Clearnet LLC: U.S. Commodity Futures Trading Commission (CFTC)

Date of this disclosure is December 31, 2015.

This disclosure can also be found at: http://www.lchclearnet.com/about_us/corporate_governance/

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I. Executive summary

LCH.Clearnet LLC (LLC) is a subsidiary of LCH.Clearnet Group Ltd, the holding company for LCH.Clearnet Ltd (Ltd) and LCH.Clearnet SA, each of which serves as a clearing organization for a variety of derivatives and other products.

LLC operates the SwapClear US clearing service. SwapClear US is a clearing service for cash-settled interest rate swaps offered to eligible clearing members of LLC, pursuant to its Rulebook. LLC has 16 clearing members, of which 11 are registered with the CFTC as futures commission merchants (FCMs) and are able to clear for clients. Non-FCM clearing members clear proprietary swaps and are banks located in the United States, Switzerland and Germany.

LLC is registered with the CFTC as a derivatives clearing organization. LLC deals with its clearing members under the terms of its New York law governed clearing Membership Agreement and Rulebook. Once eligible applicants become clearing members, they can submit interest rate swap transactions for clearing. Post-clearing, LLC monitors the creditworthiness of clearing members in order to ensure that they are able to fulfill their obligations to LLC with respect to cleared transactions, including the payment of variation margin. LLC calls for initial margin in order to ensure that, in the event of a clearing member's failure to perform, LLC can assume that defaulting clearing member's obligations to non-defaulting clearing members.

II. General description of LCH.Clearnet LLC

A. General description

LLC is licensed to clear futures, options on futures and swaps where interest rates or currencies constitute the underlying commodity. SwapClear US clears a broad range of interest rate swap products including plain vanilla, zero coupon, basis, forward rate agreements, overnight index and variable notional swaps across seventeen currencies.

The interest rate swap transactions that are eligible for clearing through the SwapClear US service are entered into by two executing parties thereto either bilaterally in the over-the-counter market, on swap execution facilities or on designated contract markets (each as defined in the Commodity Exchange Act). Upon being accepted for clearing, the interest rate swap transaction is registered, through novation, as two contracts, each between LLC and a clearing member

¹ LCH.Clearnet LLC has clearing members in the United States, Germany and Switzerland.

(whether for its own account or on behalf of a customer). LLC utilizes the same risk management techniques and offers the same product suite that its affiliate, Ltd, has adopted for the global SwapClear service. All interest rate transactions must meet the eligibility criteria stipulated by LLC and must also have been sufficiently funded, within defined tolerances, before being cleared by LLC. Cash variation margin payments are made by each clearing member to LLC and onwards to the counterparty clearing member for the life of the swap contract, via LLC's settlement bank network.

Each clearing member is required to deposit with LLC an amount of initial margin as collateral in respect of each contract registered with LLC. The initial margin is intended to secure future payment of variation margin and to protect LLC from changes in the mark-to-market value of open contracts during the close-out period following a default of a clearing member.

Clearing members are also required to furnish the clearing house with a default fund contribution, which is assessed based on the risk exposure a clearing member presents to LLC. The default fund is a mutualized resource that is available to LLC to cover any losses that LLC incurs in the event that one or more of its clearing members defaults on its obligations to LLC. LLC holds sufficient initial margin and default fund contributions to cover the exposure of an intra-day or end of day default of its two clearing members creating the largest financial exposure to LLC in extreme but plausible conditions. Initial margin is held in a combination of cash and non-cash collateral. As of November 30, 2015 all cash and non-cash collateral was denominated in U.S. dollars.

Where LLC determines that a clearing member is or will become unable to meet its obligations in respect of one or more contracts, LLC may declare the clearing member to be a "defaulter" and is entitled to discharge the clearing member's rights and obligations under its registered contracts through a range of tools available to LLC.

B. Key metrics

As of November 30, 2015, LLC cleared a total notional outstanding amount of approximately \$109 billion across swaps denominated in U.S. dollars, euros, pounds sterling, and Swedish krona.²

LLC monitors, on a daily basis, the amount of collateral that it holds together with its potential exposure to clearing members. In the event of a default, the following resources are available to LLC in order that it can continue to meet its obligations to non-defaulting clearing members: (i) the defaulter's initial margin; (ii) LLC's own capital contribution (ii) the defaulter's default fund contribution; (iii) the mutualized default fund (as replenished by clearing members in accordance with the Rulebook); and (iv) the loss distribution process as described in the Rulebook.

In addition and on a monthly basis, LLC assesses the amount of resources which it holds in order to ensure that it maintains sufficient or excess funds in order to comply with the CFTC's financial resources requirements.

In order to track the resilience of its systems and processes, LLC monitors any incidents that occur through "Quality Center", a third-party software product. All

² <http://www.swapclear.com/what/clearing-volumes-us.html>

incidents are subject to review in order to ascertain regulatory reporting requirements, where appropriate, and a Service Incident Review meeting is held, post-resolution, with a view to ensuring that the incident does not reoccur.

III. Summary of major changes since the last update of the disclosure

This disclosure constitutes LLC's second Disclosure Framework for Financial Market Infrastructure. Therefore, there are no changes to discuss under this section.

IV. Principle-by-principle summary narrative disclosure

Principle 1: Legal basis

An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.

Legal basis

LLC is registered as a derivatives clearing organization under Section 5b of the Commodity Exchange Act. Therefore, both LLC and its provision of the SwapClear US service are directly regulated by the CFTC.

Each member must enter into a Clearing Membership Agreement with LLC. The Clearing Membership Agreement is a contract between LLC and each member, governed by New York law. It requires the member to comply with the terms of the LLC Regulations and Procedures (together with such other rules published by LLC, the "Rulebook"). Accordingly, the relevant contractual rights and obligations as between LLC and its members are contained in the Rulebook and the Clearing Membership Agreement.

The LLC Rulebook covers all material aspects of LLC's operations and clearing services and aims to provide a clear and certain legal basis for its operations. Each member must provide a legal opinion that addresses certain aspects of its application including its capacity to enter into the Clearing Membership Agreement and interest rate swap contracts. LLC has commissioned and obtained legal opinions regarding the general enforceability of the Clearing Membership Agreement and the Rulebook under New York law.

Collateral is provided by members under the Clearing Membership Agreement, which, together with the Rulebook, grants a security interest in the collateral in favor of LLC. This security agreement is governed by New York law. LLC receives legal advice, from a law firm based in each relevant jurisdiction, regarding the enforceability of the Clearing Membership Agreement and the treatment under local insolvency law of LLC's rights to close out a defaulted member's positions and apply the defaulter's collateral to outstanding obligations of the clearing member.

Rules

The LLC Rulebook governs the rights and responsibilities of LLC and its members in respect of the clearing services provided by LLC.

Articulation of legal basis

To ensure the legal basis for LLC's clearing activities is publicly disclosed, LLC publishes the Rulebook on its website.³ Proposed changes to the Rulebook are also disclosed on the website as part of the self-certification process under the CFTC regulations.⁴

LLC publishes key information about its regulatory status on its website and in the LCH.Clearnet Group Limited annual report. The details of the relevant regulatory frameworks under which LLC operates, including statutes and stated policies, are publicly available on the regulators' websites.⁵

Enforceability

As noted above, LLC requires all members to enter into a New York law governed Clearing Membership Agreement, which incorporates the Rulebook, stipulating that New York courts have exclusive jurisdiction for the enforcement of the Rulebook. Clearing members must provide an opinion from local counsel that addresses the enforceability of the choice of law provisions in the Clearing Membership Agreement and any other conflicts-of-law issues under the laws of the jurisdiction of incorporation. LLC has commissioned and obtained opinions regarding the general enforceability of the Clearing Membership Agreement under New York law. See below for more detail.

Measures that contribute to ensuring a high degree of certainty in respect of specific aspects of LLC's activities are detailed below:

- *Assumption of risk*: LLC assumes the counterparty credit risk of cleared contracts through novation. Under the LLC Rulebook, novation occurs at the point of registration. Novation is recognized in New York law and provides a legally certain basis for the assumption of risk; absent bad faith or other vitiating circumstances, novated contracts would not be voided or subject to stays.
- *Default of members*: The application of LLC's default rules and procedures under the various U.S. insolvency regimes is protected by statute.

Subject to the limitations of Section 11(e) of the Federal Deposit Insurance Act with respect to insured depository institutions and Section 561(b)(2) of the U.S. Bankruptcy Code with respect to FCMs, the rights of LLC to terminate any open contract of a defaulting member, to sell any collateral deposited by a defaulting member, and to determine a single net amount due to or from the defaulter should be protected by Section 404(a) and Section 404(h) of the Federal Depositary Insurance Corporation Improvement Act (FDICIA).

Wind Down of LLC: The Rulebook provides a netting arrangement in the event of LLC's insolvency to provide members with a clear and certain termination sum. As noted above, the Rulebook is enforceable under New York and U.S. federal law and the rights of members under the provisions of the Rulebook related to the insolvency of LLC are protected under FDICIA.

³ <http://www.lchclearnet.com/rules-regulations/rulebooks/llc>

⁴ <http://www.lchclearnet.com/rules-regulations/proposed-rules-changes>

⁵ See, e.g., <http://www.cftc.gov/LawRegulation/index.htm>

The service closure procedures address circumstances where losses due to member default exceed available resources, but where LLC remains solvent. Should this situation occur, LLC will calculate a net obligation between LLC and each non-defaulting member. Claims on LLC by members are adjusted pro rata according to the assets available to the service,⁶ with this payment constituting full and final settlement of those claims; see Principle 13 of the Committee on Payment and Settlement Systems and Technical Committee of the International Organization of Securities Commissions (CPSS-IOSCO) *Principles for Financial Market Infrastructures* (PFMIs) for more detail.

Conflicts of law

To minimize the legal risk from non-U.S. domiciled members, agreements between LLC and its members are governed by New York law and participants are required to consent to the jurisdiction of New York courts.

LLC reviews the adequacy of its legal framework for cross-border participants by obtaining legal advice regarding the enforceability of the Rulebook, the jurisdiction of New York courts over non-U.S. domiciled participants, and the circumstances and extent to which a New York law security interest will be enforceable under the laws of the relevant jurisdiction. LLC receives an opinion from each member applicant (incorporated outside of New York or Delaware) that addresses the cross-border enforceability of the Clearing Membership Agreement as well as the cross-border enforceability of the security interest under the Clearing Member Agreement under the laws of the jurisdiction of incorporation of the relevant applicant.

Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Safety and efficiency

LLC's operating agreement requires that it be managed in a manner consistent with the operating principles set out in the Relationship Agreement between its parent, LCH.Clearnet Group Limited, and the owner of its parent's majority shareholder, the London Stock Exchange Group plc. (LSEG). These principles include to operate a safe and trusted clearing venue and to comply with all applicable legal and regulatory obligations at all times. In fulfilling these principles, LLC must maintain appropriate risk management structures, policies and principles. LLC also holds as a core operating principle the offering of clearing services on terms that are fair, reasonable, open, and non-discriminatory. In addition, each of the LLC board of directors (Board), the LLC CEO and senior management is required to have regard to the safety and efficiency of LLC and the stability of the broader financial system and other relevant public interest when acting pursuant to its authority.

⁶ At this time, LLC only has one service: SwapClear US.

LLC Board

The conduct and procedures of the LLC Board are governed by LLC's operating agreement. This agreement covers, among other things, the conduct and rules of meetings, frequency of meetings, and appointment and powers of directors.

The responsibilities of the LLC Board, which cannot be delegated to executive management, are set out in a schedule of matters reserved. These matters include:

- determining medium- to long-term strategy;
- approving the company's annual budget and certain material contracts;
- approving any extension of LLC's services;
- reviewing and approving any changes to LLC's risk policies or risk appetite; and
- reviewing and approving any changes to the size and rules of LLC's default fund.

Conflicts of interest are dealt with by the operating agreement and LLC's *Conflicts of Interest and Duty Policy*. These documents detail the procedures to be followed to deal with conflicts, and require directors to absent themselves from any decision in which they have a material interest, unless a majority of the independent directors (in consultation with the CCO) authorize their participation.

The LLC Board is required to undertake an annual evaluation of its performance and that of its committees, chairman and individual directors.

Board Composition

The LLC Board is comprised of a chairman, the CEO of LLC, the LCH.Clearnet Group Limited Chief Risk Officer (CRO), four other independent directors, two directors associated with shareholders not connected to exchanges (approved by LSEG), one LSEG representative and two customer representatives⁷.

The LCH.Clearnet Group Limited Nomination Committee is responsible for recommending candidates for directors for all of the boards across LCH.Clearnet Group Limited and its subsidiaries, with the board and shareholders of the relevant company responsible for approving the recommendations.⁸ The LCH.Clearnet Group Limited Nomination Committee's terms of reference require it to consider the importance of candidates with a variety of rich and complementary skills, product knowledge, and industry experience, and that a board should be representative of its company's key stakeholders. Certain appointments within the LCH.Clearnet group require LSEG approval.

Management

The roles and responsibilities of LLC's CEO are specified in the LLC "Board Reserved Matters, Roles and Responsibilities, and Delegated Authority" document approved by the LLC Board. LLC's CEO is responsible for the day-to-day management of LLC, and is authorized to take any decision or action, provided it is not a matter reserved for the LLC Board. LLC's CEO is also responsible for choosing LLC's management team. LLC's CEO, in exercising his powers, is required to have

⁷ The second customer representative seat is currently vacant. Further details on the LLC Board are available here: http://www.lchclearnet.com/about_us/corporate_governance/

⁸ Since LCH.Clearnet Group Limited is the sole shareholder of LLC, shareholder approval of LCH directors is essentially automatic.

regard to the safety and efficiency of LLC and the stability of the broader financial system and other relevant public interest.

The descriptions of other senior roles in LLC's management are broadly defined in the LLC "Board Reserved Matters, Roles and Responsibilities, and Delegated Authority" document approved by the LLC Board. LLC's Management Committee meets periodically and includes as its permanent members the CEO, the COO, the CFO, the CRO and the CCO. Each of these reports to the CEO though the CCO also reports independently to the LLC Board. The CFO of LCH.Clearnet Group Limited ("Group") and LCH.Clearnet.Limited also serves as the CFO of LLC.

LLC has arrangements that seek to ensure that the remuneration policy does not compromise sound risk management. The LLC Remuneration Committee is responsible for determining remuneration packages for all employees and executive management throughout LLC. The Remuneration Committee's terms of reference require it to implement and maintain a remuneration policy that provides appropriate incentives to encourage enhanced performance which do not create incentives to relax risk standards and which promote sound and effective risk management. Additionally, for determining remuneration for risk management, compliance and internal audit personnel, the Remuneration Committee must ensure that they are compensated in a manner that is independent of business performance. Under the LSEG Relationship Agreement, LSEG is entitled to appoint one director to the LLC Remuneration Committee and has certain rights with respect to the decisions that it makes.

Responsibility and accountability

LSEG

The Relationship Agreement between LSEG and LCH.Clearnet Group Limited outlines the scope of LSEG's involvement in the affairs of LCH.Clearnet Group Limited and the parties' responsibilities with respect to one another. Broadly, the Relationship Agreement provides that LCH.Clearnet Group Limited's business will be carried on independently of LSEG and transactions between the two will be carried on at arm's length.

The Relationship Agreement provides for LSEG to have certain representatives on boards and committees throughout LCH.Clearnet Group Limited and its subsidiaries. In addition, under the Relationship Agreement, LCH.Clearnet Group Limited cannot pursue certain matters without LSEG's consent. LSEG can also require that certain decisions of the LCH.Clearnet Group Limited Board on certain matters be put to a shareholder vote.

LLC and LCH.Clearnet Group Limited

Some elements of LLC's operations are provided on a group-wide basis. Where this occurs, relevant executive management positions exist at both the LLC and group levels, with the LLC-level position reporting directly to LLC's Chief Executive Officer (CEO) as well as to the functional head at the group level.

LLC's CEO is responsible for day-to-day management of LLC, in a manner consistent with the LLC Board's annual business plan and budget, while ensuring that sufficient resources are devoted to risk management. LLC's CEO has the power to choose his or her own management team, including LLC's Chief Risk Officer

(CRO), with recommendations from the LLC Board where appropriate (see below for more detail).

The LLC Board is responsible for overseeing the activities of LLC, and ensuring they are consistent with LCH.Clearnet Group Limited's medium-term financial plan as well as all as decisions relating to: risk tolerance, policies, and management; the company's medium- and long-term strategy and budget; approving material contracts; oversight of internal controls and compliance; and the company's annual reporting. LLC's CEO reports to the LLC Board for all decisions taken by LLC executive management. The composition of the LLC Board is set out above.

As a part of efforts to harmonize governance and operations across the subsidiaries of LCH.Clearnet Group Limited, LCH.Clearnet Group Limited operates an Executive Committee, formed under the authority of and chaired by the LCH.Clearnet Group Limited CEO that oversees and advises on Group-wide issues relating to: compliance and performance relative to LCH.Clearnet Group Limited's strategy; risk management; financial management and reporting; operational management, including regulatory compliance; internal and external audit

In addition to the Group Executive Committee, each CCP has its own Local Management Committee (the CCP LMCs) formed under the authority of and chaired by the relevant CCP CEO. The CCP CEO oversees and advises on issues relating directly to the relevant CCP on issues relating to risk management; financial management and reporting; operational management, including regulatory compliance; internal and external audit.

The Group Executive Committee and CCP LMCs are supported by a number of key sub-committees namely the Finance Committee, Project Steering Committee, New Product Approval Committee, Operational Risk Management Committee and Executive Risk Committee. The Executive Risk Committee receives advice from the Group's CROs, and makes recommendations to, the subsidiary Risk Committees. However, the subsidiary risk committee (e.g., the LLC Risk Committee) and the subsidiary CRO (e.g., the LLC CRO) are ultimately responsible for adopting and implementing risk-related decisions. The LCH.Clearnet Group Limited CRO and the CRO of each subsidiary are members of the Operational Risk and Executive Risk Committee.

SwapClear US

Although not a separate legal entity, SwapClear US operates as a distinct service within LLC. SwapClear US is part of the broader global SwapClear service which has its own executive management overseeing its operations. Ltd supplies certain company-wide services for SwapClear US and the broader global SwapClear service. SwapClear is overseen by SwapClear executive management and the SwapClear US Service is overseen by the Head of SwapClear US who reports to the SwapClear CEO.

LLC does not have a separate SwapClear US business unit. Instead, the SwapClear business unit is made up of Ltd employees who run, with assistance from LLC employees, the SwapClear and SwapClear US services.

Ltd and LLC work with a group of their largest participants in the strategic development of SwapClear. Ltd has formed arrangements for SwapClear under which the majority of the cost of developing and operating SwapClear is borne by these participants. Accordingly, some aspects of SwapClear's governance and some

financial returns from SwapClear are shared with these participants. A summary of these arrangements is available on the LCH.Clearnet website.⁹

Risk Management Framework

LLC's risk management is governed by the LCH.Clearnet group Risk Governance Framework. This framework provides a comprehensive list of risks faced by LCH.Clearnet Group Limited and its subsidiaries, and sets out for each: the LCH.Clearnet Group Limited Board's tolerance; the personnel with responsibility for managing the risk; and reporting requirements.

The LLC Risk Committee has responsibility for establishing and overseeing the Risk Governance Framework in LLC. The LLC Risk Committee's primary objectives are to: review LLC's risk policies on haircuts, margins, liquidity, and risk appetite; manage issues relating to the default fund, including rules and size; review LLC's payment settlement arrangements; and confirm compliance with stated risk policies. The LLC Risk Committee is comprised of independent directors and representatives of participants and exchanges. Members of LLC's senior management attend committee meetings in a non-voting capacity. The LLC Risk Committee meets at least six times a year, and typically does so more frequently.

All risk policies, including the Risk Governance Framework, are approved by the LLC Board, following review and recommendation by its Risk Committee. The LLC Risk Committee oversees implementation and ensures that the policies are appropriate for its business units and the applicable regulatory regimes. To aid with harmonization across the LCH.Clearnet group, the LLC Risk Committee, the LCH.Clearnet SA Risk Committee and the Ltd Risk Committee have the same independent chairman and deputy chairman.

Crisis situations affecting business continuity are addressed by LLC's Business Continuity Plan. This plan sets out crisis management teams, responsibilities, and procedures to be followed. Default management is handled in accordance with the default management policy.

Assessment of LLC's performance against the LCH.Clearnet group Risk Governance Framework is carried out periodically and reported to the LLC Board.

Internal Audit

The core objective of the Internal Audit function is to assist management and the Audit Committee in the effective and efficient discharge of their responsibilities. Internal Audit accomplishes this objective through the evaluation of policies, control standards and associated procedures designed to manage business risks. Specifically, Internal Audit carries out internal audits and examinations, both of which provide objective insights, analysis, appraisals, observations and recommendations relating to improvements in the quality and application of internal risk controls. In this regard, Internal Audit fulfils a "third line" assurance role within the company.

Both LLC and LCH.Clearnet Group Limited have Audit Committees, with participation criteria determined by the LSEG Relationship Agreement and the committees' terms

⁹ <http://www.lchclearnet.com/documents/731485/762606/project+emerald+--+disclosure.pdf/11fe28c8-ff9f-484f-a798-ff523ce1f785>

of reference.¹⁰ In order to harmonize the approach across LCH.Clearnet Group Limited and its subsidiaries certain topics that affect one or more entities are discussed in a combined Audit Committee meeting. The LLC Audit Committee reports regularly to the LLC Board. The purpose of the LLC Audit Committee is defined in its terms of reference and covers the review of LLC's financial statements and external auditor; the Internal Audit department, including the charter and audit plan; regulatory compliance; internal controls; and business continuity planning. The LLC Audit Committee meets at least quarterly, or more frequently as needed.

Internal audits are conducted by the Internal Audit department, within the scope of LLC's audit charter. The department has appropriate independence and its work is considered and reinforced by the LLC Audit Committee.

Internal Audit has direct access to the LLC Board and the Audit Committee and is accountable to the Audit Committee. The Audit Committee Chairman reports regularly to the Board on all aspects relating to the Committee. The Head of Internal Audit reports directly to the Audit Committee Chairman on functional matters and to the Chairman on administrative matters. In addition, Internal Audit has direct access to the LLC CEO for strategic matters as and when required. The Audit Committee Chairman will provide an appraisal of the Head of Internal Audit; this will normally be as part of the annual performance review process.

The audit plan determines the areas that the Internal Audit department will consider. The audit frequency ranges from annual to every five years depending on several factors including the inherent and residual risk assessments, mandatory (e.g., regulatory) requirements, emerging risks, and the extent of changes experienced and planned. The audit plan is reassessed annually by the LLC Audit Committee.

LLC's financial statements are audited annually, as required by U.S. law.¹¹ The external auditor may request a special meeting with the LLC Audit Committee at any time. LLC's external auditors review various process and controls, including LLC's internal control mechanisms and risk management processes, as a part of their annual external audit.

Stakeholder engagement

LLC provides participants (including both members and customers thereof) with input into decision-making through a number of channels. These channels include representation on the LLC Board.

Participants are included on LLC's Risk Committee and Audit Committee; the terms of reference for the relevant committee set out the degree of participant representation.

Ltd and LLC have established a number of SwapClear User Engagement Forums to consult with participants of SwapClear.

SwapClear communicates all service changes periodically via the SwapClear Program Update and all rule proposals are published on LLC's website.

¹⁰ LSEG is entitled to one LSEG director on LCH's Audit Committee under the Relationship Agreement.

¹¹ 17 C.F.R. § 39.19(c)(3)(ii).

Group Structure

LCH.Clearnet Group Limited and its subsidiaries have a number of measures in place to ensure that the group structure does not compromise either LLC or its services. The group-wide risk policies described under Principle 2 of the PFMI seek to ensure that the approach across all three subsidiaries and the services they house is as consistent as possible, while still allowing each subsidiary and service to tailor specific procedures and policies to its environment where needed. In addition, the terms of reference of each subsidiary's risk committee deal with harmonization issues and the manner in which they are to be resolved. In order to aid harmonization, certain subsidiary committees have the same independent chairman and deputy chairman.

Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Policies and Procedures

LLC's overarching approach to risk management is administered according to the LCH.Clearnet group's Risk Management Framework. Designed to harmonize risk management across LCH.Clearnet Group Limited and its subsidiaries, this framework attempts to comprehensively identify the range of risks to which the group is potentially exposed and designate responsibility for these risks. Through the framework, the LCH.Clearnet Group Limited Board defines tolerance levels for each category of risk. The framework also sets guidelines for internal reporting to provide assurance that the framework is observed. The LLC Board has approved the LCH.Clearnet group's Risk Management Framework for LLC (as part of the aforementioned risk-management harmonization efforts) and LLC reviews compliance with the framework and the framework itself on at least an annual basis.

The framework is given effect by more targeted and detailed policies of the LCH.Clearnet group, each reviewed at least annually and adopted by all of the clearing house subsidiaries of LCH.Clearnet Group Limited, which address:

- financial resource adequacy;
- counterparty credit risk;
- liquidity risk;
- latent market risk;
- model governance;
- default management;
- settlement, payment and custody risks;
- investment risk; and
- operational risk.

See Principle 2 of the PFMI for details of LLC's risk governance.

Principle 4 below contains further information concerning the way in which LLC manages its risk exposure to participants through the margining and marking to market of open positions.

Incentives for members to manage risks they pose to LLC

Since initial margin and default fund requirements are proportional to the risk posed by that member's positions, each member has an incentive to manage and contain the risks it poses to LLC in order to reduce its financial obligations. LLC's application of margin multipliers, which increase initial margin requirements as credit, liquidity, concentration and sovereign risks exceed certain base assumptions, provide additional incentives to avoid particularly risky portfolios.

Incentives to contain risks also arise from the design of LLC's loss-sharing mechanism, which prioritizes default fund contributions according to the scale of members' contributions to LLC's risk exposure and the competitiveness of members' bids in the auction of a defaulter's portfolio (see Principle 13 of the PFMI for more detail on loss mutualization in the event of default).

Interdependencies

The LCH.Clearnet group Risk Management Framework takes into account risks posed by clearing members that provide other services to LLC. In particular, LLC seeks to manage risks posed by payment and settlement intermediaries (see Principle 9 of the PFMI), custodians (see Principle 16 of the PFMI), essential service providers (see Principle 17 of the PFMI), and other FMIs (see Principle 20 of the PFMI).

By managing risks posed to its solvency and orderly operation, LLC limits the risks that it poses to other entities and to financial markets.

LLC has Recovery and Wind-Down Plans in place as required by CFTC Regulation 39.39. These Plans were developed in consultation with Ltd and harmonized with Ltd to the extent possible.

Principle 4: Credit risk

An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

The LCH.Clearnet group's credit assessment policy provides a uniform framework for credit risk assessments pertaining to clearing members and other corporate/banking counterparties across LCH.Clearnet Group Limited and its subsidiaries, including settlement agents, custodians, the protected payment system (PPS) banks, concentration banks, investment counterparties and margin collateral issuers.

Credit exposures

LLC manages its credit exposures to members through the maintenance of prefunded financial resources, the enforcement of participation criteria, and regular monitoring. In addition, the LLC Rulebook allows LLC to call for additional funds from members under certain conditions.¹²

LLC calculates internal credit ratings for each member through an assessment of both quantitative and qualitative factors. These ratings influence LLC's Risk Management Department's response to more specific risks identified by daily monitoring, as well as determining the frequency of future assessments of each member. These internal credit ratings are approved by the Credit Risk Management Committee and notified to the Executive Risk Committee.

To access SwapClear US through LLC, an institution must become a clearing member of LLC. Participation criteria include minimum net capital of US \$50 million, as well as a satisfactory assessment of financial and operational capabilities by LLC.¹³ LLC additionally requires that each SwapClear US member have, within its corporate group, at least one banking institution, credit institution, securities firm, investment firm or similar entity licensed by the competent authorities of the United States, or a member state of the European Union, or the equivalent of a banking institution, credit institution, securities firm, investment banking firm or similar entity licensed by the competent authorities of a country outside the United States and the European Union and which is subject to prudential rules considered by LLC to be at least as rigorous as those applicable to similar entities within the United States or the European Union.¹⁴

LLC may impose further conditions on members, including a requirement to provide additional collateral.¹⁵ LLC has the right to request additional financial information from a member at its discretion.

Credit risk monitoring

LLC's Risk Management Department is responsible for reviewing each member's creditworthiness and financial condition. LLC utilizes an internal credit scoring framework which considers both qualitative and quantitative factors including financial profile (asset quality, capital adequacy, funding & liquidity and profitability), operational capability (operating environment, operational profile and risk management policies & procedures), guarantees of support and sovereign ceiling considerations. Members' positions are monitored continuously, with particular focus on the size of each member's cleared positions relative to its capital and to the total open interest in a particular contract.

LLC monitors members' compliance with the net capital requirement on an on-going basis and members are obliged to provide certain financial information for this purpose under the Rulebook. All members are also obliged to notify LLC immediately in the case of a significant reduction in its shareholders' funds or net capital as compared to their previous financial returns.

¹² See, e.g., LLC Regulation 106, 302

¹³ LLC Regulation 102(b)(i)

¹⁴ LLC Regulation 102(b)(vi).

¹⁵ LLC Regulation 106(h), LLC Procedure 1.6.

All open positions are marked to market daily.¹⁶ For SwapClear US, marking-to-market uses LLC's published zero-coupon yield curves; variation margin equal to the change in the net present value of each member's portfolio is then paid to or by LLC. This practice ensures that LLC's valuations of members' positions remain current and that losses do not accrue over time (which would otherwise impair the ability of LLC's financial resources to cover market risk in the event of a default). Rates are typically sourced from banks or brokers.

LLC collects initial margin to cover potential losses incurred during the close-out of a defaulted member's positions.

Initial margin requirements for SwapClear US are calculated using the Portfolio Approach to Interest Rate Scenarios (PAIRS) model.¹⁷ The model calculates expected shortfall on a portfolio over an assumed five-day holding (close-out) period, based on approximately ten years of historical market data. The model also accounts for historical FX rate movements relative to U.S. dollars, to address the FX risk of positions denominated in other currencies.

SwapClear US's initial margining also incorporates a margin multiplier framework that requires extra margin to cover any credit, liquidity, concentration and sovereign risks not captured by the PAIRS model. Further, the holding (close-out) period used to determine initial margin requirements on the positions of a member's customer (i.e., "client" positions) is subject to an additional two days.

Initial margin is called at least daily. LLC makes additional intraday margin calls when margin liabilities exceed predetermined credit thresholds, based on portfolio revaluations conducted multiple times each day.¹⁸

Risk coverage

LLC's rules provide for a number of financial resources to cover its credit exposures. These consist of: (1) margin provided by members in respect of their outstanding positions; (2) capital contributions from LLC; and (3) a pooled default fund of paid-up contributions from members. These resources would be used in the following order to cover losses due to a member's default: (A) the defaulted member's margin and default fund contributions; (B) LLC's capital contribution; and (C) contributions from non-defaulting members to the default fund. In the event that LLC's default fund is diminished by 25% or more, LLC has the authority under its Rulebook to require non-defaulting members to pay additional "unfunded" contributions to the default fund that, with respect to each default, cannot exceed an amount equal to each clearing member's funded contribution requirements. LLC cannot call "unfunded" contributions with respect to more than three defaults in a six-month period. In addition, LLC can request that its clearing members voluntarily replenish the default fund.

The size of the SwapClear US default fund was approximately \$260 million as of November 2015. It comprises two components: a core component and an additional component that supports the intraday provision of credit needed to facilitate 'real-time' trade registration.

¹⁶ LLC Regulation 402.

¹⁷ LLC Procedures 2A.8.

¹⁸ LLC Procedures 2A.8.3.

The core component is sized to cover the sum of the stress-test losses of the two clearing members creating the largest financial exposure to LLC in extreme but plausible conditions (and the stress-test losses of their affiliates and clients) in excess of margin, plus an additional buffer of ten percent.¹⁹ However, the core component is currently subject to a cap of \$5 billion.²⁰ It is subject to a floor of \$10 million multiplied by the number of current clearing members. The core component is resized monthly with reference to a rolling look-back period of 60 business days.²¹

The proportion of the core component that each clearing member is obliged to contribute is calculated according to that member's average initial margin requirement for the previous month as a share of all clearing members' aggregate initial margin requirements.

In accordance with CFTC requirements, new trades are registered with (i.e., novated to) LLC as quickly as technologically practicable following submission, subject to LLC holding sufficient collateral to cover the incremental margin requirement or the incremental margin requirement being within specified tolerance limits for the relevant members based in part on internal credit ratings.

LLC mitigates the credit risk that arises from offering trade registration tolerance limits through an additional component in the default fund. This additional component is sized to cover the sum of the two largest members' stress-test losses (and the stress-test losses of their affiliates and clients) arising from the extension of intraday tolerance limits. The proportion that each member is obliged to contribute is based on its tolerance limit utilization relative to the aggregate utilization of all members over the prior 20 business days, subject to a floor of \$6.25 million and a cap of \$40 million.²² Member contributions to the additional component are rebalanced on the same timeline as those to the core component.

The Rulebook allows LLC to call from members pre-specified amounts of additional capital to replenish default fund resources utilized as a result of a member's default.²³ See Principle 13 for more detail. In the event of a default, LLC is permitted to call an amount equal to a member's contribution requirement to satisfy LLC's losses with respect to the default.

Stress testing

LLC assesses the sufficiency of the default fund through daily stress testing. Sufficiency is assessed with reference to the sum of the two largest stress-test losses under extreme but plausible scenarios, plus the stress-test losses of their affiliates and clients. This process involves the daily re-valuation of each member's portfolio using a set of historical and theoretical stress-test scenarios incorporating price and volatility shifts to estimate a worst-case loss in excess of that member's initial margin.

The stress-testing framework is reviewed periodically, with a full review of the coverage of the contracts cleared, model assumptions and parameters. This process

¹⁹ LLC Regulation 303(g).

²⁰ LLC Regulation 303(c) – a cap above \$5 billion would require a Rulebook change.

²¹ LLC Regulation 303(g).

²² LLC Regulation 303(f).

²³ LLC Regulations 310, 311.

also involves a review of stress-test scenarios to ensure their plausibility and accuracy. In addition, ad hoc reviews are carried out when it is deemed that a change in the market may have a material impact on any scenario's plausibility.

Scenarios

LLC maintains a record of historical stress-test scenarios covering financial crises and exceptional trading days from 1987 onwards. From these, LLC's Risk Management Department is responsible for selecting those historical periods that are sufficiently extreme to include as stress-test scenarios. These selections are subject to approval by both the Executive Risk Committee and the LLC Risk Committee. In addition, the Executive Risk Committee reviews and adds new periods of increased market volatility to the set of stress-test scenarios as soon as practicable.

Stress testing for SwapClear US currently considers a suite of extreme but plausible scenarios, comprising the most volatile five-day periods since 1992, as well as a number of theoretical stress scenarios, including Eurozone break-up scenarios. The results of this daily stress testing are also used (in conjunction with a back-testing process) to determine the appropriateness of the underlying assumptions and parameters used in the stress testing regime.

Reporting and follow-up

Stress testing is incorporated as part of the routine oversight and monitoring of members. Daily stress-test results that exceed certain predefined thresholds must be escalated to LLC's CEO and Risk Committee. In the normal course, a summary of the stress-test results and accompanying analysis is presented to the LLC Risk Committee for review on a quarterly basis.

LLC's Risk Management Department has the right to call additional margin from any member with projected stress-test losses that exceed predefined thresholds based on that member's LLC internal credit assessment. In addition, members with projected stress-test losses that exceed the size of the default fund are called for additional margin in the amount of the breach.²⁴

Principle 5: Collateral

An FMI that requires collateral to manage its or its participants' credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Collateral criteria

The LCH.Clearnet group's collateral policy places restrictions on the classes of collateral that may be accepted by LLC:

- Variation margin payment obligations must be met at least daily in cash and in the currency of the relevant contract.

²⁴ As stress testing occurs after SwapClear US closes at midnight, this additional margin is collected the next morning. See Principle 6 for more details on SwapClear's daily margin processes.

- LLC only accepts U.S. dollars cash for margin cover for initial margin²⁵.
- LLC may accept tradeable securities if they are of high credit and liquidity quality and can be reliably marked to market. LLC does not accept securities close to maturity or subject to specific corporate events. The list of collateral accepted by LLC can be found on LLC's website.²⁶
- All collateral posted to LLC is held at U.S. depository institutions or their designated Agents.

Valuation and haircuts

LLC marks its collateral holdings to market daily, using observed market prices obtained from published sources. In accordance with the LCH.Clearnet group's collateral policy, LLC will not accept a currency or security for collateral unless there is readily available market data from an authorized source.

Base haircuts are applied to non-cash collateral to account for market risk. To ensure haircuts are appropriate for stressed market conditions, add-ons may be applied to cover credit risk, concentration and liquidity risk, wrong-way risk and FX risk.

Haircuts are reviewed by LLC's Risk Management Department quarterly. They are also subject to intra-quarter monitoring and any risk-related issues are escalated to Group Risk Management if necessary. The Executive Risk Committee reviews the appropriateness of the LCH.Clearnet group's collateral policy on an annual basis.

In order to reduce the need for procyclical adjustments, haircuts are calibrated to cover periods of major market stresses, including the Lehman default and the European sovereign debt crises.

Concentration

The LCH.Clearnet group's collateral policy includes a concentration framework that limits the amount of collateral members can post in particular securities. Additionally, LLC reserves the right to place concentration limits on particular asset types and to manage specific concentration in members' collateral portfolios. Where positions are considered to be excessively concentrated, members will be contacted to re-align their portfolio.

Currently, concentration limits apply to government securities (in limited circumstances) under a framework for managing sovereign risk.²⁷

Collateral management

The LCH.Clearnet group operates its own online, proprietary collateral management system. Members are able to view their current cash and security balances via a web interface, although only cash balances used to cover initial margin, and not variation margin calls, are shown. The collateral management system also allows members to access collateral valuation reports and provide instructions to LLC to:

²⁵ Variation Margin is always payable in the currency of the swap.

²⁶ <http://www.lchclearnet.com/risk-collateral-management/collateral-management/acceptable-collateral>

²⁷ Details on the limits on FNMA, FHLMC, and FHLB Agency Debentures are available on LLC's website - <http://www.lchclearnet.com/risk-collateral-management>

- lodge, release, or substitute non-cash collateral both bilaterally and through a tri-party mechanism; and
- deposit and withdraw cash

The collateral management system allows instructions to be input at any time, but instructions are only actioned during the Collateral and Liquidity Management Department's operating hours: 08:00 to 18:00 (New York time).²⁸ Additional (i) CSD or (ii) custodian specific deadlines apply for same-day settlement.

The system interfaces to the LLC back-office systems and is able to show collateral balances in real time. In addition to the user-interface for clearing members that system also provides functionality to the Collateral Operations department enabling them to, for example:

- view incoming requests to move collateral to/from the clearing house;
- generate SWIFT messages to tri-party agents in order to open, change or close tri-party collateral transactions;
- automatically generate email notifications of status changes on collateral instructions;
- view "LSOC cover valuation reports" to clearing services;
- monitor intraday cash balances on PPS bank accounts and calculate and view intraday exposures.

Members are required to make variation margin payments to LLC within one hour of notification that payment is due. LLC credits or debits the change in the net present value of a clearing member's swap portfolio on a daily basis.²⁹ Members must give LLC no less than two business days of notice of their intention to request withdrawal of cash collateral and its replacement by the lodgment of non-cash collateral.³⁰

Principle 6: Margin

A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.

Margin levels

LLC requires each member to post initial margin to cover potential losses arising in the event of that member's default. For SwapClear US, LLC utilizes the PAIRS model.

The PAIRS model calculates initial margin requirements to cover potential losses to LLC as a result of closing out a defaulted member's portfolio. The model uses historical price movements to simulate potential adverse changes in the value of a member's current cleared portfolio over the assumed five-day holding (close-out) period. The model also considers historical FX rate movements to incorporate FX risk.

²⁸ LLC Procedures 4.2.4.

²⁹ LLC Procedures 2A.6.4.

³⁰ LLC Procedures 3.3.1.

In addition to the base requirement, LLC employs a margin ‘multiplier’ framework that requires members to post additional margin to cover credit, liquidity, concentration and sovereign risks that exceed the close-out assumptions of the PAIRS model. Further, initial margin requirements for client positions use a holding (close-out) period of seven days to reflect incremental market risk arising from a longer assumed close-out process.

Pricing

For the valuation of members’ positions, LLC sources price quotes from a number of banks and brokers via established data sources. Upon receipt, each quote is subject to validation checks. Quotes that satisfy all checks are then consolidated to produce a single reference price.

Models

Base initial margin requirements for SwapClear US provide LLC coverage based on expected shortfall. This is calculated by the PAIRS model, which simulates changes to the value of a SwapClear US member’s portfolio based on historical price movements from a ten year look back period. The coverage of potential future exposures has a confidence level of at least 99.7 percent.

The PAIRS model uses an assumed holding (close-out) period of five days for the proprietary house positions of members. For client positions, this close-out period assumption is increased to seven days. LLC additionally applies margin requirement “multipliers” by member to cover further credit, liquidity, concentration and sovereign risks that exceed the assumptions of the base calculation.

The need for procyclical margining changes in the PAIRS model is mitigated through features such as: expected shortfall, the use of a long look-back period that includes a number of significant market stresses (e.g., the Lehman default) and the use of exponentially weighted moving average volatility scaling.

Initial margin is called at least daily. Portfolios are also re-valued at least once intraday to take account of changes in both prices and positions; LLC makes intraday margin calls when margin erosion exceeds predetermined, member-specific thresholds.³¹

Intra-day calls

All SwapClear US positions are marked to market on at least a daily basis. This practice ensures that LLC’s valuations of member positions remain current and that losses do not accrue over time (which would otherwise impair the ability of LLC’s initial margin to cover market risk in the event of a member default).

LLC has the authority and operational capacity to make intraday variation margin calls and payments.³² The LLC Rulebook allows LLC to call additional intraday margin any time within the operational day.

Offsets

³¹ LLC Procedures 2A.8.3.

³² LLC Regulation 106(e).

SwapClear US's initial margin methodology calculates requirements at the portfolio level; effectively, margin is offset across currencies and products within the same asset class. However, the PAIRS model is based on historical price movements, and thus margins are only offset to the extent that a reliable correlation is observed between the various cleared interest rate products.

LLC does not permit the cross-margining of SwapClear US positions against positions cleared by other CCPs.

Model testing

Initial margin must be sufficient to cover 99.7 percent of observed price movements. This coverage is backtested on a daily basis against actual and hypothetical portfolios, with backtest results reviewed monthly. If backtesting suggests the margin coverage target cannot be met, LLC will conduct a root cause analysis including further investigation into the performance of the margin model. Additional backtesting is performed on a monthly basis and margin coverage breaches are used to identify any model weaknesses with respect to specific products, risk factors and market conditions.

Validation

LLC reviews all models on at least an annual basis,³³ considering data over the past year. Independent review of margin models considers all backtesting and stress-testing results and tests the performance of the models across various levels of confidence, and the calibration of the underlying parameters of models. In addition, LLC's margining policies and outcomes are reviewed on a regular basis by the LLC Audit and Risk Committees.

The model review evaluates the validity of the margin model in theory and its performance in practice, and also appraises its parameters and assumptions. The review considers any changes in market practice and recent market conditions. The outcome of the model review is reported to the Executive Risk Committee for approval before submitting to LLC's Risk Committee.

Material changes to margin methodology are subject to LLC's full risk governance process, which includes both internal review and external validation of the model, and must receive approval from the Executive Risk Committee, LLC's Risk Committee and the LLC Board.

Principle 7: Liquidity risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Liquidity risk framework

³³ LLC Procedure 3.6.18.

Liquidity risk is the risk of not being able to satisfy expected and unexpected financial obligations. LLC identifies two potential sources of liquidity risk: (1) stressed outflows from daily operations and (2) management of member defaults. The main driver for daily operational liquidity outflows is the return of cash collateral to members. Member default liquidity risks arise from the fulfillment of the obligations of the defaulted member (typically variation margin payments to non-defaulted clearing members) and losses due to the close-out of the defaulted member's cleared positions. In addition, liquidity pressures may be exacerbated by any FX mismatches. Operational liquidity flows are managed on a day-to-day basis by LLC's Collateral and Liquidity Management Department in accordance with the LCH.Clearnet group's liquidity policy.

LLC's Rulebook provides that a variation margin settlement cycle takes place once per day. As part of this cycle, cleared contracts are marked to market and a cash payment is made with respect to the change in net present value of the relevant portfolio in the currency of the swap. In the event of a clearing member default, LLC will pay out all variation margin payments, even though the defaulter may not have made any or all variation margin payments to LLC for that cycle, from its available liquid resources. The default resources described above under Principle 4 are available to LLC to make or reduce these payments.³⁴

LLC also calculates liquidity requirements under stress scenarios including the default of the two members (and any members affiliated therewith) that would give rise to the largest liquidity requirement following a default. Based on these stress tests, LLC sets daily operational liquidity targets for U.S. dollars to ensure outflows related to normal business activities can be met.

Measurement and monitoring

The LLC Risk Management Department is responsible for the monitoring and measuring of the adequacy of the cash levels held to meet liquidity outflows. The role of managing the day-to-day liquidity belongs to the Collateral and Liquidity Risk Management Department.

Liquidity metrics and other key liquidity performance indicators are reported daily to senior management. Exceptions and issues are discussed at the Assets and Liabilities Committee and raised to the Executive Risk Committee for approval as appropriate. Breaches in liquidity limits are escalated immediately to senior management and the Collateral and Liquidity Management Department.

Liquid resources

LLC's primary liquid resources consist of cash and highly marketable securities provided by members as collateral.

LLC's liquid resources are managed in compliance with its investment and liquidity policies to ensure capital preservation and availability of liquidity to meet stressed liquidity requirements. Specifically, investments are managed such that maturing investment cash flows each day are sufficient to cover estimated operational needs as well as the potential liquidity needs in the event of the default of the two largest members.

³⁴ See, also, the discussion under Principle 8 below with respect to the finality of this daily settlement.

LLC also has access to a committed FX line from a major bank in order to meet its potential intra-day settlement obligations in multiple currencies.

LLC engages in reciprocal repurchase transactions and periodically engages in repurchase transactions in securities to test its access to secured funding.

LLC does not have access to central banks.

Assessment of providers

LLC periodically tests its procedure for accessing liquidity through market transactions conducted by the Collateral and Liquidity Management team.

Stress testing

LLC carries out daily default liquidity stress tests and models its liquidity profile out to 30 days. The model considers the default of the two members that would give rise to the largest liquidity requirements. Default liquidity stress testing takes into consideration other relationships which LLC may have with the defaulted members.

The results of liquidity stress testing are reported to senior management on a daily basis. In addition, monthly reviews are provided to the LCH.Clearent Group Limited Assets and Liabilities Committee.

Principle 8: Settlement finality

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.

Finality

The Rulebook sets out the conditions under which settlement obligations become final and irrevocable. LLC instructs payments to and from members via 'Payment Transfer Orders', sent via the SWIFT messaging system to the relevant member's settlement bank in LLC's PPS (i.e., the member's PPS bank); see Principle 9 for more details on the PPS. The Procedures specify that a member's obligation to LLC will be deemed to be satisfied only when funds have been transferred from the PPS bank to LLC's account at its concentration bank and any time permitted by the relevant payment system for the recall of any such payment has expired. Further, the Procedures specify that LLC's obligation to a member will be deemed met when funds have been transferred from LLC's concentration bank to the member's PPS bank.³⁵

LLC has received legal advice confirming its rights to use funds received by way of cash payment by a member through the PPS banks notwithstanding the default of that clearing member.

Timing

³⁵ LLC Procedures 3.2.4.

For each revaluation of members' obligations where a net call is made on a member, the member's PPS bank is required to make an irrevocable commitment to fund the obligation due to LLC the following morning if the call was made overnight or within one hour if the call was made intraday.³⁶ Where an initial margin call is made in U.S. dollars the PPS bank is required to send a payment to LLC at the concentration bank through the appropriate payment system within two hours.³⁷ Where the margin call obligation is in a currency with a future value date (i.e., next-day currencies or currency holidays), an irrevocable commitment is made on the same timeline as described above but the actual payment is not settled until the value date.³⁸ Where the net obligation calculated overnight is in favor of the member, payment flows from the concentration bank to that PPS bank in the morning, after all member calls are settled.

LLC can issue PPS calls on every day that it is open, regardless of whether that day is a business day for the relevant currency; however, where it is not a business day in the currency, the value date of that payment is deferred to the next business day as per market convention.³⁹

Irrevocability

As described above, payment transfer orders through the PPS are irrevocable once the PPS bank has confirmed the commitment via SWIFT message. This confirmation must be made the following morning where the call was made overnight or within one hour if the call was made intraday.⁴⁰

Principle 9: Money settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimize and strictly control the credit and liquidity risk arising from the use of commercial bank money.

LLC does not have access to accounts at central banks. It uses commercial financial institutions as PPS banks and concentration banks to facilitate the following:

- Obligations between LLC and its members; for example, initial margin, default fund contributions and participation fees.⁴¹
- Obligations notionally among members; for example, variation margin and cash settlement of contracts.⁴²

Obligations between members and LLC for each currency are settled through the PPS. PPS banks which then make (or receive) payments on behalf of members to LLC's "concentration banks" through Fedwire, CHIPS or an internal book transfer where the PPS and concentration accounts are with the same entity.

³⁶ LLC Procedures 3.2.3.

³⁷ LLC Procedures 3.2.7.

³⁸ LLC Procedures 3.2.7.

³⁹ LLC Procedures 3.2.9.

⁴⁰ LLC Procedures 3.2.3.

⁴¹ These payments result in a net increase or net decrease in funds held by LLC.

⁴² If there are no defaults, LLC effectively functions as a pass-through for these payment flows.

When LLC places a net call on a member, that member has to fund the call via its PPS bank which will make an irrevocable commitment to fund the obligation due to LLC the following morning (for overnight calls) or within one hour (for an intraday call). The obligation of the member to LLC is only satisfied when the funds have been transferred from the member's PPS bank and credited to LLC's account at its concentration bank account, and any time permitted by the relevant payment settlement system for the recall of any such payment has expired.

Where an initial margin call is made in U.S. dollars, the PPS bank is required to send a payment to LLC at the concentration bank through the appropriate payment system within two hours. Where the obligation is denominated in another currency, an irrevocable commitment by the PPS bank occurs on the same timeline but actual payment is not made until the following day due to time-zone differences. Where LLC owes net margin to a member's bank, LLC instructs payment to flow from the concentration bank to that PPS bank during the morning of the following day.

SwapClear US is open for the receipt of new trades between 07:30 and 19:00 New York time. New trades are able to be registered (i.e., novated) as soon as technologically practicable following submission, subject to LLC holding sufficient collateral to cover the incremental margin requirement or the incremental margin requirement being within specified tolerance limits for the relevant members based in part on internal credit ratings.

The PPS operates through London based PPS banks from 09:00 to 16:00 London time, and in the US from 08:00 to 17:00 New York time. New trades submitted after the PPS closes will only be registered if the relevant members already have sufficient collateral posted or the relevant, member-specific tolerance limits are not breached.

Settlement asset

The PPS involves transitional settlement across the books of the commercial banks that act as PPS banks. See below for a description of the risk management applied by LLC in respect of its PPS arrangements.

Risk management

The LCH.Clearnet group's risk management policies set the standards for the selection and monitoring of exposures that arise from PPS and concentration bank activities on a daily (and intraday, where appropriate) basis.

PPS and concentration banks must meet the following eligibility criteria:

- have a minimum internal credit score as approved by the Credit Risk Management Committee;
- be able to demonstrate operational suitability such as accounting and SWIFT messaging capabilities; and
- a requirement to adhere to LLC procedures.

LLC reserves the right to apply more stringent criteria when, in its assessment, a PPS bank's financial resources or operational capability are not commensurate with its level of business. In the event that a bank no longer wishes to participate in the PPS, a minimum of three months' notice must be given and arrangements made with

LLC for an orderly transition. All members are required to have contingency plans such that they can continue to meet obligations to LLC in the event of a PPS bank failure. The list of PPS banks used by LLC is disclosed to the public.⁴³

Book-entry settlement

By maintaining internal book-entry accounts for members, LLC is able to net financial obligations between LLC and its members. This reduces credit and liquidity risks by removing the need for gross settlement through the PPS of offsetting obligations. However, net cash obligations to or from LLC are ultimately discharged through the PPS.

Timing

LLC executes a standardized set of binding terms and conditions (i.e., the “PPS Agreement”) with the commercial banks that participate in the PPS.⁴⁴ The PPS Agreement requires PPS banks to confirm PPS calls made to members for whom they provide PPS services; calls made overnight must be confirmed the following morning, and intraday calls must be confirmed within one hour of the call being received by the PPS bank. For concentration banks, the PPS Agreement sets out requirements around any onward transfer of funds in LLC’s account upon instruction from LLC.

As noted above, LLC’s credit exposure to PPS banks is mitigated as clearing members are responsible for meeting obligations to LLC until such time as funds arrive in LLC’s concentration account.

Principle 10: Physical deliveries

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.

LLC does not settle any clearing transactions by physical delivery. Therefore, Principle 10 of the PFMI is not applicable.

Principle 11: Central securities depositories

A CSD should have appropriate rules and procedures to help ensure the integrity of securities issues and minimize and manage the risks associated with the safekeeping and transfer of securities. A CSD should maintain securities in an immobilized or dematerialized form for their transfer by book entry.

LLC does not function as a central securities depository. Therefore, Principle 11 of the PFMI is not applicable.

Principle 12: Exchange-of-value settlement systems

⁴³ http://www.lchclearnet.com/risk_management/lc/pps/

⁴⁴ Different agreements exist depending on whether the bank participates in the PPS in the United Kingdom or the United States.

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

LLC does not settle any cleared transaction by way of exchange-of-value settlement. Therefore, Principle 12 of the PFMI is not applicable.

Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Rules and Procedures

The Rulebook is available on LLC's website and provides for a Default Management Process (DMP) which governs LLC's response to the default of a member.⁴⁵ The DMP addresses the declaration of a member default, the management of a defaulted member's positions, and the attribution of any losses to LLC's financial resources. It also establishes a right to call for additional financial resources from non-defaulting members and further actions in the event that all of LLC's financial resources are exhausted.

The DMP is implemented by the LLC Default Management Group (DMG). The DMG is comprised of personnel from SwapClear US, Risk Management and a revolving group of senior traders who are seconded to LLC from members in the event of a default.

Under the Rulebook, a member may be declared to be a defaulter where an event of default (as defined in the Default Regulations) is deemed to have occurred. Events of default include: commencement of insolvency proceedings; failure to make a required payment to LLC; and breach of any rules or procedures of LLC.⁴⁶ Once a default is declared, informational firewalls are erected between seconded DMG members and their firms, and a series of auctions is conducted to sell the defaulter's portfolio. The DMG has the discretion to hedge the defaulted member's portfolios and split these into sub-portfolios for auction. Where the clearing member clears for customers and prior to hedging and close-out, LLC will work with the CFTC, trustee in bankruptcy and Bankruptcy Court in order to port a customer's positions and assets to a solvent clearing member, as described further in Principle 14. In addition and where applicable, a defaulter's proprietary and customer portfolios are auctioned separately.

To ensure obligations created for non-defaulting members are proportional to the scale and nature of a member's activities, each member's default fund contribution is apportioned into "Auction Incentive Pools" (AIPs) as part of the DMP.⁴⁷ Each AIP is linked to the auction of a specific currency portfolio. The size of the allocation of a member's funds to an AIP is proportional to the risk of that member's cleared positions in that currency. Therefore, although there is no legal obligation to bid on

⁴⁵ LLC Regulation 204, <http://www.lchclearnet.com/rules-regulations/rulebooks/lc>

⁴⁶ LLC Regulation 203.

⁴⁷ LLC Regulation 204(b)(iii).

any auction portfolio, non-defaulting members with large positions in a certain currency will be incentivized to bid competitively in the auction of the defaulter's portfolio in that currency.

The default losses determined through the auction process in excess of the defaulter's financial resources and LLC's capital contribution are mutualized by non-defaulting members sequentially in tranches based on how competitive their bids were.

A defaulter's resources which are not used during the default management process are transferred back to the defaulter (or its bankruptcy administrator).

LLC has the right to call additional funds from non-defaulting members ("unfunded contributions") if 25% or more of the SwapClear US default fund has been used during the DMP.⁴⁸ The value of unfunded contributions LLC may call from each member in respect of a given default is capped at that member's required funded contribution to the default fund at the time of the default. Additionally, unfunded contributions may not be called by LLC in regard to more than three defaults in any six month period.

Following the completion of the DMP and after a 30-day cooling off period, LLC will call for additional resources (a "replenishment") to bring the level of the default fund to its proper level (as determined by the default fund sizing methodology described under Principle 4).⁴⁹

In the event that all the available funded and unfunded default fund resources are exhausted, LLC will proceed to further distribute losses by haircutting variation margin owed to non-defaulting members. Haircutting will continue until default losses are completely absorbed or pre-specified value limits are reached – at which point, unless there is a unanimous decision by members to resume the haircutting process, SwapClear US will close.⁵⁰ In the event of closure of the SwapClear US service, LLC will calculate a net obligation in respect of amounts owing between LLC and each non-defaulting member; this calculation will include amounts not received by members due to the loss distribution haircutting. Claims on LLC by members will be adjusted pro rata according to the assets available to LLC, with this payment constituting full and final settlement of those claims.

Implementation

LLC's Clearing Membership Agreement establishes the notification requirements that members must meet in relation to specified events. In particular, a member must notify LLC when:

- it becomes aware of a petition for bankruptcy or administration order;
- it ceases, or believes it may cease, meeting the criteria for admission; or
- there has been a change in its business that would affect the member's ability to perform its obligations under the Rulebook.

LLC has extensive powers to manage the outstanding contracts and market risk associated with a defaulted member, including the right to close out or hedge

⁴⁸ LLC Regulation 315.

⁴⁹ LLC Regulation 303.

⁵⁰ LLC Regulation 318.

contracts registered to a defaulter. LLC may also facilitate a transfer of client accounts to a non-defaulting member with the approval of the client and recipient member. LLC has legal opinions confirming that the protections under FDICIA, the Federal Deposit Insurance Act and the U.S. Bankruptcy Code will apply to LLC's close-out and termination rights under U.S. insolvency laws.

Disclosure

The DMP is detailed in the Rulebook, which is publicly available on LLC's website.⁵¹ The Rulebook sets out the rights and obligations of both LLC and its members in relation to a default, and provides examples of events that may trigger a declaration of member default. LLC is required to notify its members of any amendments to the Rulebook.

Involvement of stakeholders

LLC conducts default fire drills annually, in which all members are required to participate, including those traders who are part of the DMG. These fire drills test members' ability to load, price and bid on a potentially large number of trades with the goal of ensuring that all relevant stakeholders are familiar with the default management process.

Impact on Markets

The Rulebook specifies that, in the event of a default, the financial resources of the defaulted member and LLC's capital are utilized prior to the resources of non-defaulting members.⁵² In addition, the financial resources of non-defaulting members are utilized with a priority based on the risk associated with their cleared positions in each currency.

In managing a defaulted member's positions, the DMG facilitates the auction's timely completion and reduces market disruption by putting on hedges and forming auction packs that would reduce the risks to be assumed by successful bidders in the auctions.

Principle 14: Segregation and portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.

All FCM clearing members must be organized under the laws of a state in the United States. Each is also required to maintain a Proprietary Account and an Omnibus Client Account with LLC. These two accounts must remain segregated in compliance with CFTC Regulations. Pursuant to the CFTC Regulations, within an FCM clearing member's Omnibus Client Account, the FCM clearing member must keep the value of an individual client's positions and margin segregated but can hold all physical collateral (cash and non-cash collateral) on a commingled, omnibus basis. The value of one customer's collateral may not be used to satisfy the obligations of another customer of that FCM clearing member. This arrangement under the CFTC

⁵¹ <http://www.lchclearnet.com/rules-regulations/rulebooks/llc>

⁵² LLC Regulation 302.

Regulations is referred to as “legally segregated, operationally commingled” or “LSOC”.

LLC discloses key information about client clearing arrangements and segregation in the publicly available Rulebook.

Customer positions would be dealt with, to the extent possible, in accordance with the instructions of the relevant customer. The customer could request that its positions be closed out or transferred (i.e., “ported”). Customer positions generally can be transferred upon the default of the FCM clearing member provided that, among other conditions, the customer’s account is not subject to a deficit and the CFTC does not disapprove of the transfer upon notice. In the event of an FCM clearing member default, LLC will attempt to port customer positions to a solvent FCM clearing member that is able and willing to accept the positions. In the event that any customer positions are closed out and liquidated, the customers in whose name those terminated positions were cleared would be subject to a super-priority in certain estate property. Namely, as noted above, the customers would be entitled to a pro rata share of the property attributed to the customer swaps account subject to the segregation provisions of Part 22 of the CFTC’s regulations. Customers generally would not be entitled to a claim with respect to positions that have been ported to another FCM clearing member.

Segregation and porting are governed by statute and, where applicable, approved by the Bankruptcy Court.

Principle 15: General business risk

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialize. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

The group-wide Risk Management Framework requires business risk to be monitored on a continuous basis, with significant issues to be reported to the LCH.Clearnet Group Limited Board. LLC’s capital is available to cover losses arising from a crystallization of business risk, as well as from the following losses that are also unrelated to the default of a member such as:

- credit- and market-related losses from investment activities;
- settlement and payment losses from PPS banks or concentration banks activities; and
- operational losses.

The potential losses from the default of an investment counterparty are mitigated by LLC’s investment policy, which sets the minimum credit criteria for these counterparties and requires a high percentage of the investments to be secured against high quality collateral (see Principle 16).⁵³ LLC mitigates payment and settlement risks by setting operational and credit risk-based acceptance criteria for

⁵³ In addition, LLC may only invest collateral posted with respect to customers of FCM clearing members in accordance with CFTC Regulations. See § 1.25 of CFTC Regulations and LLC Regulation 103(f).

payment and settlement intermediaries. Credit exposure to PPS banks is further mitigated through Rulebook provisions which deem that payment obligations of members to LLC will only be extinguished once their PPS bank has transferred funds to the appropriate concentration bank (see Principle 9 for more detail on the PPS system).⁵⁴ LLC tests key systems regularly and monitors the operational capability of members on an ongoing basis. LLC also has in place business continuity arrangements, comprised of a set of recovery plans for key support services and critical business units (see Principle 17). For more information on LLC's internal controls and risk governance, see Principle 2.

LLC holds sufficient financial resources to cover its operational costs for a period of one year. Per CFTC requirements, a portion of these resources consist of unencumbered, liquid financial assets.

Liquid assets

LLC's internal liquidity policies require it to have cash balances at the opening of each business day that would be sufficient to satisfy all of LLC's payment obligations (including on both house and client positions) on each day of the thirty-day liquidity horizon, notwithstanding a default by the two clearing members giving rise to the largest aggregate liquidity exposures for LLC.

Asset quality

Investment of LLC's capital is subject to investment and liquidity limits to ensure that the assets are of high credit and liquidity quality. LLC also monitors, on a daily basis, the amount of interest rate risk arising from the investment portfolio against internal limits.

Principle 16: Custody and investment risks

An FMI should safeguard its own and its participants' assets and minimize the risk of loss on and delay in access to these assets. An FMI's investments should be in instruments with minimal credit, market, and liquidity risks.

Holding of assets

LLC's cash, including cash posted to it by members, is either held at commercial banks, invested in reverse repurchase agreements, used to purchase high-quality securities or invested in money market funds. LLC restricts its investment activities to counterparties and issuers that meet minimum internal credit rating requirements; exposures to credit institutions are further subject to counterparty-specific limits. In addition, the Executive Risk Committee may recommend to LLC's CRO the exclusion, or place conditions on, LLC's investment with any counterparty. Currently, all LLC's investment counterparties are high-credit commercial banks subject to prudential supervision.

Non-cash collateral is held with U.S. custodian banks. The financial condition and procedures of custodian banks are reviewed by LLC at least every two years.

⁵⁴ LLC Procedures 3.2.3.

LLC utilizes a group-wide custodian due diligence framework, which provides guidelines that seek to ensure that custodian relationships provide adequate protection of LLC's assets.

Access to assets

Pursuant to LLC's investment policy (see "Investment strategy" below for more detail on the investment policy), a majority percentage of LLC investments must be secured via reverse repurchase agreements or through purchases of securities that are of high credit and liquidity quality.

Non-cash collateral posted by members to LLC is held with custodian banks. LLC's custodian due diligence framework states that its custodian relationships must allow for prompt access to all deposited securities.

LLC receives legal advice on the insolvency law protections with respect to its ability to foreclose on and apply collateral in the event of a clearing member default.

Exposures to custodians and investment counterparties

LLC's exposure to custodians is limited to custody and investment of member collateral. The LLC Risk Committee reviews LLC's policies on investment, liquidity and custody risk at least annually.

The Risk Management Department reviews the credit risk of custodians and investment counterparties. LLC assesses exposures and concentrations to investment counterparties, taking into account all relationships with each counterparty. Investment concentration limits are monitored daily, and the results are reported to senior management.

Investment strategy

The primary objectives of the group-wide investment strategies are capital preservation and liquidity provision. To achieve this, LLC restricts its investments to high quality counterparties; sets concentration limits on securities and manages the composition of its overall investment portfolio based on investment type and maturity dates.

Investment limits are reviewed regularly by LLC's Risk Committee to ensure that they remain in line with LLC's risk appetite.

LLC's cash deposits with commercial banks are limited to minimal exposures on overnight terms. In addition, a majority percentage of LLC investments must be secured via reverse repurchase agreements, through purchases of high quality securities or invested in money market funds. Senior management and the LLC Risk Committee are notified of investment limit breaches.

Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely

recovery of operations and fulfillment of the FMI's obligations, including in the event of a wide-scale or major disruption.

LLC manages operational risk so as to:

- limit exposure to operational losses, while maintaining the balance between operational risk, quality and cost of services to clients;
- meet operational risk management industry best practices; and
- satisfy legal and regulatory operational risk obligations.

The Operational Risk Department is responsible for implementing the policy and maintaining the Operational Risk Framework.

Key components of the framework include risk and control self-assessment, risk scenarios, loss data recording, monitoring and reporting.

Risk Governance framework

As the LLC Board is responsible for the overall level of risk taken, the operational risk appetite will be approved annually by the LLC Board. The risk appetite levels for all risk types, including operational risk, are detailed in the Risk Governance Framework.

The LLC Board delegates the assessment of the adequacy of the operational risk profile with the risk appetite to LLC's Audit Committee. LLC's Audit Committee provides assurance to the Board that the Operational Risk Framework operates satisfactorily, using this policy and its underlying methodologies and processes. Changes to this policy will be submitted to the Operating Committee and Audit Committee for approval.

Key IT systems are tested for security and operational reliability. Systems and procedures for business continuity are also tested.

Reliability and availability

Operational risks posed by utility providers are managed in the context of business continuity through the use of a series of fail-safes and backup arrangements including the use of a disaster recovery site, remote access and fail-over to London.

For data center production system power failures, LLC maintains two data centers in London as well as one data center in Paris, France. Production services are tested annually to all data centers internally and also with client participation.

LLC's IT Operations team conducts regular internal and external security penetration testing. External-facing infrastructure is security tested at least annually.

New developments are tested in a comprehensive test environment outside live systems prior to launch. New developments are staged through a Test and Development environment before being introduced into Production.

Regular stress testing is performed on key systems to ensure that they can handle multiples of peak daily volume. LLC sets availability targets for its key systems that are in excess of 99.5 percent, and reviews availability statistics on a monthly basis. In general, system availability is regularly 100 percent.

The group-wide information security policy sets out guidelines for the security controls to be applied to a number of areas, including the storage of information, personnel security, physical security, and access and communications.

Risks posed to/by other entities

LLC monitors the operational capability of its members on an ongoing basis. Members must maintain the operational capacity to meet their obligations under the Rulebook and the specific operational requirements are set out in Section 1 of the LLC Procedures. Prospective SwapClear US members must demonstrate their operational capability in respect of default management before they are allowed to join (i.e., pass a 'driving test').

Under a Master Services Agreement between Ltd and LLC, Ltd provides certain operational services to LLC.

The reliance on SWIFT messaging infrastructure is LLC's only critical dependency. To mitigate the impact of a SWIFT infrastructure failure, LLC maintains a framework of operational risk controls that consist of a number of specific minimum requirements.

Operational risks posed by utility providers are managed in the context of business continuity through the use of a series of fail-safes and backup arrangements.

Business Continuity

LLC's business continuity arrangements are comprised of a set of recovery plans for key support services and critical business units.

All business platforms have disaster recovery backup and all have specified maximum times for recovery and the maximum time is two hours for critical systems. LLC maintains two geographically diverse data centers for its core clearing and the systems operated at each data center have redundancy that allows for data processing to continue or failover to a different center in the event of outages. Data is mirrored across data centers to ensure no loss of data in the event of a contingency. LLC has the ability to transfer its operations between its New York and London offices to ensure operational resilience. In addition, a work area recovery site for the continuation of other business functions is also maintained in North Bergen, New Jersey. LLC could recover the SwapClear US service on a two-hour recovery basis in the event of a significant metropolitan event in New York.

LLC undertakes regular testing of its business continuity arrangements. An annual plan is developed to encompass live system operation from backup sites, staff relocation exercises and connectivity tests. The business continuity arrangements are reviewed annually and following any major incidents, the identification of any significant new vulnerabilities, fundamental changes to the technical infrastructure, or major organizational changes. LLC's most recent failover exercise between its London and Paris data centers was successfully undertaken on October 24th, 2015, with a two-hour recovery time objective.

Principle 18: Access and participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Access

Requirements for participation in LLC are based on risk-related principles and are designed to ensure that all members are of suitable financial standing with sufficient operational capabilities.

Net capital requirements ensure that members have adequate financial resources to withstand unexpected losses. To achieve a balance between open access and risk, LLC continuously monitors a wide range of credit indicators for members, including capital-to-risk ratios, and applies real-time risk management controls such as concentration limits and margin multipliers, rather than relying solely on hurdle-based participation criteria. In addition, LLC's DMP seeks to ensure that a member's contingent obligations in the event of default are commensurate with the nature and scale of its cleared activity.

Indirect participation in LLC is possible through an FCM clearing member approved for client clearing as part of the client-clearing model.

Criteria

All participation requirements are publicly disclosed in the Rulebook.⁵⁵

A member must have at least US \$50 million in net capital and must make a minimum contribution of \$10 million to the core component of the SwapClear US default fund plus \$6.25 million to the additional trade registration tolerance component. All new members are also subject to an internal LLC credit assessment as part of the entry criteria and ongoing monitoring process.

In terms of operational capability, all members must have adequate back office infrastructure to support a high volume of transactions and must open accounts with eligible PPS banks, to pay and receive cash obligations to and from LLC. Typically, this requires appropriate systems to manage the member's clearing activities, and staff with sufficient knowledge and experience with the systems. Prior to going live, all members receive operational capability training if the Onboarding Department deems it necessary. All members must demonstrate their operational capability by participating in a "driving test" of the DMP prior to admittance. In addition, LLC conducts default "fire drills" on at least an annual basis; a failure to participate or perform in a drill may lead to suspension from SwapClear US. Members can, in lieu of participation in a fire drill, demonstrate that they have an affiliated member or an "Approved Outsourcing Agent" that has participated on the member's behalf. These tests have been designed to demonstrate the member's ability to load, price and bid on a fixed number of trade sides.

To gain further comfort with regard to financial and operational standing, LLC also requires a member (or a related entity in the same corporate group) to be subject to prudential or securities regulation in its home jurisdiction.

LLC reserves the discretion to impose additional conditions on members and may at any time vary or withdraw any such conditions. These conditions may include a requirement to post additional collateral or a requirement for prior authorization for trades above a defined ceiling.

⁵⁵ See LLC Regulation 102(b)

Criteria for indirect members are set by the FCM clearing members that offer client clearing and not by LLC.

Suspension/exit

LLC monitors compliance with membership requirements on a continuous basis. In addition, the Clearing Membership Agreement requires members to notify LLC if they no longer meet the membership requirements.

The Rulebook contains notification and disclosure requirements to ensure compliance with the financial requirements for membership in LLC. All members must provide LLC with their financial reports to regulators and must promptly notify LLC of any development which would materially affect the member's ability to comply with the participation requirements. Fire drills are conducted once a year to ensure members' operational capabilities continue to meet LLC's minimum standards.

The Rulebook outlines the actions that LLC can take if it suspects that a member no longer meets the membership requirements, including: more detailed monitoring, increased margin requirements, prior authorization for trades above a specified size, position reduction, position transfer to other members, trading for liquidation only, and the declaration of default. Where a member is in breach of the participation requirements, but has not defaulted on payments to LLC, LLC may allow a 30-day grace period for the member to remedy the breach before issuing a default notice. LLC can declare a member in default as soon as it believes the membership requirements are breached. Once a default notice has been issued, withdrawal of the member occurs in accordance with the DMP.

In the case of voluntary withdrawal by a member, at least 90 days' notice is required. The member must terminate all open contracts registered with LLC within this 90 day period. If after 90 days the portfolio has not been closed out, the member is required to remain in the service until all remaining contracts can be terminated.

Principle 19: Tiered participation arrangements

An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.

Risks

LLC offers a clearing model whereby FCM clearing members can intermediate cleared trades on behalf of customers or affiliates and also a model that allows all clearing members to clear proprietary and affiliate trades. Each FCM clearing member guarantees all obligations with respect to its clients' and affiliates' positions. Moreover, the Rulebook expressly provides that no client or affiliate of a member has a claim against LLC nor does LLC have a claim against any client or affiliate of a member with respect to the client's or affiliate's positions cleared through the member. Therefore, LLC does not have any direct exposure to a client of a member in the event of that client's default. Should a clearing member using the FCM model default, LLC will, to the extent possible and requested by the client and under advice and approval from the CFTC, port a client of the member to another FCM clearing member. Members must be authorized by LLC's Membership Department to allow indirect participation through client clearing arrangements.

LLC requires members who offer client clearing to hold segregated house and client accounts for positions and margins. As discussed under Principle 14, client accounts

are maintained in conformance with the LSOC model under the CFTC Regulations. In addition, house and client transactions are reported to LLC separately, with individual clients identifiable to LLC through the trade recording structure.

Dependencies

LLC produces daily reports that monitor client positions and associated cash flows. LLC can apply margin multipliers, or realignment, where a member's client portfolio is overly concentrated. LLC requires members to "gross margin" customer positions, meaning that the member must post initial margin to LLC with respect to each client as if the client were individually margined as a direct clearing member of LLC. LLC also mitigates indirect exposures by requiring direct members to call margin from their clients in an amount that is ten percent greater than the margin requirement that LLC imposes on those members where the clients' positions are speculative, rather than hedging in nature.

To mitigate disruptions resulting from the default of a member, LLC allows clients to nominate backup members. In the event of a default by their member, clients can opt to have their position ported to a backup member, provided the member accepts them. If a defaulter's client positions cannot be ported, they will be managed via the DMP.

Client positions

The LLC account structure enables LLC to identify the positions held by indirect members. Client positions are subject to the same margin multipliers⁵⁶ that are applied to house positions. In the event LLC determines that the positions of a clearing member's customer presents excessive risk to LLC, LLC may require the clearing member to post additional margin on behalf of that customer.

Review

Day-to-day market risk of client portfolios is monitored on an ongoing basis, as described in Principle 15. LLC will take mitigating steps, such as calling additional margin, where it identifies a need to do so.

The LLC Risk Committee reviews any proposed changes to the structure of client clearing arrangements.

Principle 20: FMI links

An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.

LLC does not maintain links to CSDs or other CCPs in relation to SwapClear US. LLC does have direct links to the following execution facilities: (1) TW SEF LLC; and (2) Bloomberg SEF LLC and additional indirect links to other execution venues via third party middleware. The terms of the relationship between LLC and each execution venue are governed by a clearing services agreement. These agreements set forth the terms on which transaction and pricing data is submitted to LLC and limits LLC's liability exposure to the SEF, including the liability for inaccurate transaction or pricing data.

⁵⁶ See Principle 6 for more detail.

LLC also has an arrangement with the Depository Trust and Clearing Corporation for the reporting of cleared OTC transaction data via straight-through processing. These links do not present material risk to the solvency of LLC or the operation of the services.

Principle 21: Efficiency and effectiveness

An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.

LLC's workflow is designed for maximum efficiency and effectiveness given the regulatory requirements for straight-through processing, market ability, and member demand. The demands for efficiency and effectiveness are balanced with the DCO's remit for prudent risk management. During the last two years, the system architecture for SwapClear has been re-engineered and improved to remove human processing or intervention in the normal workflow of a transaction. These changes have been implemented for LLC together with all operational upgrades that are designed and implemented with member syndication and industry group consultations. This ensures that LLC's clearing and settlement arrangements are efficient and effective.

LLC's operating structure and procedures are streamlined and are designed to allow for member input, where appropriate. The New Product Approval (NPA) process ensures transparency across all relevant internal stakeholders and consolidates departmental sign-offs on initiatives that introduce new and novel risks. Additionally, all deliveries of LLC's service changes are consolidated into a single project management team that is tasked with coordinating with the relevant operations, technology, legal, and compliance teams. Members are apprised of operational and procedural changes on a regular basis, and with sufficient advanced notice to allow for member system upgrades.

LLC offers interest rate swaps in a wide variety of currencies, indexes, maturities, and trade characteristics.

LLC's technology systems adhere to the time-tested system management standard of Ltd. Clearing systems have been improved to eliminate the need for human intervention assuring that trades are processed as efficiently and effectively as possible, whilst at the same time allow for prudent risk management.

Several controls are in place to ensure LLC's continued compliance with high standards. On a yearly basis, LLC's CCO will conduct a review of the entity's compliance with the CFTC regulations and issue a report to the Audit Committee of the LLC Board with findings that will be actioned internally for resolution and improvement. Also on a yearly basis, an internal test is conducted of LLC's automated systems to ensure the systems are reliable, secure and have adequate scalable capacity. System efficiency and effectiveness is tested to ensure that LLC can meet its recovery-time objective. Following system incidents and/or internal audits, LLC systems are reviewed on an ad-hoc basis or on a systemic basis to ensure that known system and operational issues are resolved in the most efficient and effective manner. The adequacy of LLC's human resources are evaluated on a quarterly basis, by both the COO and the CCO of the entity.

Service levels are maintained at all appropriate levels of the organization and are adhered to through an operational risk framework that ensures periodic reviews and internal reporting.

Principle 22: Communication procedures and standards

An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.

The LCH.Clearnet group believes in working to internationally recognized standards wherever possible.

For payments, LLC uses SWIFT ISO15022 standards for all payment instructions. For securities settlement LLC uses a combination of SWIFT ISO 15022 standards and proprietary GUI interfaces. LLC is currently developing further SWIFT standard interfaces for custodians and ICSDs in order to remove the need for proprietary interfaces.

Clearing members may provide settlement instructions to LLC either through a proprietary GUI interface (CMS) or via SWIFT ISO 20022 standard Collateral Proposal message.

While the LCH.Clearnet group has worked with SWIFT to define clearing member reporting standards, there are currently no common standards adopted across CCPs. Currently, LLC provides reporting to clearing members in its proprietary format.

Connectivity between SwapClear US and clearing members is primarily achieved through MarkitWire, which serves as a middleware and affirmation platform. In addition, LLC operates a proprietary API⁵⁷ that enables market infrastructure from any jurisdiction to link to it, and submit swap transactions for clearing.

LLC utilizes SWIFT messaging in connection with payment by PPS banks. This allows members to send messages quickly and securely.

Principle 23: Disclosure of rules, key procedures, and market data

An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.

Disclosure

The Rulebook governs the rights and responsibilities of LLC and its members in respect of the clearing services provided by LLC. The Rulebook is published on LLC's website, together with proposed changes.⁵⁸

LLC's key policies are reflected in information available on LLC's website. This includes the expected coverage of initial and variation margin requirements, the

⁵⁷ Application Programming Interface

⁵⁸ See <http://www.lchclearnet.com/rules-regulations/rulebooks/llc>

process for managing a member's default, acceptable collateral and haircuts, and participation requirements. The LCH.Clearnet group's corporate structure, as well as the board membership and primary regulator for each LCH.Clearnet group entity, is also outlined on the LCH.Clearnet website.⁵⁹

LLC also provides members with a margin approximation tool known as 'SMART' which allows clearing members and customers thereof to estimate initial margin requirements.

Assessment of risks

LLC's and members' rights and obligations are detailed in the Rulebook, which is publicly available on LLC's website.⁶⁰ Also disclosed on the website are the structure of the LLC's default waterfall and an explanation of LLC's PPS arrangements, as well as the list of current PPS banks and PPS bank requirements.⁶¹ In addition, SwapClear US provides its members access to a margin calculation tool (known as 'SMART') to estimate initial margin obligations.

LLC provides each member with the SwapClear Service Description, which provides an overview of the SwapClear US service and its operational features. The document covers key aspects such as trade validation and registration, SwapClear US clearing fees, margining, default management, LLC's PPS and SwapClear US's daily operational timeline. Detailed information regarding the SwapClear US data that is available to members, SwapClear US margin multipliers and the pricing of SwapClear US products is also featured.

Documentation and Training

In addition to providing the SwapClear US Service Description described above, LLC runs an introductory training course twice a year for members, designed as a comprehensive guide to the mechanics of cleared markets and products for new entrants and member staff not directly involved in derivatives.

Disclosure Framework

As a subpart C derivatives clearing organization, LLC is required to provide to the CFTC self-assessments against the PFMI's at least once every two years and following material changes to LLC's system or the environment in which it operates. Beginning in January 2016, LLC will be providing additional public disclosure under the CPMI-IOSCO Quantitative Disclosure Standards.

General information on LLC's activities and operations is publicly disclosed on LLC's website. This information includes a list of direct members, the set of interest rate products cleared, acceptable collateral, and an overview of the overall Risk Management Framework. Also disclosed are clearing fees, minimum default fund contribution requirements, as well as application costs and procedures. Basic service data are also publicly available on the website, such as transaction volumes, notional outstanding values and end of day mark-to-market prices.

⁵⁹ http://www.lchclearnet.com/about_us/corporate_governance/legal_and_regulatory_structure.asp

⁶⁰ <http://www.lchclearnet.com/rules-regulations/rulebooks/llc>

⁶¹ <http://www.lchclearnet.com/risk-collateral-management/collateral-management/protected-payments-system>

Principle 24: Disclosure of market data by trade repositories

A TR should provide timely and accurate data to relevant authorities and the public in line with their respective needs.

LLC does not function as a trade repository. Therefore, Principle 24 of the PFMI is not applicable.