Required fields are shown with yellow backgrounds and asterisks.

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SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
Form 19b-4

File No. * SR 2023 - * 007
Amendment No. (req. for Amendments *)

Filing by Banque Centrale de Compensation

Pursuant to Rule 19b-4 under the Securities Exchange Act of 1934

Initial * ☑ Amendment * ☐ Withdrawal ☐

Section 19(b)(2) * ☑ Section 19(b)(3)(A) * ☐ Section 19(b)(3)(B) * ☐

Pilot ☐

Extension of Time Period for Commission Action * ☐

Date Expires *

Rule
☐ 19b-4(f)(1) ☐ 19b-4(f)(4)
☐ 19b-4(f)(2) ☐ 19b-4(f)(5)
☐ 19b-4(f)(3) ☐ 19b-4(f)(6)

Notice of proposed change pursuant to the Payment, Clearing, and Settlement Act of 2010

Section 806(e)(1) * ☐ Section 806(e)(2) * ☐

Security-Based Swap Submission pursuant to the Securities Exchange Act of 1934
Section 3C(b)(2) * ☐

Exhibit 2 Sent As Paper Document ☐

Exhibit 3 Sent As Paper Document ☐

Description

Provide a brief description of the action (limit 250 characters, required when Initial is checked *).

LCH SA is proposing to amend its Liquidity Risk Modelling Framework.

Contact Information

Provide the name, telephone number, and e-mail address of the person on the staff of the self-regulatory organization prepared to respond to questions and comments on the action.

First Name * Mohamed Last Name * MEZIANE

Title * Senior Regulatory Advisor

E-mail * mohamed.meziane@lseg.com

Telephone * (000) 000-0000 Fax

Signature

Pursuant to the requirements of the Securities Exchange of 1934, Banque Centrale de Compensation has duly caused this filing to be signed on its behalf by the undersigned thereunto duly authorized.

Date 12/22/2023

By Mohamed MEZIANE
(Name *)

(Title *) Senior Regulatory Advisor

NOTE: Clicking the signature block at right will initiate digitally signing the form. A digital signature is as legally binding as a physical signature, and once signed, this form cannot be changed.

Mohamed MEZIANE
Digitally signed by Mohamed MEZIANE
Date: 2023.12.22 23:07:47 +01'00'

Required fields are shown with yellow backgrounds and astericks.

SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

For complete Form 19b-4 instructions please refer to the EFFS website.

Form 19b-4 Information *

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1_LCH SA-2023-007_LRMF_SEC For

The self-regulatory organization must provide all required information, presented in a clear and comprehensible manner, to enable the public to provide meaningful comment on the proposal and for the Commission to determine whether the proposal is consistent with the Act and applicable rules and regulations under the Act.

Exhibit 1 - Notice of Proposed Rule Change *

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2_LCH SA-2023-007-LRMF_Exhibit 1

The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 1A - Notice of Proposed Rule Change, Security-Based Swap Submission, or Advanced Notice by Clearing Agencies *

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The Notice section of this Form 19b-4 must comply with the guidelines for publication in the Federal Register as well as any requirements for electronic filing as published by the Commission (if applicable). The Office of the Federal Register (OFR) offers guidance on Federal Register publication requirements in the Federal Register Document Drafting Handbook, October 1998 Revision. For example, all references to the federal securities laws must include the corresponding cite to the United States Code in a footnote. All references to SEC rules must include the corresponding cite to the Code of Federal Regulations in a footnote. All references to Securities Exchange Act Releases must include the release number, release date, Federal Register cite, Federal Register date, and corresponding file number (e.g., SR-[SRO]-xx-xx). A material failure to comply with these guidelines will result in the proposed rule change being deemed not properly filed. See also Rule 0-3 under the Act (17 CFR 240.0-3)

Exhibit 2- Notices, Written Comments, Transcripts, Other Communications

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Copies of notices, written comments, transcripts, other communications. If such documents cannot be filed electronically in accordance with Instruction F, they shall be filed in accordance with Instruction G.

☐ Exhibit Sent As Paper Document

Exhibit 3 - Form, Report, or Questionnaire

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3_LCH SA-2023-007_LRMF_SEC Exh

Copies of any form, report, or questionnaire that the self-regulatory organization proposes to use to help implement or operate the proposed rule change, or that is referred to by the proposed rule change.

☐ Exhibit Sent As Paper Document

Exhibit 4 - Marked Copies

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The full text shall be marked, in any convenient manner, to indicate additions to and deletions from the immediately preceding filing. The purpose of Exhibit 4 is to permit the staff to identify immediately the changes made from the text of the rule with which it has been working.

Exhibit 5 - Proposed Rule Text

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4_LCH SA-2023-007_LRMF_SEC Exh

The self-regulatory organization may choose to attach as Exhibit 5 proposed changes to rule text in place of providing it in Item I and which may otherwise be more easily readable if provided separately from Form 19b-4. Exhibit 5 shall be considered part of the proposed rule change

Partial Amendment

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If the self-regulatory organization is amending only part of the text of a lengthy proposed rule change, it may, with the Commission's permission, file only those portions of the text of the proposed rule change in which changes are being made if the filing (i.e. partial amendment) is clearly understandable on its face. Such partial amendment shall be clearly identified and marked to show deletions and additions.

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 19b-4

Proposed Rule Change
by

BANQUE CENTRALE DE COMPENSATION

Pursuant to Rule 19b-4 under the
Securities Exchange Act of 1934

Item 1. Text of the Proposed Rule Change

(a) Pursuant to the provisions of Section 19(b)(1) of the Securities Exchange Act of 1934 ("**Exchange Act**" or "**Act**"),[1] and Rule 19b-4 thereunder,[2] Banque Centrale de Compensation, which conducts business under the name LCH SA ("**LCH SA**"), is proposing to amend its Liquidity Risk Modelling Framework (the "**Framework**"), which describes the Liquidity Stress Testing framework by which the Collateral and Liquidity Risk Management department ("**CaLRM**") of LCH SA assures that LCH SA has enough cash available to meet any financial obligations, both expected and unexpected, that may arise over the liquidation period for each of the clearing services that LCH SA offers (the "**Proposed Rule Change**").[3]

The text of the Proposed Rule Change is provided in Exhibit 5.[4]

The implementation of the Proposed Rule Change will be contingent upon LCH SA's receipt of all necessary regulatory approvals.

(b) Not applicable.

(c) Not applicable.

Item 2. Procedures of the Self-Regulatory Organization

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1 15 U.S.C. 78s(b)(1).

2 17 CFR 240.19b-4.

3 LCH SA, a subsidiary of LCH Group and an indirect subsidiary of the London Stock Exchange Group plc ("LSEG"), manages its liquidity risk pursuant to, among other policies and procedures, the Group Liquidity Risk Policy and the Group Liquidity Plan applicable to each entity within LCH Group. In addition to its CDSClear service, LCH SA provides clearing services in connection with cash equities and derivatives listed for trading on Euronext (EquityClear), commodity derivatives listed for trading on Euronext (CommodityClear), and tri-party Repo transactions (RepoClear). LCH SA also maintains an interoperability link with Euronext Clearing, formerly Cassa di Compensazione e Garanzia, in Milan, Italy.

4 All capitalized terms not defined herein have the same definition as in the Framework, unless otherwise stated.

LCH SA has completed all of the required action to be taken to approve the Proposed Rule Change. The Proposed Rule Change was approved by the LCH SA Executive Risk Committee on September 14, 2022. No further approvals to authorize this Proposed Rule Change are necessary.

Questions should be addressed to Anne Favé, Interim Chief Compliance Officer, at anne.fave@lseg.com or +33 1 70 37 65 97; or Mohamed Meziane, Senior Regulatory Advisor, Compliance Department, at mohamed.meziane@lseg.com or +33 1 70 37 65 52.

Item 3. Self-Regulatory Organization's Statement of the Purpose of, and Statutory Basis for, the Proposed Rule Change

(a) Purpose

The Proposed Rule Change is being adopted primarily to enhance the manner in which the Liquidity Coverage Ratio ("**LCR**") is calculated, thereby increasing the robustness of LCH SA's liquidity profile.[5] The changes implement recommendations made by LCH SA's Model Validation Team following validation exercises in 2020 and 2021.

In particular, the Proposed Rule Change will: (a) revise the manner in which the settlement obligation liquidity requirements are calculated by aligning it to the actual process used by the Operations Team during a default management event and ensuring that no netting is allowed between Members of the same Group; (b) revise the manner in which securities pledged to the Banque de France ("**BdF**") are calculated by providing that such securities be valued at the stressed mark-to-market price rather than the contract price;[6] (c) extend from five (5) days to

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5 LCH SA uses a Cover 2 approach for conducting stress tests and assessing its liquidity resources on a daily basis. This approach assumes that the two Clearing Member groups with the largest liquidity exposure will default on the same day. Cover 2 is computed by taking into account the liquidity risks related to clearing members within the same group across all services of the CCP that are then aggregated.

6 See, Framework, § 4.2.5.

seven (7) days the length of time for which LCH SA must maintain liquidity resources sufficient to meet its liquidity requirements;[7] (d) include the liquidity needs generated by the expiration of physically settled stock futures in the liquidity monitoring; and (e) require LCH SA, in calculating its required liquidity resources, to take into account that Clearing Members may switch from depositing non-cash collateral in a Full Title Transfer Account, which may be pledged at the BdF to obtain a liquidity line of credit, to depositing non-cash collateral instead in a Pledge Account, which permits no re-hypothecation rights.[8]

The proposed revisions to the Framework are set out in four of the Framework's six sections: Section 1, *Model Scope, Purpose and Use*; Section 4, *Model Specifications*; Section 5, *Model Performance Testing and Ongoing Monitoring* and Section 6, *Appendix.*[9]

Section 1 of the Framework will be amended as follows:

Section 1.1, *Model Objective, Business Scope and Intended Use,* will be revised to specify that the review of the Framework will be performed at least on an annual basis rather than quarterly to align the frequency of the review with the frequency defined for the regular update of the Liquidity Risk Policy.

Section 1.1.1, *Reminder of SA's activities,* will be revised to specify that the Default Funds are calibrated on the assumption of default of the two most exposed Member Groups (Cover 2). In particular, LCH SA's Framework ensures that the liquid resources are sufficient to

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7 See, e.g., Framework, §§ 4.2.1, 5.1, 5.3.

8 See, Framework, § 4.2.5.2.4.

9 No revisions are being proposed to Section 2, Limitations and Compensating Controls, or Section 3, Justification of Modeling Approach. The Framework also has a number of appendices, set out in Section 6, that supplement the matters discussed elsewhere in the Framework.

cover the simultaneous default of the two most exposed Member Groups in term of liquidity that are identified by taking into consideration all of the possible liquidity needs, including the settlement obligation. This is approach incorporates the Cover 1 Clearing Member Group plus the next most exposed Clearing Member Group.[10]

Section 1.1.2, *Investment activities*, will be revised to clarify the responsibilities of the Collateral and Liquidity Management ("**CaLM**") Front Office team. Specifically, the sentence: "Three main tasks have been assigned to the team: liquidity management, non-cash collateral *settlement* in case of a clearing member's default and investment management" has been revised to read: "Three main tasks have been assigned to the team: liquidity management, non-cash collateral *liquidation*[11] in case of a clearing member's default and investment management". The purpose of this change is to provide a more accurate description on the actual responsibilities of the CaLM Front Office team which is in charge of performing all the relevant activities necessary to liquidate a member's non-cash collateral in case of defaults.

Section 1.3, *Model dependency and interconnectivity*, will be revised to describe more fully the purpose of the various policies and procedures that LCH SA employs to manage its liquidity risk in a manner that is consistent with defined risk appetites, as well as with regulatory and internal requirements. These policies and procedures include:

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[10] Per SEC Rule 17Ad-22(e)(7)(i), LCH SA is required to maintain sufficient liquid resources at the minimum 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 foreseeable stress scenarios that includes, but is not limited to, the default of the participant family that would generate the largest aggregate payment obligation for the covered clearing agency in extreme but plausible market conditions.

[11] Such liquidation includes the possible liquidation of securities underlying reverse repurchase activities of a defaulting clearing member.

- *LCH SA Liquidity Plan*, which sets out the principles and procedures for liquidity management within LCH SA. Its main objectives are to:
    - Ensure that LCH SA maintains sufficient liquidity at all times in accordance with policies set by the appropriate governance authority and monitored and reported by Risk Management;
    - Ensure that liquidity management and resources are aligned with LCH SA's operational requirements to meet payment obligations as they fall due under business as usual and stressed liquidity conditions; and
    - Ensure effective liquidity risk identification and escalation within CaLM service and other relevant LCH SA departments.
- *Group Liquidity Risk Policy*, which ensures that each central counterparty ("**CCP**") of LCH Group has enough liquid resources on hand to meet all the expected and unexpected financial obligations that arise during the course of the day. The policy lays out how a CCP will measure whether there are enough available liquid resources.
- *Group Financial Resource Adequacy Policy*, which describes the standards by which financial resources should be assessed against Clearing Member exposures, including variation margins, initial margins, margin add-ons for liquidity risk, concentration risk, wrong-way risk, where appropriate, as well as the sizing and re-sizing of the default funds across the LCH Group CCPs.
- *Group Collateral Risk Policy*, which sets out the standards for managing collateral risk across the LCH Group CCPs and ensures that CCPs must have a robust mechanism in place to process and control the collateral posted by Members.

- *Group Investment Risk Policy*, which sets out the standards for the management of investment risk across the LCH Group CCPs.
- *LCH SA Collateral Control Framework*, which describes the actions undertaken by the CaLRM team to implement the collateral limits laid out in the Group Collateral Risk Policy and to ensure that the prices integrated on a daily basis by the Margin Team are accurate and fairly priced.
- *Group Risk Policy: Default Management*, which describes the minimum standards that each CCP within the LCH Group must meet in dealing with the default of a Member.[12]
- Section 1.4, *Model Governance*, will be revised by adding a footnote specifying that core liquidity reverse stress tests[13] are performed monthly in line with that stated in the Liquidity Risk Policy. In particular LCH SA performs two set of reverse stress test:
    - On a monthly basis, in line with the methodology applied to perform any reverse stress tests in LCH SA, risk factors (defined in section 5.3.1) are independently stressed (one signle factor at time) to assess extreme market conditions necessary to observe a breach of the LCR limit.
    - In addition, combined reverse stress test scenarios (defined in section 5.3.2) are also performed on at least a quarterly basis. These combined scenarios are considered as "non-core reverse stress tests" with combined stress schocks applied on risks factors to determine the joint market conditions necessary to

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12 The CaLM Risk Procedures: Investment Risk Monitoring, and Default Management Guidelines, which currently are included among these policies and procedures, have been removed.

13 *See*, Framework, § 5.3.

breach the LCR limit and assess their plausibility. This change to the Framework is being proposed to align it with the updated Liquidity Risk Policy text approved during the 2022 review and in compliance with the SEC rule 17Ad-22(e)(7)(vi)(B).[14]

- Finally, Section 1.6.1, *Liquidity Sources*, will be revised to expand the tools available to CaLM to meet LCH SA's non-Euro liquidity requirements in the event of a default. This proposed change aims to align the Framework with the updated Liquidity Plan text approved during the 2022 review.

Specifically, these tools include:

- Non-Euro cash deposited as collateral in accordance with SEC Rule 17Ad-22(a)(14)(i)[15] as being cash held at creditworthy commercial banks;
- Sale of non-Euro securities of the defaulting member in accordance with SEC Rule 17Ad-22(a)(14)(ii)[16]:
  - These highly liquid and available securities would be converted into cash via an outright sale in the open market; or
  - in the intermediary period between the default of the member and the auction settlement, these securities might be converted into cash via the repo arrangement in place at CaLM Front Office.
- Repo transactions, including: (a) bilateral repo transactions (non-Euro cash taker and non-Euro collateral giver); (b) cross-currency bilateral repo (non-Euro cash taker and

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14 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

15 17 CFR § 240.17Ad-22(a)(14)(i).

16 17 CFR § 240.17Ad-22(a)(14)(ii).

Euro collateral giver); (c) cross-currency triparty repo (non-Euro cash taker and Euro collateral giver). LCH SA considers these transactions to be classified as prearranged funding arrangements determined to be highly reliable even in extreme but plausible market conditions due to (a) their contractual nature; and (b) the highly liquid and overall resilience of the repo markets for the major currencies cleared by LCH SA.

- Use of the multicurrency overdraft facility. In accordance with SEC Rule 17Ad-22(a)(14)[17], LCH SA considers this facility to be classified as a prearranged funding arrangement determined to be highly reliable even in extreme but plausible market conditions due to (a) its contractual nature; and (b) the high credit quality, based on the conservative internal credit score required of the bank providing the facility.
- Use of the FX spot market transactions. In accordance with SEC Rule 17Ad-22(a)(14)[18], LCH SA considers this facility to be classified as a prearranged funding arrangement determined to be highly reliable even in extreme but plausible market conditions as (a) numerous counterparties are already onboarded on the FX platform; and (b) the highly liquid and overall resilience of the FX markets observed for the major currencies cleared by LCH SA.
- ECB weekly tender in U.S. Dollars ("**USD**").[19] In accordance with SEC Rule 17Ad-22(a)(14)[20] LCH SA considers this facility to be a prearranged funding arrangement

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17 17 CFR § 240.17Ad-22(a)(14).

18 *Id.*

19 As a credit institution, LCH SA has access to the ECB Open Market Operations in USD. LCH SA considers this resource as a last resort.

20 17 CFR § 240.17Ad-22(a)(14).

determined to be highly reliable even in extreme but plausible market conditions given LCA SA's banking license and the central bank status of the institution providing such resource.

- Replace LCH SA's liabilities in non-Euro by Euro, as permitted by LCH SA's Rule Book (Article 4.2.3.2 of CDSClear Rulebook)[21]. In accordance with SEC Rule 17Ad-22(a)(14)[22] Euros used to cover liabilities would be cash held at central bank.

Furthermore, the committed liquidity line previously noted is being removed as LCH SA has replaced the committed liquidity line with a multicurrency overdraft facility at a major international bank.

In summary, LCH SA classifies the different liquidity tools pursuant to SEC Rule 17Ad-22(a)(14)[23], as follows:

- *Cash* – Euros cash held at central bank / non euros cash held at creditworthy commercial banks; replacement of LCH SA's liabilities in non euros by euros
- *Uncommitted prearranged* – readily available assets convertible to cash through prearranged funding arrangements, that are determined to be highly reliable even in extreme but plausible market conditions by the BoD following a review to be conducted not less than annually:

    a. Sale of non-Euro securities of the defaulting members;

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21 See Article 4.2.3.2., https://www.lch.com/system/files/media_root/Supplementary%20Materials%20-%20LCH%20SA%20-%20CDSClear%20SA%20Rule%20Book_1.pdf.

22 17 CFR § 240.17Ad-22(a)(14).

23 *Id.*

b. Repo transactions (bilateral repo, cross currency bilateral repo, and cross currency triparty repo);

c. Multicurrency overdraft facility;

d. FX spot market transactions; and

e. ECB weekly tender in U.S. dollars

Additionnaly, a footnote (8) has been removed as the relevant report has been taken out from the appendix in the context of the reorganisation of the appendix 5 as described below in the relevant section in the present 19b4.

Section 1.6.1.1, *Collateral transfer*, will be revised to recognize that a Clearing Member may deposit non-cash collateral either (a) by Full Title Transfer Accounts that LCH SA maintains at various central securities depositories or (b) by a Single Pledged Account, without the right of re-hypothecation, that LCH SA maintains at Euroclear Bank.[24] This section will be further revised to clarify that non-cash collateral deposited in Full Title Transfer Accounts may be pledged at the BdF to obtain a liquidity line of credit that can be drawn on intraday or overnight, if needed. Additionnaly, precisions have been added regarding :

- the existing limits applied on Repoclear SA/ €GC Plus and EquityClear SA for pledge
- the fact that FFTA is used in majority by Clearing Members

Finally, to enhance the wording, a precision has been added to precise that only resources received in FFTA can be pledged to 3G pool.

[24] Currently, non-cash collateral may be pledged without limits only with regard to the CDSClear service. Moreover, there are limits on the amount of pledge collateral that may be deposited for RepoClear, €GC (Tri-Party Repo) and EquityClear. The majority of the collateral that LCH SA currently collects is by Full Title Transfer.

The change aims to improve the clarity of the document as there is no change applied on the actual offer of collateral account.

Section 1.6.1.2, *Assessment of assets' liquidity*, will be revised to provide that Tier 1 assets, *i.e.*, securities that are deemed to be of sufficient quality and demand to generate liquidity in the event of a default or a major market stress at little or no loss, will include, in addition to all European Central Bank ("**ECB**") eligible collateral, UK Gilts and U.S. Treasury Bills, along with Dutch and Belgian central bank guarantees (but only for the defaulting Clearing Member). In addition, recognized Tier 3 assets, *i.e.*, assets that are deemed to have little or no liquidity value in the event of a default or major market stress, or are deemed to be too illiquid to be converted in the timeframe that LCH SA would need the liquidity, will be revised to include non-cash collateral denominated Danish Krone, Norwegian Krone, Swedish Krona, Japanese Yen, Swiss Francs, Canadian Dollars and Australian Dollars.

Section 1.6.1.3, *Synthesis*, will be revised to clarify that LCH SA does not retain the right of collateral re-hypothecation for collateral deposited under the pledge regime unless the Clearing Member is in default. The reference specific to CDS has been removed as now the pledge is offered for all LCH SA services. It will confirm that CaLM demonstrated in 2021 and 2022 the ability to raise Euro liquidity from non-Euro non cash collateral in USD and GBP. Moreover, it will clarify that when considering non-Euro non cash collateral as a liquidity source, a conservative buffer of ten percent (10%) is applied to absorb market stress that may occur beyond the volatility already captured by the all-in haircut. In addition, it will confirm that Central Bank guarantees can be considered for liquidity purposes only if the relevant Member posting them is in default because only in that situation the CCP would acquire full ownership of the guarantee provided by the Central Bank.

Section 1.6.2.1, *Liquidity needs arising from members' defaults*, will be revised to clarify the description of the liquidity needs that may arise from settlement. The following sentence : "Cash outflows are generated when SA has to step in on behalf of the defaulted member to post cash to non-defaulting member(s) and take in the underlying *collateral*" has been revised to read: "Cash outflows are generated when SA has to step in on behalf of the defaulted member to post cash to non-defaulting member(s) and take in the underlying *securities*". This change is being made to increase the accuracy of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover, LCH SA will also specify that the value of the bonds pledged at the ECB to raise liquidity takes into account stress market conditions.[25] The addition of the "stress market conditions" is thus performed for clarity in line with adjustments performed in the LCR model assumptions.

Section 4 of the Framework, which explains the modelling Framework in detail, will be amended, as noted above, to enhance the manner in which the LCR is calculated, thereby increasing the robustness of LCH SA's liquidity profile. This section discusses first, the calculation of the Operational Target, *i.e.*, the amount of liquidity required to be held to satisfy LCH SA's liquidity needs related to the operational management of LCH SA in a stressed environment, but one that does not lead to a Clearing Member's default. The Operational Target ensures that LCH SA's liquidity resources are always greater than its operational liquidity requirements.

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[25] A detailed presentation of the model enhancement is reflected in Section 4.2.5.1.1.2 of the Framework.

Section 4.1.2, *Model inputs and Variable selection*, will be revised to clarify that the repayment of excess cash as well as excess ECB eligible securities deposited to cover margin requirements are considered in the liquidity requirement of the Operational Target. Two footnotes will be updated to specify that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets (repayment of excess cash and stressed margin reduction) because these securities are not transferrable to the BdF due to operational constraints. These changes will increase the accuracy of the document and does not represent a change in the methodology or procedure of LCH SA. Finally, the change of branding from CC&G to Euronext Clearing has been performed in line with the change of branding performed in the whole documentation and described below in the present 19b4.

Section 4.1.4, *Mathematical formula, derivation and algorithm, and numerical approximation*, will be revised to clarify that the Operational Target is calculated as the sum of the liquidity requirements described in Section 4.1.2 and that the liquidity requirements must always be lower than the resources available. This change will increase the accuracy of the Framework and does not represent a change in the methodology or procedure of LCH SA.

Section 4.1.5, *Model assumptions*, will be revised to provide that liquidity resources must be sufficient to meet LCH SA's liquidity requirements for the next seven (7) days in stressed situations. This section currently provides that liquidity resources must be sufficient to meet LCH SA's liquidity requirements for the next five (5) days.[26] The change incorporates a model validation recommendation to extend the LCR and consequently also the Operational Target to a 7 day period in order to align the liquidity monitoring time horizon to the RepoClear service new

[26] Consistent with this change, LCH SA will take into account the maximum daily switches from cash and ECB eligible cash securities to non-Euro denominated securities observed over seven (7) days rather than five (5) days, as currently provided.

maximum holding period to manage a default (changed from a 3-day to 5-day holding period since the end of June 2022, to which LCH SA added 2 days of settlement convention). Additionnaly, to enhance the clarity, details related to the management of the former horizon have been removed in order to clearly state that the horizon is 7 days and results will be displayed without any aggregation.

In addition (4.1.5.d), the provisions of this section describing the liquidity requirements drivers, which assume, in part, that 100 percent (100%) of the excess cash and excess ECB eligible securities will be withdrawn over the 3-day period will be revised. Specifically, the assumptions that the two largest individual Clearing Members will withdraw their excess on day one (T) and that the third and fourth largest Clearing Members will withdraw their excess on day two (T+1) will be revised to provide instead that (a) the two Clearing Member Groups that have the largest amount of excess collateral will withdraw their excess on T, and (b) the third and fourth Clearing Member Groups that have the next largest amount of excess collateral will withdraw their excess on T+1. In each case, the remaining Clearing Members will withdraw their excess on the third day (T+2). Precision on the footnote to specify that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets as these securities are not transferrable to the BdF due to operational constraints.

For the liquidity requirement that aims to quantify the potential substitution of cash collateral/ECB eligible securities (4.1.5.e), LCH SA will take into account the maximum daily switches from cash and ECB eligible cash securities to non-Euro denominated securities observed over seven (7) days rather than five (5) days as currently provided to incoroporate the model valitation recommendation. In order to be consistent with this change from five to seven days in the time horizon, two additional definition of amount of switch corresponding to T+5 and

T+6 have been added. Moreover, it will be clarified that on Q3 2022 CaLM Front Office demonstrated the ability to transfer ECB eligible securities to BdF within 30 minutes for all eligible countries. The list of specific countries will be removed from the Framework as it is dynamic and depends on the collateral eligible at the CCP that can be found on the LCH SA website (a footnote will be added to point towards website). With respect to the amount of equity lodged, as LCH SA takes the maximum amount of switched observed, the reference to 100 million will be removed as the amount is a dynamic figure. It will also be precised that the amount of equity deposited over the past 3 years which is also a dynamic figure remains negligible. These changes will improve the accuracy of the Framework and do not represent a change in the methodology or procedure of LCH SA.

For Section 4.1.5.f which describes the potential intraday additional liquidity injection that may generate securities carried overnight it will be specified that the amount is calibrated as the maximum EOD securities carried over night over the whole time series available. This change will increase the accuracy and clarity of the Framework and does not represent a change in the methodology or procedure of LCH SA.

Moreover, Section 4.1.5.g will be revised to modify the targeted estimated margin reduction of non-defaulting Clearing Members. Currently, estimated margin reduction is calculated over a three-day period. As revised, targeted estimated margin reduction will be calculated over seven (7) consecutive days to address model validation recommendation.[27] To reflect this change, a detailed table has been added describing the margin reduction rate per day of the horizon period in line with the above In order to enhance the wording, two bullet points

[27] The overall compounded margin reduction will be above the maximum historical 7-day margin reduction observed.

have been revised to state that (a) margin reduction applied is greater than the biggest one observed in the historical window considered for the calibration (b) for each day, the reduction is over the 99,7% percentile on the available set of data. In order to precise the size of the lookback period of observation, a footnote will be added detailing the current start date and end date. One footnote will be also updated to provide that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets because such securities are not transferrable to the BdF due to operational constraints.

These additional changes will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Finally, Section 4.1.5.h will be reworded to specify that the liquidity requirements stemming from estimated Variation Margin payment to be processed towards the interoperable CCP is calculated on the basis of the Initial Margin actually posted at LCH SA to cover a 5-days holding period to be spread out over a 5-days period according to a simulated market stress based on historical yield shifts (third bullet point). The rewording of the introduction of 4.1.5.h aims to clarify the computation of the theoretical allocation of IM (leading to the removal of one footnote that was duplicated) as well as to reflect the change of branding. These changes will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of the LCH SA.

As mentioned, Please also note that reference to the depth of time series (4.1.5.e and 4.1.5.f) are proposed to be removed as available set of data are wider and every points are considered. This would avoid LCH to periodically review the depth in the wording.

Finally, the notion "DF" has been added in 4.1.5.i to reflect the usual acronym of the default fund. The review was the opportunity also to correct a typo in the third bullet point of this section.

Section 4.2 of the Framework, *LCR*, which describes the manner in which the LCR is calculated, will be revised as follows:

Section 4.2.1, *Model overview*, will be revised to provide that the purpose of the LCR Cover 2 scenario is to allow LCH SA to ensure that it has enough liquidity in the case of default of the two largest Members Groups during the seven (7) days following the default, rather than five (5) days, as is currently provided. Moreover the sentence: "*3* days holding period of margin *collateral*, *i.e.*, SA ensures it has sufficient liquidity to meet non-defaulting member's cash requests even if SA is waiting for the defaulter's *margin collateral* to be liquidated" will be revised to read: "5 days holding period of margin *requirement*, i.e. SA ensures it has sufficient liquidity to meet non-defaulting member's cash requests even if SA is waiting for the defaulter's *position* to be liquidated". These changes will enhance the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA (i.e. "requirement" is an enhanced wording as the objective is to cover the clean risk (collateral might include excess). Similarly, "positions" better clarifies the liquidity needs that are present until the final liquidation of the complete position of the Defaulted Members.

Further, the sentence: "The ERCO has approved the *5* days liquidity horizon as per *the article 22 of* the Group liquidity risk policy" will be revised to read: "The ERCO has approved the *7* days liquidity horizon as per the Group liquidity risk policy". The change will remove a dependency between the two documents as the number of articles may change when the Group

Liquidity Policy is updated on an annual basis, while ensuring that the policy content is referred in the Framework.

Finally, the sentence: "The cover 2 is computed by taking into account the liquidity risks related to clearing members within the same group across all services ***within*** the CCP that are aggregated" will be revised to read: "The cover 2 is computed by taking into account the liquidity risks related to clearing members within the same group across all services ***of*** the CCP that are ***then*** aggregated". These last changes do not trigger any methodology changes but have been amended to enhance the clarity. The reference to footnote (24) is proposed to be removed as it refers to a non existing footnote (typo).

Section 4.2.2, *Model inputs and Variable selection*, and Section 4.2.4, *Mathematical formula derivation and algorithm and numerical approximation*, will be revised to provide that securities pledged at the BdF and included among Total Available Assets will be valued at stressed market prices and include the ECB haircut effect on the resulting figures. The notion of "for each market" is proposed to be removed to preserve clarity. At the same time for the computation of VM erosion, the market risk impact arising from the contractual settlement of RepoClear will be excluded from the computation of the component as treated on the asset side as previously described (i.e. the component that was previously considered in liabilities will be incorporated in the assets as a reduction of the amount of liquidity sourced from the clearing securities pledged to BdF, cf 4.2.4.c). For this purpose, the sentence "on top of which is added the market stress risk impact on the contractual settlement for repoClear" will be removed. These changes have the purpose of adressing a model validation recommendation to enhance the treatment of market stress in the computation of liquidity sourced by the Central Bank

Moreover an update of wording will be done to consider the Total Default Liabilities and Total Available Assets as plural rather than singular as currently the case. It will be specified that in the VM Erosion calulation all LCH SA services are considered that is Cash & Derivatives, Repoclear, EGC, and CDS markets. Two footnotes will be updated to specify that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets because not transferrable to the BdF due to operational constraints (4.2.2/4.2.4).

These changes have will increase the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Finally, additional clarifications will be made regarding the treatment of FCM/BD client resources in the LCR. In particular, LCH SA will further specify that in a context of default (and purpose of the LCR monitoring) LCH SA will only treat FCM/BD client collateral as available liquidity resources if and only if this FCM/BD client defaults and generates some liquidity needs. Its resources will not be considered as available liquidity assets for any other FCM/BD clients and/or the FCM/BD clearing member or any other clearing member of the CCP. In particular, in case of one FCM/BD client defaulting, other FCM/BD clients assets will not be considered to cover the liquidity needs of the defaulting FCM/BD client. These changes are also replacing "clearing member" with client where relevant to increase clarity.

The changes will enhance the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5, *Model Assumptions,* describes the various risks that each business line must consider in determining liquidity requirements as well as other liquidity requirements that

LCH SA must meet.[28]. Title of Section 4.2.5.1 will be changed to 'Description of risks per Business line' to reflect that different risks are tackled in different sub section.

Section 4.2.5.1.1, *RepoClear*, will be revised to provide that settlement cash outflows will be calculated over a period of 7 days and on a gross basis, aggregated by ISIN, settlement date and Clearing Member level. The final settlement outflows are then aggregated at the Clearing Member Group level without allowing any netting across members of the same Clearing Member Group. The objective of these changes is to address two model validation recommendations: to align the LCR liquidity monitoring period to the RepoClear new maximum holding period to manage a default (5 days holding period of margin + 2 of settlement convention); and to not allow any netting between entity of the same Group. Moreover, a table summarizing the liquidity requirements according to the direction of the repo transactions as well as a paragraph describing the specific treatment of forward starting repo in the calculation of the settlement obligation outflows have been removed because a new enhanced algorithm was designed and described in the new sections 4.2.5.1.1.1 and 4.2.5.1.1.2 as described later in the present form. One bullet point is proposed to be removed as well as the sentence "Note that the post default date forward start leg of cash borrower transaction are excluded for the LCR calculation (e.g. starts date: Default date + 1 day and returns legs: Default date +2). The transactions are performed through DVP so LCH SA will fail to deliver the securities leading no liquidity requirements related to the returns legs to factor in the LCR.to keep consistency with the new algorithm.

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[28] As noted earlier, in addition to its CDSClear service, LCH SA provides clearing services in connection with cash equities and derivatives listed for trading on Euronext (EquityClear), commodity derivatives listed for trading on Euronext (CommodityClear), and tri-party Repo transactions (RepoClear). LCH SA also maintains an interoperability link with Euronext Clearing.

Section 4.2.5.1.1.1, *Liabilities contractual obligations on physical delivery*, will describe the methodology to compute liabilities due to settlement obligations. In particular, in case of default, LCH SA shall assume and honour the obligations of the defaulted Members. In case of securities with physical settlement, this may represent substantial liquidity needs for LCH SA. The enhanced methodology presented in this section leverages on the actual management of settlement instructions performed by the Fixed Income Operations department during an event of default to fully take into account in the calculation of the liquidity needs the specific settlement dynamics over the time horizon of the LCR with the objective to more closely align the computation of the LCR with the actual default management process.

To model the settlement obligation, the DCO would start by constructing the contractual balance of net buyer/seller position by Clearing Member, ISIN and date within the LCR time horizon:

1. Identify transactions (each leg independently for repos) that settles within the time horizon of the LCR and allocate, to the settlement date, the contractual cash amount to be settled and the corresponding nominal of securities to be delivered; and
2. Aggregate cash amounts and nominals by member, ISIN and date.

This contractual view of cash and security flows is then adjusted to take into account the eventual effect of carrying forward the liquidity position (the effect of one day fails on the contractual flows of the following dates). In fact, in case of a net seller position on date t, LCH SA would fail to deliver securities if they are not already sourced and/or pledged at the BdF and would continue to fail until the date t' on which the balance is net buyer (or until the end of the time horizon when the portfolio would be perfectly matched again). In that case, LCH SA would receive no cash on date t for the securities in which it fails to deliver and would need to inject

less cash into the settlement system on date t' because of the netting effect of carrying forward. The real cash injection flows obtained are aligned with the Operations Team view of the settlement obligation in case of default.

When the real cashflow injections are obtained as described above for each member they are then aggregated at group level.

A simplified numerical example is provided to demonstrate the sequence of steps used to calculate the liquidity needs deriving from settlement obbligation.

The changes described in this section will improve the liquidity monitoring of LCH SA and address two model validation recommendations: to improve the liquidity needs estimation related to Settlement Risk and to not allow any netting between entity of the same Group.

Section 4.2.5.1.1.2, *Assets: settlement securities pledged at Central Bank,* will describe the methodology to compute the liquidity raised through the pledge at a Central Bank of the settlement securities withdrawn from the settlement system on behalf of the defaulter. In particular, when LCH SA pledges eligible securities at the Central Bank in exchange of liquidity, two important factors need to be considered:

- the market price of the securities that may be decreased by unfavorable market conditions therefore reducting the value of the collateral and consequently the amount of liquidity that can be sourced out of it; and
- the haircut applied by the Central Bank when lending cash to LCH SA in exchange of securities.

The changes described in the following paragraph provide a summary of the calculation performed by the DCO when modelling the liquidity that it would be able to source from the Central Bank.

The amount raised is the sum of the unstressed assets value after taking into account the ECB haircut and a stress price market impact applied to the value of the securities. In order to calculate the amount of liquidity raised from the BdF, LCH SA will consider the real security flows calculated in Section 4.2.5.1.1.1 which are equivalent to securities pledged at/retrieved from the BdF (with an opposite direction with respect to settlement). The securities are then valued at current market price at the moment of default with the application of an ECB haircut. To quantify the market impact, a preliminary screening is applied in order to identify correctly only the subset of transactions to which the market impact applies because they are not covered by offsetting inflow. In particular for long cash transactions or Cash Borrower Repo - Return Leg:

- Before the settlement date: an eventual bond price decrease would result in a margin decrease of the non-defaulting member due to Variation Margin credit which is accounted for in the LCR liabilities in a separate entry.
- On the settlement date: LCH SA would get the securities from the non-defaulting member, pledge them at the BdF and receive an amount of cash equal to the stressed price of the bond minus the haircut. The additional liquidity impact, with regards to the unstressed assets described previously, rises from the bond price move from the default date until the settlement date. Hereunder, we will refer to this component by “Settlement Market Price Impact”.
- After the settlement date: once the bond is pledged overnight, the price decrease afterwards would trigger an additional liquidity impact to cover the cash that needs to be returned to the BdF because of the lower amount of the collateral deposited, *i.e.*, the price move from the settlement date until the date on which LCH SA will have a settlement

obligation to deliver the bond (or until the book is perfectly matched again after the settlement of the auction). Hereunder, we will refer to this component by "Pledge Market Price Impact".

The total market impact is calculated as the sum of Settlement Market Price Impact and Pledge Market Price Impact. The bond prices moves generating the market impact is calculated in accordance with RepoClear stress test scenarios. The final amount of liquidity retrieved from the BdF resulting from the pledge of securities retrieved from settlement on behalf of the defaulted members will be:

Liquidity retrieved from the BdF (t) = Real Security Flow * Market Price at moment of default * (1 – ECB Haircut) - Settlement Market Price Impact - Pledge Market Price Impact.

A simplified numerical example is added to the Framework to demonstrate the sequence of steps used to calculate the liquidity amount retrieved from the BdF.

The change will improve the liquidity monitoring of LCH SA and address a model validation recommendation to improve the liquidity needs estimation related to Market Risk.

To remain consistent with the calculation of settlement obligations, after calculating the Liquidity retrieved from the BdF for all dates in the LCR period at Member level, the amounts are aggregated at the Clearing Member Group level.

This change address a model validation recommendation.

Section 4.2.5.1.1.3, *Market Risk*, will be revised to provide that, in addition to the settlement obligations driven flows, the position of the defaulter may generate a liquidity drain for LCH SA in the form of negative mark to market to be paid to non-defaulting members. The formula to estimate this amount is changed and will consider the worst stress loss of the defaulter position according to the relevant RepoClear stress test scenario and add additional margin to

model any concentration, market liquidity issues. The purpose of this change is to adress a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR. Additionally, a footnote will be added to disclose that a list of stress scenario is reported in appendix 6.7.

Section 4.2.5.1.2, *€GCPlus,* will be revised to provide that, when calculating the settlement driven cash outflows, the aggregation is based on data provided by the triparty agent and that only positions in which the defaulter is a cash borrower (collateral giver) in the first leg of the repo and, therefore, collateral taker when the repo closes, generate a liquidity need. Therefore, in case of default of a Member collateral giver in the first leg, LCH SA has to inject cash and withdraw securities when the repo closes (cf new footnotes).

Finally a repetition of words have been cancelled to remove redundancy in the text. The changes will enhance the accuracy and clarity of the Framework and do not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.1.2.1, *Market risk*, will be revised to provide that for €GCPlus the additional liquidity needs generated by negative mark to market payments to non-defaulting members is estimated in line with what is done for RepoClear[29] as the worst stress loss of the defaulter position according to the relevant €GCPlus stress test scenario and adding additional margins. The change will incorporate a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR.

Moreover, a numerical example has been added to the Framework to demonstrate that the eventual BdF haircut will always be covered by the collateral posted by the collateral giver as

[29] Please refer to changes to section 4.2.5.1.1.3 described in the present document.

requested by the current margin methodology (corresponding to "Example"). The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.1.3.1, *Cash Equity,* will be revised to provide that the settlement cash outflows will be calculated on a gross basis at the Clearing Member level and then aggregated at the Clearing Member Group level without allowing any netting across the Clearing Members of the same Group. The objective of the change is to enhance the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover, the methodology to consider among the liquidity requirements the equity settlement arising from the expiration of physically settled futures is detailed. In particular, in case the defaulting member is long futures which expire during the LCR horizon, LCH SA will have to pay the future price to the non-defaulting counterparty in order to settle the physical underlying. Therefore the enhanced algorithm daily identifies all the potential maturing long futures positions on the day of the computation and on the upcoming business day as well, identifies the positions of the Cover 2 Members Group and finally, given the potential physical settlement, adds the relevant liquidity needs to the computation of the LCR. A numerical example is included to provide a sample of the calculation.This change has the purpose of addressing a model validation recommendation by including the liquidity needs related to the expiry of physical delivery single stock futures in the LCR.

In addition, this section will provide that the liquidity needs generated by negative mark to market payments to be made to non-defaulting members is changed in line with what is done

for the other LCH SA services [30] (RepoClear, €GCPlus, CDSClear) and will be calculated as the worst stress loss of the defaulter position according to the relevant EquityClear stress test scenario with the addition of additional margins.

The objective of the change is to incoporate a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR.

A footnote has been added to improve the accuracy of the document to specify that the full list of stress scenarios used is presented in a dedicated Appendix.

Finally, this section will explain that because equities are not eligible at the BdF they will not be considered as liquidity sources in the assets of the LCR. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.1.3.2, *Listed derivatives*, will be revised to clarify that futures on equity index contracts are included among the listed derivatives instruments considered in the calculation of the LCR and that derivatives expirations occur on a monthly basis rather than the previously stated quarterly basis. These changes will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA (i.e. monthly expiry is already efficiently implemented in the computation of the LCR).

The calculation of the liquidity needs generated by negative mark to market payments to be done to non-defaulting members is changed in line with what is done for the other LCH SA services [31](RepoClear, €GCPlus, CDSClear) and will be calculated as the worst stress loss of the

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30 Please refer to changes for Sections 4.2.5.1.1.3, 4.2.5.1.2.1 and 4.2.5.1.4 described in the present document.

31 Please refer to changes for Sections 4.2.5.1.1.3, 4.2.5.1.2.1 and 4.2.5.1.4 described in the present document.

defaulter position according to the relevant EquityClear stress test scenario with the addition of Additional margins. The change will address a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR. Finally, please note scenario is now stated in plural to reflect that several scenarios (disclosed in appendix 6.7) are used to model stressed VM.

Section 4.2.5.1.4, *Credit Default Swaps*, will be revised to clarify that the calculation of the liquidity needs generated by negative mark to market payments to be done to non-defaulting members is changed in line with what is done for the other LCH SA services[32] (RepoClear, ~~€~~GCPlus, EquityClear) and will be calculated as the worst stress loss of the defaulter position according to the relevant CDSClear stress test scenario with the addition of additional margins. The change adresses a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR. Finally, please note scenario is now stated in plural to reflect that several scenarios (disclosed in appendix 6.7) are used to model stressed VM

A footnote have been added to improve the accuracy of the document to specify that the full list of stress scenarios is disclosed in a dedicated Appendix.

Section 4.2.5.2 will be revised to modify those provisions of the Framework relating to the other liquidity requirements to be taken into account in calculating the LCR.

Section 4.2.5.2.1 will be revised to provide that the Operational Target to be included in the calculation of the LCR will be restated by removing margin outflows calculated in the Operational Target and related to Cover 2 for LCR. This is because LCH SA has the right to fully use the collateral of the defaulters including excess. The changes enhance the accuracy and

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[32] Please refer to changes for Sections 4.2.5.1.1.3, 4.2.5.1.2.1, 4.2.5.1.3.1 and 4.2.5.1.3.2 described in the present document.

clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.2.2, *Margin non-cash collateral*, will be revised to provide that LCH SA will compute the pure stress loss of such collateral rather than the stress loss over haircut (less conservative) as currently stated, by applying a set of stress scenarios used by RepoClear in the calibration of the Default Fund and choosing the one that generates the biggest liquidity exposure in terms of Cover 2. The choise of application of Repoclear scenarios is driven by the fact that only bonds deposited as collateral can be used to raise liquidity while equities are completely excluded from the calculation of liquid assets. The change aims to improve the liquidity monitoring by leveraging on the same coherent scenarios for all bonds position included in the LCR computation. A list of scenarios is disclosed in appendix of the LRMF.

Section 4.2.5.2.3, *CaLM investments*, will be revised to specify that when calculating the liquidation losses related to the collateral posted by the defaulting Member through the reverse repo activity and the potential outright purchases losses deriving from the CCP portfolio, LCH SA will apply the driving stress scenario chosen among the set of scenarios from RepoClear consistent with the determination of the Cover 2 described in section 4.2.5.4. “Potential” has been added because the loss on the outright portfolio will be only realized if the DCO is forced to sell the portfolio because of liquidity needs and does not wait until maturity. The changes will increase the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.2.4, *Collateral pledge modelling*, is added to describe in details how pledged collateral has to be modelled when calculating the asset of the LCR. In particular LCH SA assumes that Clearing Members will utilize their ability to pledge collateral near the

maximum allowed on each LCH SA service and, therefore, this amount will be subtracted from the amount of non-cash collateral included in the LCR assets.

The expected additional pledge will be calculated as the difference between the Maximum pledge capacity scaled by a parameter that can capture Clearing Members behaviour and the actual pledge capacity used currently by the Clearing Members.

The Maximum pledge capacity amount will take into consideration eventual concentration limits in places for specific LCH SA services (i.e. Repoclear, €GCPlus and EquityClear).

In contrast, for the Members not having a pledge account active, CDSClear non-cash collateral deposited under Full Title Transfer with the exclusion of securities in DKK, NOK, SEK, JPY, CHF, CAD and AUD is considered to be eligible to raise liquidity and, therefore, is included among liquidity resources. This section has been added to address a model validation recommendation by disclosing more details in the modelling of the collateral pledge.

Section 4.2.5.3, *Stress scenario selection*, will be revised to clarify that the stress tests scenarios selected for each LCH SA service will be consistent with a market state resulting from the default of the Cover 2 as assumed by the LCR. The scenarios selected are taken from the set of scenarios used to calibrate the Default Fund amount on the different services and in particular include scenarios that simulate an increase in interest rates and credit spreads and a decrease of equity indexes. The change has the purpose of increasing the accuracy and clarity of the document and ensure that the stress scenarios chosen are coherent with the LCR assumption of Cover 2 default and the consequent increased volatility on the market. In other terms, additions of wording aim to highlight the consistency of stressed scenarios applied on different market to define the Cover 2 (i.e. rate up (iii), index and equities down (ii) and CDSClear widening (i)).

A full list of the selected stress test scenarios for each service is set out in an Appendix to the Framework. The driving scenario is then selected as the one that produces the largest stress loss on a Cover 2 basis as described in Section 4.2.5.4.

The list of scenarios has been updated to select, among the available scenarios used by the LCH SA services, only the most relevant ones given the LCR assumptions. The purpose is to improve the liquidity monitoring of LCH SA.

In addition, when describing the additional stress scenario where a downgrade of sovereign ratings results in an increase of ECB haircuts applied when the securities are pledged at the BdF to raise liquidity, the table reporting the values of the ECB haircuts applicable will be updated. The new values are the official values applied by the ECB[33] on each eligible collateral posted to raise liquidity as a function of the collateral category and maturity.

Section 4.2.5.4, *Cover 2 selection*, provide the description of the methodology used by the DCO to identify the two Member Groups most exposed in term of liquidity (Cover 2) which are assumed to be simultaneously in default in the LCR. Liquidity needs deriving from Settlement risk, Market risk and Investment risk are aggregated to rank the Member Group and identify the most exposed ones. The section will be revised to specify that the Cover 2 will be identified by calculating the following liquidity requirements at the Clearing Member Member level, aggregating the total requirement at the Clearing Member Group level and then choosing the two most exposed Clearing Member Groups:

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[33] Please refer to EUR-Lex - 32023O0832 - EN - EUR-Lex (europa.eu).

- Stress Variation Margin: for all the services the variation margins are modelled by applying the most punitive scenario among the chosen sets and consistent with the LCR assumptions;
- Settlement liquidity requirements due to RepoClear and Cash equity settlement obligations. In case of securities pledged at the BdF their value would be stressed according to the scenario that would generate the highest loss;
- Non-cash Collateral stress losses are estimated by stressing the non-cash collateral eligible for BdF liquidity with the set of scenarios consistent with the LCR assumptions;
- Investment stress losses over haircut are estimated by applying the stress scenarios to the collateral received from the reverse repo activity with each specific counterpart; and
- ECB Haircut impact is quantified by applying the relevant haircut to all the securities received from a specific member that are eligible for Central Bank liquidity.

Between the set of scenarios used from the RepoClear Stress Test framework, the set of scenarios used from the CDSClear Stress Test framework and the set of scenarios used from the EquityClear stress test framework, only the one jointly generating the maximum loss of the sum of all the above elements for the two most exposed Clearing Member Groups will be used to determine the Cover 2 and calculate the final LCR.

The changes have the objective to coherently include in the computation of the Cover 2 the changes related to the update of the stress test scenarios considered in the LCR (described in Section 4.2.5.3), the changes related to the impact of market risk on the securities pledged at Central Bank (described in Section 4.2.5.1.1.2) and the changes related to the estimation of the Variation Margin Outflows (described in Sections 4.2.5.1.1.3, 4.2.5.1.2.1, 4.2.5.1.3.1, 4.2.5.1.3.2 and 4.2.5.1.4).

- Section 4.3: All the changes reflect the new branding of CC&G (Euronext Clearing). No change in the methodology or procedure applied by LCH.

Section 5, *Model Performance Testing and Ongoing Monitoring*, will be revised to provide throughout that the length of time for which LCH SA must maintain liquidity resources sufficient to meet its liquidity requirements for each service will be extended from five (5) days to seven (7) days.[34] In addition, Section 5.1, *Ongoing Monitoring*, will be revised to provide that cash or non-cash collateral available for pledge to the BdF should represent at least 25 percent (25%) of LCH SA's available liquid resources after the default of its most significant Clearing Member. This section currently provides that cash alone should represent at least 25 percent (25%) of LCH SA's available liquid resources after the default of its most significant Clearing Member. This change will align the text of the Framework to the updated text of the Liquidity Policy approved in 2022.

Section 5.3 on Reverse Stress Tests will be modified to include a paragraph providing the regulatory requirements pursuant to SEC Rule 17Ad-22(e)(7)(vi)(B)[35] and SEC Rule 17Ad-22(e)(7)(vi)(C)[36].

Consistent with this change, Section 5.3.1, *Independent stress of various risk factors*, which describes the single factor reverse stress test (or 'core' reverse stress test), which examines the stress on liquidity outflows caused by different risk factors that are independently stressed (one signle factor at time) to assess extreme market conditions necessary to observe a breach of the LCR limit will be revised as follow:

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[34] See, Section 5.1, *Ongoing Monitoring*, Section 5.3, *Reverse Stress Test*, and Section 5.3.1, *Independent stress of various risk factors*.

[35] 17 C.F.R. 240.17Ad-22(e)(7)(vi)(B).

[36] 17 C.F.R. 240.17Ad-22(e)(7)(vi)(C).

- Risk Factor 1: Liquid assets reduction

It will be stated that non-cash collateral deposited by Clearing Members and eligible for pledge at the BdF represents another primary source of liquidity for LCH SA.

The sentence ‘A primary source of liquidity for a CCP is from investments maturing management by the CaLM team at the opening of the day’ will be revised to ‘A primary source of liquidity for a CCP is from investments maturing management *performed* by the CaLM team at the opening of the day’.

The sentence ‘The overall liquid *asset is* reduced to obtain the stress required to reduce the LCR below 100%’ will be revised to ‘The overall liquid *assets are* reduced to obtain the stress required to reduce the LCR below 100%’

The changes described will improve the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Moreover it will be stated that the reduction in assets necessary to breach the LCR will be compared against the 7 days historical data in order to assess the plausibility of the scenario rather than the 5 days historical data currently reported. The change has the purpose of aligning the time horizon of the reverse stress with the time horizon of the LCR (described in Section 4.2.1).

- Risk Factor 2: Switches to non ECB eligible assets

It will provide that when calculating the single factor reverse stress test that simulates a switch of collateral from ECB eligible assets to non-ECB eligible assets such that a liquidity breach occurs, the non-ECB eligible assets includes GILT or US bonds, Central Bank guarantee, equities, non-Euro non cash collateral, and pledge collateral. The addition of pledge collateral to

the list will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

The required amount of switches necessary to produce a liquidity breach will be compared against the 7 days historical data rather than the 5 days historical data currently reported in the Framework. The change has the purpose of aligning the time horizon of the reverse stress to the tme horizon of the LCR.

- Risk Factor 3: Rating downgrade of the Euro zone peripheral and core countries

The sentence 'This reverse stress test aims at modelling the downgrade of the relevant countries and estimate the theoretical ECB haircuts ***generating*** a liquidity shortfall ' will be revised to 'This reverse stress test aims at modelling the downgrade of the relevant countries and estimate the theoretical ECB haircuts ***needed to generate*** a liquidity shortfall'.

The change described will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

- Risk Factor 6: CC&G VM

The subparagraph will be renamed Risk Factor 6: CC&GEuronext Clearing VM to reflect the updated name of the interoperable CCP.

The sentence 'The direction of the position' will be revised to 'The direction of the positions'.

The change described will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover it will be stated that this specific reverse stress test aims to asses the amount of VM fails by the interoperable CCP during 7 days that could generate a liquidity shortfall rather than 5 days as currently reported in the Framework.

The change has the purpose of aligning the time horizon of the reverse stress to the tme horizon of the LCR.

- Risk Factor 7: Multiple defaults

The sentence 'Given that liquidity requirements are sized to a cover 2 standard, is it plausible that more than 2 ***members*** defaults who could lead to a liquidity deficit ' will be revised to 'Given that liquidity requirements are sized to a cover 2 standard, is it plausible that more than 2 ***member Groups*** defaults who could lead to a liquidity deficit '.

In addition, the sentence: "In order to answer this question, LCH SA ranks order Members Groups based on their ICS and starting from the ones with the worst ICS (and hence highest probabilities of default)" will be revised to read: "In order to answer this question, LCH SA ranks Members Groups based on their ICS and *starts considering* the ones with the worst ICS (and hence highest probabilities of default)".

Finally it will be added that all Clearing Member Groups with a credit score of 6 or higher will be considered in the reverse stress test. The changes described will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 5.3.2.1, *Context & Objective*, will be revised to provide that the combined reverse stress test scenarios[37] that include multiple risk factors will be performed at least quarterly. The purpose of the change is to align the frequency of combined reverse stress stress described in the framework to the one state in the Liquidity Risk Policy.

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[37] Combined reverse stress test scenario are known as "non core". Please refer to change to Section 1.4 described previously herein.

Section 5.3.2.2, *Behavioural scenario*, will be revised to provide a more updated example of report layout. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 5.3.2.3, *Macro-economic scenario*, describes the reverse stress test, which examines the stress on liquidity outflows caused by a set of macro-economic scenarios that combine market, credit and concentration risk to determine the number of defaults that LCH SA can sustain in a shocked macro-economic environment until it suffers a liquidity shortfall. This section will be revised, in part, to clarify that the market risk driving scenarios will be selected from the scenarios used to calculate LCR in accordance with the logic described in Section 4.2.5.4 . The current Framework considers only 2 macroeconomic scenarios that will be replaced by the new set of scenarios dscribed in Appendix 6.7. Additional external rating downgrade will be considered on top of the selected market risk scenario as it is the case of the current Framework.

Moreover, the Operational outflow considered in the scenario will be aligned to the calculation of the Operational Target and therefore assuming a margin reduction of 24.7% over 7 days.

The changes will improve the liquidity monitoring of LCH SA by aligning the reverse stress test calculation to the changes proposed for the LCR and described in Sections 4.1.5g, 4.2.5.3, 4.2.5.4, and Appendix 6.7.

This Section will also be revised to provide that LCH SA will consider Clearing Member Groups, rather than individual Clearing Members, when simulating the multiple defaults driven by credit quality criteria, concentration criteria or total liquidity exposure criteria as this Section currently provides. The changes will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

- Multiple Defaults based on the credit quality of the member Groups

The sentence 'By expanding the analysis presented on the individual risk factor *8* this case highlights the evolution of the LCR *for each* macro-economic scenario' will be revised to 'By expanding the analysis presented on the individual risk factor *7* this case highlights the evolution of the LCR *under the driving* macro-economic *shock* scenario '.

The change has the purpose of correcting a typo and alignin the description to the new computation of the driving macroeconomic scenario described above.
Moreover, the example table that reports a sample of member Groups and their respective liquidity needs will be updated to anonymize the name of each Group.

- Multiple Defaults of the most concentrated countries (FR & US member Groups)

The sentence 'More specifically, we assume that the *Macro-Eco 2* scenario *(Peripheral shock accompanied with a contagion on core countries)* affects French and the European entities of the US members (two different simulations)' will be revised to 'More specifically, we assume that the *Driving macro economic* scenario affects French and the European entities of the US members (two different simulations)'. The change will align the description to the new computation of the driving macroeconomic scenario described above.

Moreover, the various report examples reported in this section displaying the multiple defaults of member Groups from most concentrated countries will be updated [38]to provide a more recent example of report layout. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

- Default of the biggest member Groups in terms of liquidity (Cover N)

[38] Figures as of October 2022.

The report example reported in this section displaying the default of the biggest Member Groups in terms of liquidity will be updated [39]to provide a more recent example of report layout. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 5.3.3 is being added to the Framework in order to include provisions governing frequency and reporting. This section specifies that LCH SA performs core reverse stress tests at least on a monthly basis and that the results of the analysis are shared with the CRO on a monthly basis and quarterly to LCH SA Risk Committee.

LCH SA also performs an ad-hoc analysis of the existing stress testing scenarios, models, and underlying parameters and assumptions used in evaluating liquidity needs and resources through the core reverse stress tests exercise (i) when the products cleared or markets served display high volatility or become less liquid, (ii) when the size or concentration of positions held by the clearing agency's participants increases significantly, or (iii) in any other appropriate circumstances that would lead to a liquidity coverage ratio falling below the alert threshold of 107%. The ad-hoc analysis triggered by a liquidity coverage ratio falling below 107% are reported to LCH SA CRO, the Head of LCH SA Collateral and Liquidity Management division and to the LCH SA Risk Committee.

Section 5.5, *Testing Summary and Model Limitation,* will be revised to add a footnote to provide that single factor reverse stress tests are performed monthly. Single and combined reverse stress tests are performed quarterly. These requirements come from the LCH Liquidity Risk Policy.

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39 *Id.*

Appendix 6.2, *Members behavior analysis*, that analyses the assumptions used in calculation the Operational Target and the LCR will be revised to provide that the volume of the non-ECB eligible non cash collateral (mainly Gilts, U.S. Treasury securities, securities denominated in Danish Krone, Norwegian Krone, Swedish Krona, Japanese Yen, Swiss Francs, Canadian Dollars and Australian Dollars and Central Bank Guarantee) will remain at a level that does not downgrade LCH SA liquidity profile (*i.e.*, quarterly reverse stress test) and that LCH SA imposes concentration limits on non-Euro non cash collateral. The change will enhance the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover, this Appendix will be revised to specify that the margin reduction is estimated at 24.7% over 7 days assuming that the daily margin reductions are independent (sum of the daily margin reduction vs. 7 days margin reduction). This level is bigger than the historical margin reduction over 7 days observed over a 10-year lookback period. This change has the purpose of updating the Appendix to be coherent with the changes described is Section 4.1.5 and driven by the necessity to address a model validation recommendation. Finally the graph reporting the LCH SA total margin is updated to provide a more recent orverview of the data.

Appendix 6.3, *Reminder of SA's sources of liquidity and related risk drivers*, will be revised to update the table to include as a risk driver the pledge collateral. In particular it will provide that because of higher concern toward LCH SA, the Clearing Members may increase their use of the pledge collateral capacity. This behavior is modelled in the LCR. Moreover, LCH SA may adjust the maximum limit allowed in pledge.

The change will align the Appendix with what presented in Section 4.2.5.2.4 and highlighted above.

In addition, when reporting the cash settlement option in case of Euronext Clearing default, the following footnote will be updated to read: “There is a residual risk (uncertainty – delay/amount - with regards SA’s margins return by Euronext Clearing administrator) “. The footnote is amended following the completion by LCH SA of its review of risk drivers and related mitigation measures for cash received from Euronext Clearing.

Appendix 6.4, *Liquidity risk drivers synthesis by reports*, will be revised to update the table summarizing the components of each liquidity indicator (Operational Target, LCR Cover 2 and LCR Euronext Clearing) to reflect the fact that the liquidity monitoring period will be extended from 5 days to 7 days and that the overall margin reduction considered is 24.7%. Moreover, for LCR Cover 2, the Appendix will provide that when calculating the settlement obligation and the resulting BdF liquidity, the securities pledge will take into account ECB haircut and market stress, and when estimating excess reduction LCH SA will consider only non-defaulting Clearing Members as LCH SA has the right to use for liquidity purposes any amounts left in excess from a defaulting Clearing Member.

Appendix 6.5, *Liquidity risk monitoring report*, will be updated by including the more recent layout versions of liquidity reports used by the DCO to monitor liquidity. The change will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH sA.

Appendix 6.7, *Stress scenarios list,* will be added to report the specific list of stress scenarios used for each service.

Appendix 6.8, *Pseudo-code of settlement and market risk calculation*, will be added to provide the details on the algorithm used to calculate the settlement obligation driven liquidity requirements in the monitoring of the LCR and the resulting BdF liquidity raised by pledging the

securities withdrawn from the settlement systems. This appendix translate into a pseudo code the algorithm described in detail in sections 4.2.5.1.1.1 (liabilities contractual obligations on physical delivery) and 4.2.5.1.1.2 (settlement securities pledged at Central Bank). Different steps of computation are described covering both liabilities and assets and the resulting aggegations to get the finale outputs. The Appendix has the purpose of providing a technical overview of the implementation of the algorithm described in the referred sections and duly commented in the present 19b4. Please refer to such sections for a theorical decription of the methodology.

Finally in the whole Framework the name of the interoperable CCP have been updated from "Cassa di Compensazione e Garanzia (CC&G)" into "Euronext Clearing".

(b) Statutory Basis

LCH SA has determined that the Proposed Rule Change is consistent with the requirements of Section 17A of the Act[40] and regulations thereunder applicable to it. In particular, Section 17A(b)(3)(F) of the Act requires, *inter alia*, that the rules of a clearing agency should be designed to "promote the prompt and accurate clearance and settlement of securities transactions . . . and, to assure the safeguarding of securities and funds which are in the custody or control of the clearing agency or for which it is responsible[.]"[41] In addition, Regulation 17Ad-22(e)(7)(ii)[42] requires a covered clearing agency to establish, implement, maintain and enforce written policies and procedures reasonably designed to assure that it holds qualifying liquid resources sufficient to meet the minimum liquidity resource requirement in each relevant

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40 15 U.S.C. 78q-1.

41 15 U.S.C. 78q-1(b)(3)(F).

42 17 C.F.R. 240.17Ad-22(e)(7)(ii).

currency for which the covered clearing agency has payment obligations owed to clearing members.

As discussed above, the Framework is being amended primarily to enhance the manner in which the LCR is calculated, thereby increasing the robustness of LCH SA's liquidity profile. In particular, the amendments will: (a) revise the manner in which the settlement obligation is calculated by aligning it to the actual process used by the Operations Team during a default management and ensuring that no netting is allowed between Members of the same Group; (b) revise the manner in which securities pledged to the Banque de France are valued by providing that such securities be valued at the stressed mark-to-market price rather than the contract price; (c) extend from five (5) days to seven (7) days the length of time for which LCH SA must maintain liquidity resources sufficient to meet its liquidity requirements; (d) include the liquidity needs generated by the expiration of physically settled stock futures in the liquidity monitoring; and (e) require LCH SA, in calculating its required liquidity resources, to take into account that Clearing Members may switch from depositing non-cash collateral in a Full Title Transfer Account, which may be pledged at the BdF to obtain a liquidity line of credit, to depositing non-cash collateral instead in a Pledge Account.

By enhancing the manner in which the LCR is calculated, thereby increasing the robustness of LCH SA's liquidity profile, the policies and procedures set out in the amended Framework are designed to promote the prompt and accurate clearance and settlement of securities transactions and continue to assure the safeguarding of securities and funds that are in LCH SA's custody or control or for which it is responsible to be consistent with the requirements

of Section 17A(b)(3)(F) of the Act.[43] Specifically, the Proposed Rule will revise the manner in which the settlement obligation liquidity requirements are calculated, revise the manner in which securities pledged at the BdF are valued, extend the length of time LCH SA must maintain its liquidity resources, include the liquidity needs from the expiration of physically settled stock futures and account for in the way LCH SA calculates its liquidity resources, the process by which Clearing Members pledge non-cash collateral. Further, the amended Framework continues to assure that LCH SA holds qualifying liquid resources sufficient to meet the minimum liquidity resource requirement in each relevant currency for which the covered clearing agency has payment obligations owed to Clearing Members, as required by Regulation 17Ad-22(e)(7)(ii).[44]

LCH SA also believes that the Proposed Rule Change is consistent with Exchange Act Rule 17Ad-22(e)(1)[45] that requires a covered clearing agency to establish, implement, maintain and enforce written policies and procedures reasonably designed to provide for a well-founded, clear, transparent, and enforceable legal basis for each aspect of its activities in all relevant jurisdictions. As described above, the Proposed Rule Change will ensure that the Framework complies with the provisions of SEC Rule 17Ad-22(e)(7)[46] with respect to liquidity risk, including with respect to its requirement to determine the amount and regularly test the sufficiency of the liquid resources held for purposes of meeting the minimum liquid resource requirement.[47]

Finally, LCH SA believes that the Proposed Rule Change is consistent with Exchange Act

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43 15 U.S.C. 78q-1(b)(3)(F).

44 17 C.F.R. 240.17Ad-22(e)(7)(ii).

45 17 CFR 240.17Ad-22(e)(1).

46 17 CFR § 240.17Ad-22(e)(7).

47 17 CFR § 240.17Ad-22(e)(7)(vi).

Rule 17Ad-22(e)(7)(vi)(B)[48] and Rule17Ad-22(e)(7)(vi)(C)[49]. Rule 17Ad-22(e)(7)(vi)(B) requires a covered clearing agency to establish, implement, maintain and enforce written policies and procedures reasonably designed to effectively measure, monitor, and manage the liquidity risk that arises in or is borne by the covered clearing agency, including measuring, monitoring, and managing its settlement and funding flows on an ongoing and timely basis, and its use of intraday liquidity by . . . [d]etermining the amount and regularly testing the sufficiency of the liquid resources held for purposes of meeting the minimum liquid resource requirement [as required by SEC Rule 17Ad-22(e)(7)(i)] by establishing requirements for conducting monthly comprehensive analyses of stress testing scenarios, models, parameters and assumptiosn with respect to liquidity needs.[50] Rule 17Ad-22(e)(7)(vi)(C) further provides that LCH SA conduct such analyses more frequently than monthly, "the products cleared or markets served display high volatility or become less liquid, when the size or concentration of positions held by [LCH SA's] participants increases significantly." [51]

LCH SA is proposing to amend the Framework to reflect its current practice of conducting monthly analysis of its existing stress testing scenarios, models, and underlying parameters and assumptions used in evaluating liquidity needs and resources for purposes of ensuring they are appropriate for determining the LCH SA's identified liquidity needs and resources in light of current and evolving market conditions. LCH SA is also proposing to amend the Framework to include the additional requirement that it conduct more frequent analysis when the products cleared

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48 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

49 17 CFR § 240.17Ad-22(e)(7)(vi)(C).

50 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

51 17 CFR § 240.17Ad-22(e)(7)(vi)(C).

or markets served display high volatility or become less liquid, when the size or concentration of positions held by LCH SA's participants increases significantly, or in other appropriate circumstances. By revising the Framework to reflect its current practice of conducting monthly analysis and including the requirement to conduct more frequent analysis, subject to certain conditions, LCH SA believes that the Proposed Rule Change is therefore consistent with Exchange Act Rule 17Ad-22(e)(7)(vi)(B)[52] and Rule 17Ad-22(e)(7)(vi)(C).[53]

Item 4. Self-Regulatory Organization's Statement on Burden on Competition

Section 17A(b)(3)(I) of the Act requires that the rules of a clearing agency not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act.[54] LCH SA does not believe the Proposed Rule Change would have any impact, or impose any burden, on competition. The Proposed Rule Change does not address any competitive issue or have any impact on the competition among central counterparties. LCH SA operates an open access model, and the Proposed Rule Change will have no effect on this model.

Item 5. Self-Regulatory Organization's Statement on Comments on the Proposed Rule Change Received from Members, Participants or Others

Written comments relating to the Proposed Rule Change have not been solicited or received. LCH SA will notify the Commission of any written comments received by LCH SA.

Item 6. Extension of Time Period for Commission Action

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52 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

53 17 CFR § 240.17Ad-22(e)(7)(vi)(C).

54 15 U.S.C. 78q-1(b)(3)(I).

LCH SA does not consent to the extension of the time period listed in Section 19(b)(2) of the Exchange Act for Commission action.

Item 7. Basis for Summary Effectiveness Pursuant to Section 19(b)(3) or for Accelerated Effectiveness Pursuant to Section 19(b)(2) or Section 19(b)(7)(D)

Not applicable.

Item 8. Proposed Rule Change Based on Rules of Another Self-Regulatory Organization or of the Commission

The proposed rule change is not based on the rules of another self-regulatory organization or the Commission.

Item 9. Security-Based Swap Submissions Filed Pursuant to Section 3C of the Act

Not applicable.

Item 10. Advance Notices Filed Pursuant to Section 806(e) of the Payment, Clearing and Settlement Supervision Act

Not applicable.

Item 11. Exhibits

Exhibit 1 Not Applicable

Exhibit 1A Completed Notice of Proposed Rule Change for publication in the Federal Register.

Exhibit 2 Not Applicable.

Exhibit 3 Response to Commission information request.

Exhibit 3.1 – LCH SA response to SEC Risk Management Review Information Request. **Omitted and filed separately with the Commission. Confidential treatment pursuant to 17 CFR 240.24b-2 being requested**.

Exhibit 3.2 – LCH SA analysis of SEC Rule 17Ad-22(a)(14) for repo and triparty repo. **Omitted and filed separately with the Commission. Confidential treatment pursuant to 17 CFR 240.24b-2 being requested**.

Exhibit 3.3 – LCH SA analysis and follow-up message on the discussion with the SEC staff regarding this filing. **Omitted and filed separately with the Commission. Confidential treatment pursuant to 17 CFR 240.24b-2 being requested**.

Exhibit 3.4 – LCH SA Excel file supporting the analysis provided. **Omitted and filed separately with the Commission. Confidential treatment pursuant to 17 CFR 240.24b-2 being requested**.

Exhibit 4 Not Applicable.

Exhibit 5 Text of the proposed rule change:

Exhibit 5.1 – Liquidity Risk Modelling Framework V.6.2. **Omitted and filed separately with the Commission. Confidential treatment pursuant to 17 CFR 240.24b-2 being requested**.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, Banque Centrale de Compensation has caused this filing to be signed on its behalf by the undersigned hereunto duly authorized.

BANQUE CENTRALE DE COMPENSATION

By:_____
Anne Favé
Interim Chief Compliance Officer

EXHIBIT 1A

SECURITIES AND EXCHANGE COMMISSION

(Release No. _____; File No. SR-LCH SA-2023-007)

_____, 2023

Self-Regulatory Organizations; LCH SA; Notice of Filing of Proposed Rule Change Relating to Liquidity Risk Modelling Framework

Pursuant to Section 19(b)(1) of the Securities Exchange Act of 1934 ("**Act**")[1], and Rule 19b-4 thereunder,[2] notice is hereby given that on _____, 2023, Banque Centrale de Compensation, which conducts business under the name LCH SA ("**LCH SA**"), filed with the Securities and Exchange Commission ("**Commission**") the proposed rule change described in Items I, II and III below, which Items have been primarily prepared by LCH SA. The Commission is publishing this notice to solicit comments on the Proposed Rule Change from interested persons.

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

LCH SA is proposing to amend its Liquidity Risk Modelling Framework (the "**Framework**"), which describes the Liquidity Stress Testing framework by which the Collateral and Liquidity Risk Management department ("**CaLRM**") of LCH SA assures that LCH SA has enough cash available to meet any financial obligations, both expected and unexpected, that may arise over the liquidation period for each of the clearing services that LCH SA offers (the "**Proposed Rule Change**").[3]

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1 15 U.S.C. 78s(b)(1).

2 17 CFR 240.19b-4.

3 LCH SA, a subsidiary of LCH Group and an indirect subsidiary of the London Stock Exchange Group plc ("LSEG"), manages its liquidity risk pursuant to, among other policies and procedures,

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

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

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

1. Purpose

The Proposed Rule Change is being adopted primarily to enhance the manner in which the Liquidity Coverage Ratio ("**LCR**") is calculated, thereby increasing the robustness of LCH SA's liquidity profile.[4] The changes implement recommendations made by LCH SA's Model Validation Team following validation exercises in 2020 and 2021.

In particular, the Proposed Rule Change will: (a) revise the manner in which the settlement obligation liquidity requirements are calculated by aligning it to the actual process used by the Operations Team during a default management event and ensuring that no netting is allowed between Members of the same Group; (b) revise the manner in which securities pledged to the Banque de France ("**BdF**") are calculated by providing that such securities be valued at the

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the Group Liquidity Risk Policy and the Group Liquidity Plan applicable to each entity within LCH Group. In addition to its CDSClear service, LCH SA provides clearing services in connection with cash equities and derivatives listed for trading on Euronext (EquityClear), commodity derivatives listed for trading on Euronext (CommodityClear), and tri-party Repo transactions (RepoClear). LCH SA also maintains an interoperability link with Euronext Clearing, formerly Cassa di Compensazione e Garanzia, in Milan, Italy.

[4] LCH SA uses a Cover 2 approach for conducting stress tests and assessing its liquidity resources on a daily basis. This approach assumes that the two Clearing Member groups with the largest liquidity exposure will default on the same day. Cover 2 is computed by taking into account the liquidity risks related to clearing members within the same group across all services of the CCP that are then aggregated.

stressed mark-to-market price rather than the contract price;[5] (c) extend from five (5) days to seven (7) days the length of time for which LCH SA must maintain liquidity resources sufficient to meet its liquidity requirements;[6] (d) include the liquidity needs generated by the expiration of physically settled stock futures in the liquidity monitoring; and (e) require LCH SA, in calculating its required liquidity resources, to take into account that Clearing Members may switch from depositing non-cash collateral in a Full Title Transfer Account, which may be pledged at the BdF to obtain a liquidity line of credit, to depositing non-cash collateral instead in a Pledge Account, which permits no re-hypothecation rights.[7]

The proposed revisions to the Framework are set out in four of the Framework's six sections: Section 1, *Model Scope, Purpose and Use*; Section 4, *Model Specifications*; Section 5, *Model Performance Testing and Ongoing Monitoring* and Section 6, *Appendix.*[8]

Section 1 of the Framework will be amended as follows:

Section 1.1, *Model Objective, Business Scope and Intended Use*, will be revised to specify that the review of the Framework will be performed at least on an annual basis rather than quarterly to align the frequency of the review with the frequency defined for the regular update of the Liquidity Risk Policy.

Section 1.1.1, *Reminder of SA's activities,* will be revised to specify that the Default Funds are calibrated on the assumption of default of the two most exposed Member Groups

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5 See, Framework, § 4.2.5.

6 See, e.g., Framework, §§ 4.2.1, 5.1, 5.3.

7 See, Framework, § 4.2.5.2.4.

8 No revisions are being proposed to Section 2, Limitations and Compensating Controls, or Section 3, Justification of Modeling Approach. The Framework also has a number of appendices, set out in Section 6, that supplement the matters discussed elsewhere in the Framework.

(Cover 2). In particular, LCH SA's Framework ensures that the liquid resources are sufficient to cover the simultaneous default of the two most exposed Member Groups in term of liquidity that are identified by taking into consideration all of the possible liquidity needs, including the settlement obligation. This is approach incorporates the Cover 1 Clearing Member Group plus the next most exposed Clearing Member Group.[9]

Section 1.1.2, *Investment activities*, will be revised to clarify the responsibilities of the Collateral and Liquidity Management ("**CaLM**") Front Office team. Specifically, the sentence: "Three main tasks have been assigned to the team: liquidity management, non-cash collateral *settlement* in case of a clearing member's default and investment management" has been revised to read: "Three main tasks have been assigned to the team: liquidity management, non-cash collateral *liquidation*[10] in case of a clearing member's default and investment management". The purpose of this change is to provide a more accurate description on the actual responsibilities of the CaLM Front Office team which is in charge of performing all the relevant activities necessary to liquidate a member's non-cash collateral in case of defaults.

Section 1.3, *Model dependency and interconnectivity*, will be revised to describe more fully the purpose of the various policies and procedures that LCH SA employs to manage its liquidity risk in a manner that is consistent with defined risk appetites, as well as with regulatory and internal requirements. These policies and procedures include:

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9 Per SEC Rule 17Ad-22(e)(7)(i), LCH SA is required to maintain sufficient liquid resources at the minimum 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 foreseeable stress scenarios that includes, but is not limited to, the default of the participant family that would generate the largest aggregate payment obligation for the covered clearing agency in extreme but plausible market conditions.

10 Such liquidation includes the possible liquidation of securities underlying reverse repurchase activities of a defaulting clearing member.

- *LCH SA Liquidity Plan*, which sets out the principles and procedures for liquidity management within LCH SA. Its main objectives are to:
    - Ensure that LCH SA maintains sufficient liquidity at all times in accordance with policies set by the appropriate governance authority and monitored and reported by Risk Management;
    - Ensure that liquidity management and resources are aligned with LCH SA's operational requirements to meet payment obligations as they fall due under business as usual and stressed liquidity conditions; and
    - Ensure effective liquidity risk identification and escalation within CaLM service and other relevant LCH SA departments.
- *Group Liquidity Risk Policy*, which ensures that each central counterparty ("**CCP**") of LCH Group has enough liquid resources on hand to meet all the expected and unexpected financial obligations that arise during the course of the day. The policy lays out how a CCP will measure whether there are enough available liquid resources.
- *Group Financial Resource Adequacy Policy*, which describes the standards by which financial resources should be assessed against Clearing Member exposures, including variation margins, initial margins, margin add-ons for liquidity risk, concentration risk, wrong-way risk, where appropriate, as well as the sizing and re-sizing of the default funds across the LCH Group CCPs.
- *Group Collateral Risk Policy*, which sets out the standards for managing collateral risk across the LCH Group CCPs and ensures that CCPs must have a robust mechanism in place to process and control the collateral posted by Members.

- *Group Investment Risk Policy*, which sets out the standards for the management of investment risk across the LCH Group CCPs.
- *LCH SA Collateral Control Framework*, which describes the actions undertaken by the CaLRM team to implement the collateral limits laid out in the Group Collateral Risk Policy and to ensure that the prices integrated on a daily basis by the Margin Team are accurate and fairly priced.
- *Group Risk Policy: Default Management*, which describes the minimum standards that each CCP within the LCH Group must meet in dealing with the default of a Member.[11]
- Section 1.4, *Model Governance*, will be revised by adding a footnote specifying that core liquidity reverse stress tests[12] are performed monthly in line with that stated in the Liquidity Risk Policy. In particular LCH SA performs two set of reverse stress test:
    - On a monthly basis, in line with the methodology applied to perform any reverse stress tests in LCH SA, risk factors (defined in section 5.3.1) are independently stressed (one signle factor at time) to assess extreme market conditions necessary to observe a breach of the LCR limit.
    - In addition, combined reverse stress test scenarios (defined in section 5.3.2) are also performed on at least a quarterly basis. These combined scenarios are considered as "non-core reverse stress tests" with combined stress schocks applied on risks factors to determine the joint market conditions necessary to breach the LCR limit and assess their plausibility. This change to the Framework

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11 The CaLM Risk Procedures: Investment Risk Monitoring, and Default Management Guidelines, which currently are included among these policies and procedures, have been removed.

12 *See*, Framework, § 5.3.

is being proposed to align it with the updated Liquidity Risk Policy text approved during the 2022 review and in compliance with the SEC rule 17Ad-22(e)(7)(vi)(B).[13]

- Finally, Section 1.6.1, *Liquidity Sources*, will be revised to expand the tools available to CaLM to meet LCH SA's non-Euro liquidity requirements in the event of a default. This proposed change aims to align the Framework with the updated Liquidity Plan text approved during the 2022 review.

Specifically, these tools include:

- Non-Euro cash deposited as collateral in accordance with SEC Rule 17Ad-22(a)(14)(i)[14] as being cash held at creditworthy commercial banks;
- Sale of non-Euro securities of the defaulting member in accordance with SEC Rule 17Ad-22(a)(14)(ii)[15]:
  - These highly liquid and available securities would be converted into cash via an outright sale in the open market; or
  - in the intermediary period between the default of the member and the auction settlement, these securities might be converted into cash via the repo arrangement in place at CaLM Front Office.
- Repo transactions, including: (a) bilateral repo transactions (non-Euro cash taker and non-Euro collateral giver); (b) cross-currency bilateral repo (non-Euro cash taker and Euro collateral giver); (c) cross-currency triparty repo (non-Euro cash taker and Euro

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13 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

14 17 CFR § 240.17Ad-22(a)(14)(i).

15 17 CFR § 240.17Ad-22(a)(14)(ii).

collateral giver). LCH SA considers these transactions to be classified as prearranged funding arrangements determined to be highly reliable even in extreme but plausible market conditions due to (a) their contractual nature; and (b) the highly liquid and overall resilience of the repo markets for the major currencies cleared by LCH SA.

- Use of the multicurrency overdraft facility. In accordance with SEC Rule 17Ad-22(a)(14)[16], LCH SA considers this facility to be classified as a prearranged funding arrangement determined to be highly reliable even in extreme but plausible market conditions due to (a) its contractual nature; and (b) the high credit quality, based on the conservative internal credit score required of the bank providing the facility.
- Use of the FX spot market transactions. In accordance with SEC Rule 17Ad-22(a)(14)[17], LCH SA considers this facility to be classified as a prearranged funding arrangement determined to be highly reliable even in extreme but plausible market conditions as (a) numerous counterparties are already onboarded on the FX platform; and (b) the highly liquid and overall resilience of the FX markets observed for the major currencies cleared by LCH SA.
- ECB weekly tender in U.S. Dollars ("**USD**").[18] In accordance with SEC Rule 17Ad-22(a)(14)[19] LCH SA considers this facility to be a prearranged funding arrangement determined to be highly reliable even in extreme but plausible market conditions given

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16 17 CFR § 240.17Ad-22(a)(14).

17 *Id.*

18 As a credit institution, LCH SA has access to the ECB Open Market Operations in USD. LCH SA considers this resource as a last resort.

19 17 CFR § 240.17Ad-22(a)(14).

LCA SA's banking license and the central bank status of the institution providing such resource.

- Replace LCH SA's liabilities in non-Euro by Euro, as permitted by LCH SA's Rule Book (Article 4.2.3.2 of CDSClear Rulebook)[20]. In accordance with SEC Rule 17Ad-22(a)(14)[21] Euros used to cover liabilities would be cash held at central bank.

Furthermore, the committed liquidity line previously noted is being removed as LCH SA has replaced the committed liquidity line with a multicurrency overdraft facility at a major international bank.

In summary, LCH SA classifies the different liquidity tools pursuant to SEC Rule 17Ad-22(a)(14)[22], as follows:

- *Cash* – Euros cash held at central bank / non euros cash held at creditworthy commercial banks; replacement of LCH SA's liabilities in non euros by euros
- *Uncommitted prearranged* – readily available assets convertible to cash through prearranged funding arrangements, that are determined to be highly reliable even in extreme but plausible market conditions by the BoD following a review to be conducted not less than annually:

a. Sale of non-Euro securities of the defaulting members;

b. Repo transactions (bilateral repo, cross currency bilateral repo, and cross currency triparty repo);

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[20] See Article 4.2.3.2., https://www.lch.com/system/files/media_root/Supplementary%20Materials%20-%20LCH%20SA%20-%20CDSClear%20SA%20Rule%20Book_1.pdf.

[21] 17 CFR § 240.17Ad-22(a)(14).

[22] *Id.*

c. Multicurrency overdraft facility;

d. FX spot market transactions; and

e. ECB weekly tender in U.S. dollars

Additionnaly, a footnote (8) has been removed as the relevant report has been taken out from the appendix in the context of the reorganisation of the appendix 5 as described below in the relevant section in the present 19b4.

Section 1.6.1.1, *Collateral transfer*, will be revised to recognize that a Clearing Member may deposit non-cash collateral either (a) by Full Title Transfer Accounts that LCH SA maintains at various central securities depositories or (b) by a Single Pledged Account, without the right of re-hypothecation, that LCH SA maintains at Euroclear Bank.[23] This section will be further revised to clarify that non-cash collateral deposited in Full Title Transfer Accounts may be pledged at the BdF to obtain a liquidity line of credit that can be drawn on intraday or overnight, if needed. Additionnaly, precisions have been added regarding :

- the existing limits applied on Repoclear SA/ €GC Plus and EquityClear SA for pledge
- the fact that FFTA is used in majority by Clearing Members

Finally, to enhance the wording, a precision has been added to precise that only resources received in FFTA can be pledged to 3G pool.

The change aims to improve the clarity of the document as there is no change applied on the actual offer of collateral account.

Section 1.6.1.2, *Assessment of assets' liquidity*, will be revised to provide that Tier 1 assets, *i.e.*, securities that are deemed to be of sufficient quality and demand to generate liquidity

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[23] Currently, non-cash collateral may be pledged without limits only with regard to the CDSClear service. Moreover, there are limits on the amount of pledge collateral that may be deposited for RepoClear, €GC (Tri-Party Repo) and EquityClear. The majority of the collateral that LCH SA currently collects is by Full Title Transfer.

in the event of a default or a major market stress at little or no loss, will include, in addition to all European Central Bank ("**ECB**") eligible collateral, UK Gilts and U.S. Treasury Bills, along with Dutch and Belgian central bank guarantees (but only for the defaulting Clearing Member). In addition, recognized Tier 3 assets, *i.e.*, assets that are deemed to have little or no liquidity value in the event of a default or major market stress, or are deemed to be too illiquid to be converted in the timeframe that LCH SA would need the liquidity, will be revised to include non-cash collateral denominated Danish Krone, Norwegian Krone, Swedish Krona, Japanese Yen, Swiss Francs, Canadian Dollars and Australian Dollars.

Section 1.6.1.3, *Synthesis*, will be revised to clarify that LCH SA does not retain the right of collateral re-hypothecation for collateral deposited under the pledge regime unless the Clearing Member is in default. The reference specific to CDS has been removed as now the pledge is offered for all LCH SA services. It will confirm that CaLM demonstrated in 2021 and 2022 the ability to raise Euro liquidity from non-Euro non cash collateral in USD and GBP. Moreover, it will clarify that when considering non-Euro non cash collateral as a liquidity source, a conservative buffer of ten percent (10%) is applied to absorb market stress that may occur beyond the volatility already captured by the all-in haircut. In addition, it will confirm that Central Bank guarantees can be considered for liquidity purposes only if the relevant Member posting them is in default because only in that situation the CCP would acquire full ownership of the guarantee provided by the Central Bank.

Section 1.6.2.1, *Liquidity needs arising from members' defaults*, will be revised to clarify the description of the liquidity needs that may arise from settlement. The following sentence : "Cash outflows are generated when SA has to step in on behalf of the defaulted member to post cash to non-defaulting member(s) and take in the underlying *collateral*" has been revised to read:

"Cash outflows are generated when SA has to step in on behalf of the defaulted member to post cash to non-defaulting member(s) and take in the underlying *securities*". This change is being made to increase the accuracy of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover, LCH SA will also specify that the value of the bonds pledged at the ECB to raise liquidity takes into account stress market conditions.[24] The addition of the "stress market conditions" is thus performed for clarity in line with adjustments performed in the LCR model assumptions.

Section 4 of the Framework, which explains the modelling Framework in detail, will be amended, as noted above, to enhance the manner in which the LCR is calculated, thereby increasing the robustness of LCH SA's liquidity profile. This section discusses first, the calculation of the Operational Target, *i.e.*, the amount of liquidity required to be held to satisfy LCH SA's liquidity needs related to the operational management of LCH SA in a stressed environment, but one that does not lead to a Clearing Member's default. The Operational Target ensures that LCH SA's liquidity resources are always greater than its operational liquidity requirements.

Section 4.1.2, *Model inputs and Variable selection*, will be revised to clarify that the repayment of excess cash as well as excess ECB eligible securities deposited to cover margin requirements are considered in the liquidity requirement of the Operational Target. Two footnotes will be updated to specify that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets (repayment of excess cash and stressed

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[24] A detailed presentation of the model enhancement is reflected in Section 4.2.5.1.1.2 of the Framework.

margin reduction) because these securities are not transferrable to the BdF due to operational constraints. These changes will increase the accuracy of the document and does not represent a change in the methodology or procedure of LCH SA. Finally, the change of branding from CC&G to Euronext Clearing has been performed in line with the change of branding performed in the whole documentation and described below in the present 19b4.

Section 4.1.4, *Mathematical formula, derivation and algorithm, and numerical approximation*, will be revised to clarify that the Operational Target is calculated as the sum of the liquidity requirements described in Section 4.1.2 and that the liquidity requirements must always be lower than the resources available. This change will increase the accuracy of the Framework and does not represent a change in the methodology or procedure of LCH SA.

Section 4.1.5, *Model assumptions*, will be revised to provide that liquidity resources must be sufficient to meet LCH SA's liquidity requirements for the next seven (7) days in stressed situations. This section currently provides that liquidity resources must be sufficient to meet LCH SA's liquidity requirements for the next five (5) days.[25] The change incorporates a model validation recommendation to extend the LCR and consequently also the Operational Target to a 7 day period in order to align the liquidity monitoring time horizon to the RepoClear service new maximum holding period to manage a default (changed from a 3-day to 5-day holding period since the end of June 2022, to which LCH SA added 2 days of settlement convention). Additionnaly, to enhance the clarity, details related to the management of the former horizon have been removed in order to clearly state that the horizon is 7 days and results will be displayed without any aggregation.

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[25] Consistent with this change, LCH SA will take into account the maximum daily switches from cash and ECB eligible cash securities to non-Euro denominated securities observed over seven (7) days rather than five (5) days, as currently provided.

In addition (4.1.5.d), the provisions of this section describing the liquidity requirements drivers, which assume, in part, that 100 percent (100%) of the excess cash and excess ECB eligible securities will be withdrawn over the 3-day period will be revised. Specifically, the assumptions that the two largest individual Clearing Members will withdraw their excess on day one (T) and that the third and fourth largest Clearing Members will withdraw their excess on day two (T+1) will be revised to provide instead that (a) the two Clearing Member Groups that have the largest amount of excess collateral will withdraw their excess on T, and (b) the third and fourth Clearing Member Groups that have the next largest amount of excess collateral will withdraw their excess on T+1. In each case, the remaining Clearing Members will withdraw their excess on the third day (T+2). Precision on the footnote to specify that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets as these securities are not transferrable to the BdF due to operational constraints.

For the liquidity requirement that aims to quantify the potential substitution of cash collateral/ECB eligible securities (4.1.5.e), LCH SA will take into account the maximum daily switches from cash and ECB eligible cash securities to non-Euro denominated securities observed over seven (7) days rather than five (5) days as currently provided to incoroporate the model valitation recommendation. In order to be consistent with this change from five to seven days in the time horizon, two additional definition of amount of switch corresponding to T+5 and T+6 have been added. Moreover, it will be clarified that on Q3 2022 CaLM Front Office demonstrated the ability to transfer ECB eligible securities to BdF within 30 minutes for all eligible countries. The list of specific countries will be removed from the Framework as it is dynamic and depends on the collateral eligible at the CCP that can be found on the LCH SA website (a footnote will be added to point towards website). With respect to the amount of equity

lodged, as LCH SA takes the maximum amount of switched observed, the reference to 100 million will be removed as the amount is a dynamic figure. It will also be precised that the amount of equity deposited over the past 3 years which is also a dynamic figure remains negligible. These changes will improve the accuracy of the Framework and do not represent a change in the methodology or procedure of LCH SA.

For Section 4.1.5.f which describes the potential intraday additional liquidity injection that may generate securities carried overnight it will be specified that the amount is calibrated as the maximum EOD securities carried over night over the whole time series available. This change will increase the accuracy and clarity of the Framework and does not represent a change in the methodology or procedure of LCH SA.

Moreover, Section 4.1.5.g will be revised to modify the targeted estimated margin reduction of non-defaulting Clearing Members. Currently, estimated margin reduction is calculated over a three-day period. As revised, targeted estimated margin reduction will be calculated over seven (7) consecutive days to address model validation recommendation.[26] To reflect this change, a detailed table has been added describing the margin reduction rate per day of the horizon period in line with the above In order to enhance the wording, two bullet points have been revised to state that (a) margin reduction applied is greater than the biggest one observed in the historical window considered for the calibration (b) for each day, the reduction is over the 99,7% percentile on the available set of data. In order to precise the size of the lookback period of observation, a footnote will be added detailing the current start date and end date. One footnote will be also updated to provide that Portuguese and Finnish government bonds posted

[26] The overall compounded margin reduction will be above the maximum historical 7-day margin reduction observed.

via the triparty solution are excluded from the liquid assets because such securities are not transferrable to the BdF due to operational constraints.

These additional changes will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Finally, Section 4.1.5.h will be reworded to specify that the liquidity requirements stemming from estimated Variation Margin payment to be processed towards the interoperable CCP is calculated on the basis of the Initial Margin actually posted at LCH SA to cover a 5-days holding period to be spread out over a 5-days period according to a simulated market stress based on historical yield shifts (third bullet point). The rewording of the introduction of 4.1.5.h aims to clarify the computation of the theoretical allocation of IM (leading to the removal of one footnote that was duplicated) as well as to reflect the change of branding. These changes will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of the LCH SA.

As mentioned, Please also note that reference to the depth of time series (4.1.5.e and 4.1.5.f) are proposed to be removed as available set of data are wider and every points are considered. This would avoid LCH to periodically review the depth in the wording.
Finally, the notion “DF” has been added in 4.1.5.i to reflect the usual acronym of the default fund. The review was the opportunity also to correct a typo in the third bullet point of this section.

Section 4.2 of the Framework, *LCR*, which describes the manner in which the LCR is calculated, will be revised as follows:

Section 4.2.1, *Model overview*, will be revised to provide that the purpose of the LCR Cover 2 scenario is to allow LCH SA to ensure that it has enough liquidity in the case of default

of the two largest Members Groups during the seven (7) days following the default, rather than five (5) days, as is currently provided. Moreover the sentence: "*3* days holding period of margin *collateral*, *i.e.,* SA ensures it has sufficient liquidity to meet non-defaulting member's cash requests even if SA is waiting for the defaulter's *margin collateral* to be liquidated" will be revised to read: "5 days holding period of margin *requirement*, i.e. SA ensures it has sufficient liquidity to meet non-defaulting member's cash requests even if SA is waiting for the defaulter's *position* to be liquidated". These changes will enhance the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA (i.e. "requirement" is an enhanced wording as the objective is to cover the clean risk (collateral might include excess). Similarly, "positions" better clarifies the liquidity needs that are present until the final liquidation of the complete position of the Defaulted Members.

Further, the sentence: "The ERCO has approved the 5 days liquidity horizon as per *the article 22 of* the Group liquidity risk policy" will be revised to read: "The ERCO has approved the *7* days liquidity horizon as per the Group liquidity risk policy". The change will remove a dependency between the two documents as the number of articles may change when the Group Liquidity Policy is updated on an annual basis, while ensuring that the policy content is referred in the Framework.

Finally, the sentence: "The cover 2 is computed by taking into account the liquidity risks related to clearing members within the same group across all services *within* the CCP that are aggregated" will be revised to read: "The cover 2 is computed by taking into account the liquidity risks related to clearing members within the same group across all services *of* the CCP that are *then* aggregated". These last changes do not trigger any methodology changes but have

been amended to enhance the clarity. The reference to footnote (24) is proposed to be removed as it refers to a non existing footnote (typo).

Section 4.2.2, *Model inputs and Variable selection*, and Section 4.2.4, *Mathematical formula derivation and algorithm and numerical approximation*, will be revised to provide that securities pledged at the BdF and included among Total Available Assets will be valued at stressed market prices and include the ECB haircut effect on the resulting figures. The notion of "for each market" is proposed to be removed to preserve clarity. At the same time for the computation of VM erosion, the market risk impact arising from the contractual settlement of RepoClear will be excluded from the computation of the component as treated on the asset side as previously described (i.e. the component that was previously considered in liabilities will be incorporated in the assets as a reduction of the amount of liquidity sourced from the clearing securities pledged to BdF, cf 4.2.4.c). For this purpose, the sentence "on top of which is added the market stress risk impact on the contractual settlement for repoClear" will be removed. These changes have the purpose of adressing a model validation recommendation to enhance the treatment of market stress in the computation of liquidity sourced by the Central Bank

Moreover an update of wording will be done to consider the Total Default Liabilities and Total Available Assets as plural rather than singular as currently the case. It will be specified that in the VM Erosion calulation all LCH SA services are considered that is Cash & Derivatives, Repoclear, EGC, and CDS markets. Two footnotes will be updated to specify that Portuguese and Finnish government bonds posted via the triparty solution are excluded from the liquid assets because not transferrable to the BdF due to operational constraints (4.2.2/4.2.4). These changes have will increase the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Finally, additional clarifications will be made regarding the treatment of FCM/BD client resources in the LCR. In particular, LCH SA will further specify that in a context of default (and purpose of the LCR monitoring) LCH SA will only treat FCM/BD client collateral as available liquidity resources if and only if this FCM/BD client defaults and generates some liquidity needs. Its resources will not be considered as available liquidity assets for any other FCM/BD clients and/or the FCM/BD clearing member or any other clearing member of the CCP. In particular, in case of one FCM/BD client defaulting, other FCM/BD clients assets will not be considered to cover the liquidity needs of the defaulting FCM/BD client. These changes are also replacing "clearing member" with client where relevant to increase clarity.

The changes will enhance the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5, *Model Assumptions,* describes the various risks that each business line must consider in determining liquidity requirements as well as other liquidity requirements that LCH SA must meet.[27]. Title of Section 4.2.5.1 will be changed to 'Description of risks per Business line' to reflect that different risks are tackled in different sub section.

Section 4.2.5.1.1, *RepoClear*, will be revised to provide that settlement cash outflows will be calculated over a period of 7 days and on a gross basis, aggregated by ISIN, settlement date and Clearing Member level. The final settlement outflows are then aggregated at the Clearing Member Group level without allowing any netting across members of the same Clearing Member Group. The objective of these changes is to address two model validation recommendations: to align the LCR liquidity monitoring period to the RepoClear new maximum

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[27] As noted earlier, in addition to its CDSClear service, LCH SA provides clearing services in connection with cash equities and derivatives listed for trading on Euronext (EquityClear), commodity derivatives listed for trading on Euronext (CommodityClear), and tri-party Repo transactions (RepoClear). LCH SA also maintains an interoperability link with Euronext Clearing.

holding period to manage a default (5 days holding period of margin + 2 of settlement convention); and to not allow any netting between entity of the same Group. Moreover, a table summarizing the liquidity requirements according to the direction of the repo transactions as well as a paragraph describing the specific treatment of forward starting repo in the calculation of the settlement obligation outflows have been removed because a new enhanced algorithm was designed and described in the new sections 4.2.5.1.1.1 and 4.2.5.1.1.2 as described later in the present form. One bullet point is proposed to be removed as well as the sentence "Note that the post default date forward start leg of cash borrower transaction are excluded for the LCR calculation (e.g. starts date: Default date + 1 day and returns legs: Default date +2). The transactions are performed through DVP so LCH SA will fail to deliver the securities leading no liquidity requirements related to the returns legs to factor in the LCR.to keep consistency with the new algorithm.

Section 4.2.5.1.1.1, *Liabilities contractual obligations on physical delivery*, will describe the methodology to compute liabilities due to settlement obligations. In particular, in case of default, LCH SA shall assume and honour the obligations of the defaulted Members. In case of securities with physical settlement, this may represent substantial liquidity needs for LCH SA. The enhanced methodology presented in this section leverages on the actual management of settlement instructions performed by the Fixed Income Operations department during an event of default to fully take into account in the calculation of the liquidity needs the specific settlement dynamics over the time horizon of the LCR with the objective to more closely align the computation of the LCR with the actual default management process.

To model the settlement obligation, the DCO would start by constructing the contractual balance of net buyer/seller position by Clearing Member, ISIN and date within the LCR time horizon:

1. Identify transactions (each leg independently for repos) that settles within the time horizon of the LCR and allocate, to the settlement date, the contractual cash amount to be settled and the corresponding nominal of securities to be delivered; and
2. Aggregate cash amounts and nominals by member, ISIN and date.

This contractual view of cash and security flows is then adjusted to take into account the eventual effect of carrying forward the liquidity position (the effect of one day fails on the contractual flows of the following dates). In fact, in case of a net seller position on date t, LCH SA would fail to deliver securities if they are not already sourced and/or pledged at the BdF and would continue to fail until the date t' on which the balance is net buyer (or until the end of the time horizon when the portfolio would be perfectly matched again). In that case, LCH SA would receive no cash on date t for the securities in which it fails to deliver and would need to inject less cash into the settlement system on date t' because of the netting effect of carrying forward. The real cash injection flows obtained are aligned with the Operations Team view of the settlement obligation in case of default.

When the real cashflow injections are obtained as described above for each member they are then aggregated at group level.

A simplified numerical example is provided to demonstrate the sequence of steps used to calculate the liquidity needs deriving from settlement obbligation.

The changes described in this section will improve the liquidity monitoring of LCH SA and address two model validation recommendations: to improve the liquidity needs estimation related to Settlement Risk and to not allow any netting between entity of the same Group.

Section 4.2.5.1.1.2, *Assets: settlement securities pledged at Central Bank*, will describe the methodology to compute the liquidity raised through the pledge at a Central Bank of the settlement securities withdrawn from the settlement system on behalf of the defaulter. In particular, when LCH SA pledges eligible securities at the Central Bank in exchange of liquidity, two important factors need to be considered:

- the market price of the securities that may be decreased by unfavorable market conditions therefore reducting the value of the collateral and consequently the amount of liquidity that can be sourced out of it; and
- the haircut applied by the Central Bank when lending cash to LCH SA in exchange of securities.

The changes described in the following paragraph provide a summary of the calculation performed by the DCO when modelling the liquidity that it would be able to source from the Central Bank.

The amount raised is the sum of the unstressed assets value after taking into account the ECB haircut and a stress price market impact applied to the value of the securities. In order to calculate the amount of liquidity raised from the BdF, LCH SA will consider the real security flows calculated in Section 4.2.5.1.1.1 which are equivalent to securities pledged at/retrieved from the BdF (with an opposite direction with respect to settlement). The securities are then valued at current market price at the moment of default with the application of an ECB haircut. To quantify the market impact, a preliminary screening is applied in order to identify correctly

only the subset of transactions to which the market impact applies because they are not covered by offsetting inflow. In particular for long cash transactions or Cash Borrower Repo - Return Leg:

- Before the settlement date: an eventual bond price decrease would result in a margin decrease of the non-defaulting member due to Variation Margin credit which is accounted for in the LCR liabilities in a separate entry.
- On the settlement date: LCH SA would get the securities from the non-defaulting member, pledge them at the BdF and receive an amount of cash equal to the stressed price of the bond minus the haircut. The additional liquidity impact, with regards to the unstressed assets described previously, rises from the bond price move from the default date until the settlement date. Hereunder, we will refer to this component by "Settlement Market Price Impact".
- After the settlement date: once the bond is pledged overnight, the price decrease afterwards would trigger an additional liquidity impact to cover the cash that needs to be returned to the BdF because of the lower amount of the collateral deposited, *i.e.*, the price move from the settlement date until the date on which LCH SA will have a settlement obligation to deliver the bond (or until the book is perfectly matched again after the settlement of the auction). Hereunder, we will refer to this component by "Pledge Market Price Impact".

The total market impact is calculated as the sum of Settlement Market Price Impact and Pledge Market Price Impact. The bond prices moves generating the market impact is calculated in accordance with RepoClear stress test scenarios. The final amount of liquidity retrieved from

the BdF resulting from the pledge of securities retrieved from settlement on behalf of the defaulted members will be:

Liquidity retrieved from the BdF (t) = Real Security Flow * Market Price at moment of default * (1 – ECB Haircut) - Settlement Market Price Impact - Pledge Market Price Impact.

A simplified numerical example is added to the Framework to demonstrate the sequence of steps used to calculate the liquidity amount retrieved from the BdF.

The change will improve the liquidity monitoring of LCH SA and address a model validation recommendation to improve the liquidity needs estimation related to Market Risk.

To remain consistent with the calculation of settlement obligations, after calculating the Liquidity retrieved from the BdF for all dates in the LCR period at Member level, the amounts are aggregated at the Clearing Member Group level. This change address a model validation recommendation.

Section 4.2.5.1.1.3, *Market Risk*, will be revised to provide that, in addition to the settlement obligations driven flows, the position of the defaulter may generate a liquidity drain for LCH SA in the form of negative mark to market to be paid to non-defaulting members. The formula to estimate this amount is changed and will consider the worst stress loss of the defaulter position according to the relevant RepoClear stress test scenario and add additional margin to model any concentration, market liquidity issues. The purpose of this change is to adress a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR. Additionally, a footnote will be added to disclose that a list of stress scenario is reported in appendix 6.7.

Section 4.2.5.1.2, *€GCPlus,* will be revised to provide that, when calculating the settlement driven cash outflows, the aggregation is based on data provided by the triparty agent

and that only positions in which the defaulter is a cash borrower (collateral giver) in the first leg of the repo and, therefore, collateral taker when the repo closes, generate a liquidity need. Therefore, in case of default of a Member collateral giver in the first leg, LCH SA has to inject cash and withdraw securities when the repo closes (cf new footnotes).

Finally a repetition of words have been cancelled to remove redundancy in the text. The changes will enhance the accuracy and clarity of the Framework and do not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.1.2.1, *Market risk*, will be revised to provide that for €GCPlus the additional liquidity needs generated by negative mark to market payments to non-defaulting members is estimated in line with what is done for RepoClear[28] as the worst stress loss of the defaulter position according to the relevant €GCPlus stress test scenario and adding additional margins. The change will incorporate a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR.

Moreover, a numerical example has been added to the Framework to demonstrate that the eventual BdF haircut will always be covered by the collateral posted by the collateral giver as requested by the current margin methodology (corresponding to “Example”). The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.1.3.1, *Cash Equity*, will be revised to provide that the settlement cash outflows will be calculated on a gross basis at the Clearing Member level and then aggregated at the Clearing Member Group level without allowing any netting across the Clearing Members of

[28] Please refer to changes to section 4.2.5.1.1.3 described in the present document.

the same Group. The objective of the change is to enhance the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA. Moreover, the methodology to consider among the liquidity requirements the equity settlement arising from the expiration of physically settled futures is detailed. In particular, in case the defaulting member is long futures which expire during the LCR horizon, LCH SA will have to pay the future price to the non-defaulting counterparty in order to settle the physical underlying. Therefore the enhanced algorithm daily identifies all the potential maturing long futures positions on the day of the computation and on the upcoming business day as well, identifies the positions of the Cover 2 Members Group and finally, given the potential physical settlement, adds the relevant liquidity needs to the computation of the LCR. A numerical example is included to provide a sample of the calculation.This change has the purpose of addressing a model validation recommendation by including the liquidity needs related to the expiry of physical delivery single stock futures in the LCR.

In addition, this section will provide that the liquidity needs generated by negative mark to market payments to be made to non-defaulting members is changed in line with what is done for the other LCH SA services [29] (RepoClear, €GCPlus, CDSClear) and will be calculated as the worst stress loss of the defaulter position according to the relevant EquityClear stress test scenario with the addition of additional margins.

The objective of the change is to incoporate a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR.

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[29] Please refer to changes for Sections 4.2.5.1.1.3, 4.2.5.1.2.1 and 4.2.5.1.4 described in the present document.

A footnote has been added to improve the accuracy of the document to specify that the full list of stress scenarios used is presented in a dedicated Appendix.

Finally, this section will explain that because equities are not eligible at the BdF they will not be considered as liquidity sources in the assets of the LCR. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.1.3.2, *Listed derivatives*, will be revised to clarify that futures on equity index contracts are included among the listed derivatives instruments considered in the calculation of the LCR and that derivatives expirations occur on a monthly basis rather than the previously stated quarterly basis. These changes will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA (i.e. monthly expiry is already efficiently implemented in the computation of the LCR).

The calculation of the liquidity needs generated by negative mark to market payments to be done to non-defaulting members is changed in line with what is done for the other LCH SA services [30](RepoClear, €GCPlus, CDSClear) and will be calculated as the worst stress loss of the defaulter position according to the relevant EquityClear stress test scenario with the addition of Additional margins. The change will address a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR. Finally, please note scenario is now stated in plural to reflect that several scenarios (disclosed in appendix 6.7) are used to model stressed VM.

Section 4.2.5.1.4, *Credit Default Swaps*, will be revised to clarify that the calculation of the liquidity needs generated by negative mark to market payments to be done to non-defaulting

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30 *Id.*

members is changed in line with what is done for the other LCH SA services[31] (RepoClear, €GCPlus, EquityClear) and will be calculated as the worst stress loss of the defaulter position according to the relevant CDSClear stress test scenario with the addition of additional margins. The change adresses a model validation recommendation by improving the liquidity needs estimation related to Market Risk in the LCR. Finally, please note scenario is now stated in plural to reflect that several scenarios (disclosed in appendix 6.7) are used to model stressed VM A footnote have been added to improve the accuracy of the document to specify that the full list of stress scenarios is disclosed in a dedicated Appendix.

Section 4.2.5.2 will be revised to modify those provisions of the Framework relating to the other liquidity requirements to be taken into account in calculating the LCR.

Section 4.2.5.2.1 will be revised to provide that the Operational Target to be included in the calculation of the LCR will be restated by removing margin outflows calculated in the Operational Target and related to Cover 2 for LCR. This is because LCH SA has the right to fully use the collateral of the defaulters including excess. The changes enhance the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.2.2, *Margin non-cash collateral*, will be revised to provide that LCH SA will compute the pure stress loss of such collateral rather than the stress loss over haircut (less conservative) as currently stated, by applying a set of stress scenarios used by RepoClear in the calibration of the Default Fund and choosing the one that generates the biggest liquidity exposure in terms of Cover 2. The choise of application of Repoclear scenarios is driven by the fact that

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[31] Please refer to changes for Sections 4.2.5.1.1.3, 4.2.5.1.2.1, 4.2.5.1.3.1 and 4.2.5.1.3.2 described in the present document.

only bonds deposited as collateral can be used to raise liquidity while equities are completely excluded from the calculation of liquid assets. The change aims to improve the liquidity monitoring by leveraging on the same coherent scenarios for all bonds position included in the LCR computation. A list of scenarios is disclosed in appendix of the LRMF.

Section 4.2.5.2.3, *CaLM investments*, will be revised to specify that when calculating the liquidation losses related to the collateral posted by the defaulting Member through the reverse repo activity and the potential outright purchases losses deriving from the CCP portfolio, LCH SA will apply the driving stress scenario chosen among the set of scenarios from RepoClear consistent with the determination of the Cover 2 described in section 4.2.5.4. “Potential” has been added because the loss on the outright portfolio will be only realized if the DCO is forced to sell the portfolio because of liquidity needs and does not wait until maturity. The changes will increase the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Section 4.2.5.2.4, *Collateral pledge modelling*, is added to describe in details how pledged collateral has to be modelled when calculating the asset of the LCR. In particular LCH SA assumes that Clearing Members will utilize their ability to pledge collateral near the maximum allowed on each LCH SA service and, therefore, this amount will be subtracted from the amount of non-cash collateral included in the LCR assets.

The expected additional pledge will be calculated as the difference between the Maximum pledge capacity scaled by a parameter that can capture Clearing Members behaviour and the actual pledge capacity used currently by the Clearing Members.

The Maximum pledge capacity amount will take into consideration eventual concentration limits in places for specific LCH SA services (i.e. Repoclear, €GCPlus and EquityClear).

In contrast, for the Members not having a pledge account active, CDSClear non-cash collateral deposited under Full Title Transfer with the exclusion of securities in DKK, NOK, SEK, JPY, CHF, CAD and AUD is considered to be eligible to raise liquidity and, therefore, is included among liquidity resources. This section has been added to address a model validation recommendation by disclosing more details in the modelling of the collateral pledge.

Section 4.2.5.3, *Stress scenario selection*, will be revised to clarify that the stress tests scenarios selected for each LCH SA service will be consistent with a market state resulting from the default of the Cover 2 as assumed by the LCR. The scenarios selected are taken from the set of scenarios used to calibrate the Default Fund amount on the different services and in particular include scenarios that simulate an increase in interest rates and credit spreads and a decrease of equity indexes. The change has the purpose of increasing the accuracy and clarity of the document and ensure that the stress scenarios chosen are coherent with the LCR assumption of Cover 2 default and the consequent increased volatility on the market. In other terms, additions of wording aim to highlight the consistency of stressed scenarios applied on different market to define the Cover 2 (i.e. rate up (iii), index and equities down (ii) and CDSClear widening (i)). A full list of the selected stress test scenarios for each service is set out in an Appendix to the Framework. The driving scenario is then selected as the one that produces the largest stress loss on a Cover 2 basis as described in Section 4.2.5.4.

The list of scenarios has been updated to select, among the available scenarios used by the LCH SA services, only the most relevant ones given the LCR assumptions. The purpose is to improve the liquidity monitoring of LCH SA.

In addition, when describing the additional stress scenario where a downgrade of sovereign ratings results in an increase of ECB haircuts applied when the securities are pledged at the BdF to raise liquidity, the table reporting the values of the ECB haircuts applicable will be updated. The new values are the official values applied by the ECB[32] on each eligible collateral posted to raise liquidity as a function of the collateral category and maturity.

Section 4.2.5.4, *Cover 2 selection*, provide the description of the methodology used by the DCO to identify the two Member Groups most exposed in term of liquidity (Cover 2) which are assumed to be simultaneously in default in the LCR. Liquidity needs deriving from Settlement risk, Market risk and Investment risk are aggregated to rank the Member Group and identify the most exposed ones. The section will be revised to specify that the Cover 2 will be identified by calculating the following liquidity requirements at the Clearing Member Member level, aggregating the total requirement at the Clearing Member Group level and then choosing the two most exposed Clearing Member Groups:

- Stress Variation Margin: for all the services the variation margins are modelled by applying the most punitive scenario among the chosen sets and consistent with the LCR assumptions;
- Settlement liquidity requirements due to RepoClear and Cash equity settlement obligations. In case of securities pledged at the BdF their value would be stressed according to the scenario that would generate the highest loss;

[32] Please refer to EUR-Lex - 32023O0832 - EN - EUR-Lex (europa.eu).

- Non-cash Collateral stress losses are estimated by stressing the non-cash collateral eligible for BdF liquidity with the set of scenarios consistent with the LCR assumptions;
- Investment stress losses over haircut are estimated by applying the stress scenarios to the collateral received from the reverse repo activity with each specific counterpart; and
- ECB Haircut impact is quantified by applying the relevant haircut to all the securities received from a specific member that are eligible for Central Bank liquidity.

Between the set of scenarios used from the RepoClear Stress Test framework, the set of scenarios used from the CDSClear Stress Test framework and the set of scenarios used from the EquityClear stress test framework, only the one jointly generating the maximum loss of the sum of all the above elements for the two most exposed Clearing Member Groups will be used to determine the Cover 2 and calculate the final LCR.

The changes have the objective to coherently include in the computation of the Cover 2 the changes related to the update of the stress test scenarios considered in the LCR (described in Section 4.2.5.3), the changes related to the impact of market risk on the securities pledged at Central Bank (described in Section 4.2.5.1.1.2) and the changes related to the estimation of the Variation Margin Outflows (described in Sections 4.2.5.1.1.3, 4.2.5.1.2.1, 4.2.5.1.3.1, 4.2.5.1.3.2 and 4.2.5.1.4).

- Section 4.3: All the changes reflect the new branding of CC&G (Euronext Clearing). No change in the methodology or procedure applied by LCH.

Section 5, *Model Performance Testing and Ongoing Monitoring*, will be revised to provide throughout that the length of time for which LCH SA must maintain liquidity resources sufficient to meet its liquidity requirements for each service will be extended from five (5) days

to seven (7) days.[33] In addition, Section 5.1, *Ongoing Monitoring*, will be revised to provide that cash or non-cash collateral available for pledge to the BdF should represent at least 25 percent (25%) of LCH SA's available liquid resources after the default of its most significant Clearing Member. This section currently provides that cash alone should represent at least 25 percent (25%) of LCH SA's available liquid resources after the default of its most significant Clearing Member. This change will align the text of the Framework to the updated text of the Liquidity Policy approved in 2022.

Section 5.3 on Reverse Stress Tests will be modified to include a paragraph providing the regulatory requirements pursuant to SEC Rule 17Ad-22(e)(7)(vi)(B)[34] and SEC Rule 17Ad-22(e)(7)(vi)(C)[35].

Consistent with this change, Section 5.3.1, *Independent stress of various risk factors*, which describes the single factor reverse stress test (or 'core' reverse stress test), which examines the stress on liquidity outflows caused by different risk factors that are independently stressed (one signle factor at time) to assess extreme market conditions necessary to observe a breach of the LCR limit will be revised as follow:

- Risk Factor 1: Liquid assets reduction

It will be stated that non-cash collateral deposited by Clearing Members and eligible for pledge at the BdF represents another primary source of liquidity for LCH SA.

The sentence 'A primary source of liquidity for a CCP is from investments maturing management by the CaLM team at the opening of the day' will be revised to 'A primary source

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33 See, Section 5.1, *Ongoing Monitoring*, Section 5.3, *Reverse Stress Test*, and Section 5.3.1, *Independent stress of various risk factors*.

34 17 C.F.R. 240.17Ad-22(e)(7)(vi)(B).

35 17 C.F.R. 240.17Ad-22(e)(7)(vi)(C).

of liquidity for a CCP is from investments maturing management *performed* by the CaLM team at the opening of the day'.

The sentence 'The overall liquid *asset is* reduced to obtain the stress required to reduce the LCR below 100%' will be revised to 'The overall liquid *assets are* reduced to obtain the stress required to reduce the LCR below 100%'

The changes described will improve the accuracy and clarity of the document and do not represent a change in the methodology or procedure of LCH SA.

Moreover it will be stated that the reduction in assets necessary to breach the LCR will be compared against the 7 days historical data in order to assess the plausibility of the scenario rather than the 5 days historical data currently reported. The change has the purpose of aligning the time horizon of the reverse stress with the time horizon of the LCR (described in Section 4.2.1).

- Risk Factor 2: Switches to non ECB eligible assets

It will provide that when calculating the single factor reverse stress test that simulates a switch of collateral from ECB eligible assets to non-ECB eligible assets such that a liquidity breach occurs, the non-ECB eligible assets includes GILT or US bonds, Central Bank guarantee, equities, non-Euro non cash collateral, and pledge collateral. The addition of pledge collateral to the list will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

The required amount of switches necessary to produce a liquidity breach will be compared against the 7 days historical data rather than the 5 days historical data currently reported in the Framework. The change has the purpose of aligning the time horizon of the reverse stress to the tme horizon of the LCR.

- Risk Factor 3: Rating downgrade of the Euro zone peripheral and core countries

The sentence ‘This reverse stress test aims at modelling the downgrade of the relevant countries and estimate the theoretical ECB haircuts ***generating*** a liquidity shortfall ’ will be revised to ‘This reverse stress test aims at modelling the downgrade of the relevant countries and estimate the theoretical ECB haircuts ***needed to generate*** a liquidity shortfall’.

The change described will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

- Risk Factor 6: CC&G VM

The subparagraph will be renamed Risk Factor 6: CC&GEuronext Clearing VM to reflect the updated name of the interoperable CCP.

The sentence ‘The direction of the position’ will be revised to ‘The direction of the positions’.

The change described will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover it will be stated that this specific reverse stress test aims to asses the amount of VM fails by the interoperable CCP during 7 days that could generate a liquidity shortfall rather than 5 days as currently reported in the Framework. The change has the purpose of aligning the time horizon of the reverse stress to the tme horizon of the LCR.

- Risk Factor 7: Multiple defaults

The sentence ‘Given that liquidity requirements are sized to a cover 2 standard, is it plausible that more than 2 ***members*** defaults who could lead to a liquidity deficit ’ will be revised to ‘Given that liquidity requirements are sized to a cover 2 standard, is it plausible that more than 2 ***member Groups*** defaults who could lead to a liquidity deficit ’.

In addition, the sentence: "In order to answer this question, LCH SA ranks order Members Groups based on their ICS and starting from the ones with the worst ICS (and hence highest probabilities of default)" will be revised to read: "In order to answer this question, LCH SA ranks Members Groups based on their ICS and *starts considering* the ones with the worst ICS (and hence highest probabilities of default)".

Finally it will be added that all Clearing Member Groups with a credit score of 6 or higher will be considered in the reverse stress test. The changes described will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 5.3.2.1, *Context & Objective,* will be revised to provide that the combined reverse stress test scenarios[36] that include multiple risk factors will be performed at least quarterly. The purpose of the change is to align the frequency of combined reverse stress stress described in the framework to the one state in the Liquidity Risk Policy.

Section 5.3.2.2, *Behavioural scenario,* will be revised to provide a more updated example of report layout. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 5.3.2.3, *Macro-economic scenario,* describes the reverse stress test, which examines the stress on liquidity outflows caused by a set of macro-economic scenarios that combine market, credit and concentration risk to determine the number of defaults that LCH SA can sustain in a shocked macro-economic environment until it suffers a liquidity shortfall. This section will be revised, in part, to clarify that the market risk driving scenarios will be selected

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[36] Combined reverse stress test scenario are known as "non core". Please refer to change to Section 1.4 described previously herein.

from the scenarios used to calculate LCR in accordance with the logic described in Section 4.2.5.4 . The current Framework considers only 2 macroeconomic scenarios that will be replaced by the new set of scenarios dscribed in Appendix 6.7. Additional external rating downgrade will be considered on top of the selected market risk scenario as it is the case of the current Framework.

Moreover, the Operational outflow considered in the scenario will be aligned to the calculation of the Operational Target and therefore assuming a margin reduction of 24.7% over 7 days.

The changes will improve the liquidity monitoring of LCH SA by aligning the reverse stress test calculation to the changes proposed for the LCR and described in Sections 4.1.5g, 4.2.5.3, 4.2.5.4, and Appendix 6.7.

This Section will also be revised to provide that LCH SA will consider Clearing Member Groups, rather than individual Clearing Members, when simulating the multiple defaults driven by credit quality criteria, concentration criteria or total liquidity exposure criteria as this Section currently provides. The changes will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

- Multiple Defaults based on the credit quality of the member Groups

The sentence ‘By expanding the analysis presented on the individual risk factor *8* this case highlights the evolution of the LCR *for each* macro-economic scenario’ will be revised to ‘By expanding the analysis presented on the individual risk factor *7* this case highlights the evolution of the LCR *under the driving* macro-economic *shock* scenario ’. The change has the purpose of correcting a typo and alignin the description to the new computation of the driving macroeconomic scenario described above.

Moreover, the example table that reports a sample of member Groups and their respective liquidity needs will be updated to anonymize the name of each Group.

- Multiple Defaults of the most concentrated countries (FR & US member Groups)

The sentence 'More specifically, we assume that the *Macro-Eco 2* scenario *(Peripheral shock accompanied with a contagion on core countries)* affects French and the European entities of the US members (two different simulations)' will be revised to 'More specifically, we assume that the *Driving macro economic* scenario affects French and the European entities of the US members (two different simulations)'. The change will align the description to the new computation of the driving macroeconomic scenario described above.

Moreover, the various report examples reported in this section displaying the multiple defaults of member Groups from most concentrated countries will be updated [37]to provide a more recent example of report layout. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

- Default of the biggest member Groups in terms of liquidity (Cover N)

The report example reported in this section displaying the default of the biggest Member Groups in terms of liquidity will be updated [38]to provide a more recent example of report layout. The change will increase the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Section 5.3.3 is being added to the Framework in order to include provisions governing frequency and reporting. This section specifies that LCH SA performs core reverse stress tests at

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[37] Figures as of October 2022.

[38] *Id.*

least on a monthly basis and that the results of the analysis are shared with the CRO on a monthly basis and quarterly to LCH SA Risk Committee.

LCH SA also performs an ad-hoc analysis of the existing stress testing scenarios, models, and underlying parameters and assumptions used in evaluating liquidity needs and resources through the core reverse stress tests exercise (i) when the products cleared or markets served display high volatility or become less liquid, (ii) when the size or concentration of positions held by the clearing agency's participants increases significantly, or (iii) in any other appropriate circumstances that would lead to a liquidity coverage ratio falling below the alert threshold of 107%. The ad-hoc analysis triggered by a liquidity coverage ratio falling below 107% are reported to LCH SA CRO, the Head of LCH SA Collateral and Liquidity Management division and to the LCH SA Risk Committee.

Section 5.5, *Testing Summary and Model Limitation*, will be revised to add a footnote to provide that single factor reverse stress tests are performed monthly. Single and combined reverse stress tests are performed quarterly. These requirements come from the LCH Liquidity Risk Policy.

Appendix 6.2, *Members behavior analysis*, that analyses the assumptions used in calculation the Operational Target and the LCR will be revised to provide that the volume of the non-ECB eligible non cash collateral (mainly Gilts, U.S. Treasury securities, securities denominated in Danish Krone, Norwegian Krone, Swedish Krona, Japanese Yen, Swiss Francs, Canadian Dollars and Australian Dollars and Central Bank Guarantee) will remain at a level that does not downgrade LCH SA liquidity profile (*i.e.*, quarterly reverse stress test) and that LCH SA imposes concentration limits on non-Euro non cash collateral. The change will enhance the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH SA.

Moreover, this Appendix will be revised to specify that the margin reduction is estimated at 24.7% over 7 days assuming that the daily margin reductions are independent (sum of the daily margin reduction vs. 7 days margin reduction). This level is bigger than the historical margin reduction over 7 days observed over a 10-year lookback period. This change has the purpose of updating the Appendix to be coherent with the changes described is Section 4.1.5 and driven by the necessity to address a model validation recommendation. Finally the graph reporting the LCH SA total margin is updated to provide a more recent orverview of the data.
Appendix 6.3, *Reminder of SA's sources of liquidity and related risk drivers*, will be revised to update the table to include as a risk driver the pledge collateral. In particular it will provide that because of higher concern toward LCH SA, the Clearing Members may increase their use of the pledge collateral capacity. This behavior is modelled in the LCR. Moreover, LCH SA may adjust the maximum limit allowed in pledge.

The change will align the Appendix with what presented in Section 4.2.5.2.4 and highlighted above.

In addition, when reporting the cash settlement option in case of Euronext Clearing default, the following footnote will be updated to read: "There is a residual risk (uncertainty – delay/amount - with regards SA's margins return by Euronext Clearing administrator) ". The footnote is amended following the completion by LCH SA of its review of risk drivers and related mitigation measures for cash received from Euronext Clearing.

Appendix 6.4, *Liquidity risk drivers synthesis by reports*, will be revised to update the table summarizing the components of each liquidity indicator (Operational Target, LCR Cover 2 and LCR Euronext Clearing) to reflect the fact that the liquidity monitoring period will be extended from 5 days to 7 days and that the overall margin reduction considered is 24.7%.

Moreover, for LCR Cover 2, the Appendix will provide that when calculating the settlement obligation and the resulting BdF liquidity, the securities pledge will take into account ECB haircut and market stress, and when estimating excess reduction LCH SA will consider only non-defaulting Clearing Members as LCH SA has the right to use for liquidity purposes any amounts left in excess from a defaulting Clearing Member.

Appendix 6.5, *Liquidity risk monitoring report*, will be updated by including the more recent layout versions of liquidity reports used by the DCO to monitor liquidity. The change will improve the accuracy and clarity of the document and does not represent a change in the methodology or procedure of LCH sA.

Appendix 6.7, *Stress scenarios list*, will be added to report the specific list of stress scenarios used for each service.

Appendix 6.8, *Pseudo-code of settlement and market risk calculation*, will be added to provide the details on the algorithm used to calculate the settlement obligation driven liquidity requirements in the monitoring of the LCR and the resulting BdF liquidity raised by pledging the securities withdrawn from the settlement systems. This appendix translate into a pseudo code the algorithm described in detail in sections 4.2.5.1.1.1 (liabilities contractual obligations on physical delivery) and 4.2.5.1.1.2 (settlement securities pledged at Central Bank). Different steps of computation are described covering both liabilities and assets and the resulting aggegations to get the finale outputs. The Appendix has the purpose of providing a technical overview of the implementation of the algorithm described in the referred sections and duly commented in the present 19b4. Please refer to such sections for a theorical decription of the methodology.
Finally in the whole Framework the name of the interoperable CCP have been updated from “Cassa di Compensazione e Garanzia (CC&G)” into “Euronext Clearing”.

2. Statutory Basis

LCH SA has determined that the Proposed Rule Change is consistent with the requirements of Section 17A of the Act[39] and regulations thereunder applicable to it. In particular, Section 17A(b)(3)(F) of the Act requires, *inter alia*, that the rules of a clearing agency should be designed to "promote the prompt and accurate clearance and settlement of securities transactions . . . and, to assure the safeguarding of securities and funds which are in the custody or control of the clearing agency or for which it is responsible[.]"[40] In addition, Regulation 17Ad-22(e)(7)(ii)[41] requires a covered clearing agency to establish, implement, maintain and enforce written policies and procedures reasonably designed to assure that it holds qualifying liquid resources sufficient to meet the minimum liquidity resource requirement in each relevant currency for which the covered clearing agency has payment obligations owed to clearing members.

As discussed above, the Framework is being amended primarily to enhance the manner in which the LCR is calculated, thereby increasing the robustness of LCH SA's liquidity profile. In particular, the amendments will: (a) revise the manner in which the settlement obligation is calculated by aligning it to the actual process used by the Operations Team during a default management and ensuring that no netting is allowed between Members of the same Group; (b) revise the manner in which securities pledged to the Banque de France are valued by providing that such securities be valued at the stressed mark-to-market price rather than the contract price; (c) extend from five (5) days to seven (7) days the length of time for which LCH SA must

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39 15 U.S.C. 78q-1.

40 15 U.S.C. 78q-1(b)(3)(F).

41 17 C.F.R. 240.17Ad-22(e)(7)(ii).

maintain liquidity resources sufficient to meet its liquidity requirements; (d) include the liquidity needs generated by the expiration of physically settled stock futures in the liquidity monitoring; and (e) require LCH SA, in calculating its required liquidity resources, to take into account that Clearing Members may switch from depositing non-cash collateral in a Full Title Transfer Account, which may be pledged at the BdF to obtain a liquidity line of credit, to depositing non-cash collateral instead in a Pledge Account.

By enhancing the manner in which the LCR is calculated, thereby increasing the robustness of LCH SA's liquidity profile, the policies and procedures set out in the amended Framework are designed to promote the prompt and accurate clearance and settlement of securities transactions and continue to assure the safeguarding of securities and funds that are in LCH SA's custody or control or for which it is responsible to be consistent with the requirements of Section 17A(b)(3)(F) of the Act.[42] Specifically, the Proposed Rule will revise the manner in which the settlement obligation liquidity requirements are calculated, revise the manner in which securities pledged at the BdF are valued, extend the length of time LCH SA must maintain its liquidity resources, include the liquidity needs from the expiration of physically settled stock futures and account for in the way LCH SA calculates its liquidity resources, the process by which Clearing Members pledge non-cash collateral. Further, the amended Framework continues to assure that LCH SA holds qualifying liquid resources sufficient to meet the minimum liquidity resource requirement in each relevant currency for which the covered clearing agency has payment obligations owed to Clearing Members, as required by Regulation 17Ad-22(e)(7)(ii).[43]

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42 15 U.S.C. 78q-1(b)(3)(F).

43 17 C.F.R. 240.17Ad-22(e)(7)(ii).

LCH SA also believes that the Proposed Rule Change is consistent with Exchange Act Rule 17Ad-22(e)(1)[44] that requires a covered clearing agency to establish, implement, maintain and enforce written policies and procedures reasonably designed to provide for a well-founded, clear, transparent, and enforceable legal basis for each aspect of its activities in all relevant jurisdictions. As described above, the Proposed Rule Change will ensure that the Framework complies with the provisions of SEC Rule 17Ad-22(e)(7)[45] with respect to liquidity risk, including with respect to its requirement to determine the amount and regularly test the sufficiency of the liquid resources held for purposes of meeting the minimum liquid resource requirement.[46]

Finally, LCH SA believes that the Proposed Rule Change is consistent with Exchange Act Rule 17Ad-22(e)(7)(vi)(B)[47] and Rule17Ad-22(e)(7)(vi)(C)[48]. Rule 17Ad-22(e)(7)(vi)(B) requires a covered clearing agency to establish, implement, maintain and enforce written policies and procedures reasonably designed to effectively measure, monitor, and manage the liquidity risk that arises in or is borne by the covered clearing agency, including measuring, monitoring, and managing its settlement and funding flows on an ongoing and timely basis, and its use of intraday liquidity by . . . [d]etermining the amount and regularly testing the sufficiency of the liquid resources held for purposes of meeting the minimum liquid resource requirement [as required by SEC Rule 17Ad-22(e)(7)(i)] by establishing requirements for conducting monthly

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44 17 CFR 240.17Ad-22(e)(1).

45 17 CFR § 240.17Ad-22(e)(7).

46 17 CFR § 240.17Ad-22(e)(7)(vi).

47 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

48 17 CFR § 240.17Ad-22(e)(7)(vi)(C).

comprehensive analyses of stress testing scenarios, models, parameters and assumptiosn with respect to liquidity needs.[49] Rule 17Ad-22(e)(7)(vi)(C) further provides that LCH SA conduct such analyses more frequently than monthly, "the products cleared or markets served display high volatility or become less liquid, when the size or concentration of positions held by [LCH SA's] participants increases significantly." [50]

LCH SA is proposing to amend the Framework to reflect its current practice of conducting monthly analysis of its existing stress testing scenarios, models, and underlying parameters and assumptions used in evaluating liquidity needs and resources for purposes of ensuring they are appropriate for determining the LCH SA's identified liquidity needs and resources in light of current and evolving market conditions. LCH SA is also proposing to amend the Framework to include the additional requirement that it conduct more frequent analysis when the products cleared or markets served display high volatility or become less liquid, when the size or concentration of positions held by LCH SA's participants increases significantly, or in other appropriate circumstances. By revising the Framework to reflect its current practice of conducting monthly analysis and including the requirement to conduct more frequent analysis, subject to certain conditions, LCH SA believes that the Proposed Rule Change is therefore consistent with Exchange Act Rule 17Ad-22(e)(7)(vi)(B)[51] and Rule 17Ad-22(e)(7)(vi)(C).[52]

B. Clearing Agency's Statement on Burden on Competition

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49 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

50 17 CFR § 240.17Ad-22(e)(7)(vi)(C).

51 17 CFR § 240.17Ad-22(e)(7)(vi)(B).

52 17 CFR § 240.17Ad-22(e)(7)(vi)(C).

Section 17A(b)(3)(I) of the Act requires that the rules of a clearing agency not impose any burden on competition not necessary or appropriate in furtherance of the purposes of the Act.[53] LCH SA does not believe the Proposed Rule Change would have any impact, or impose any burden, on competition. The Proposed Rule Change does not address any competitive issue or have any impact on the competition among central counterparties. LCH SA operates an open access model, and the Proposed Rule Change will have no effect on this model.

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

Written comments relating to the Proposed Rule Change have not been solicited or received. LCH SA will notify the Commission of any written comments received by LCH SA.

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

Within 45 days of the date of publication of this notice in the Federal Register or within such longer period up to 90 days (i) as the Commission may designate if it finds such longer period to be appropriate and publishes its reasons for so finding or (ii) as to which the self-regulatory organization consents, the Commission will: (A) by order approve or disapprove such proposed rule change, or (B) institute proceedings to determine whether the proposed rule change should be disapproved.

IV. Solicitation of Comments

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

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53 15 U.S.C. 78q-1(b)(3)(I).

- Use the Commission's Internet comment form (http://www.sec.gov/rules/sro.shtml) or
- Send an e-mail to rule-comments@sec.gov. Please include File Number SR-LCH SA-2023-007 on the subject line.

Paper Comments:

- Send paper comments in triplicate to Vanessa A. Countryman, Secretary, Securities and Exchange Commission, 100 F Street, NE, Washington, DC 20549-1090.

All submissions should refer to File Number SR-LCH SA-2023-007. This file number should be included on the subject line if e-mail is used. To help the Commission process and review your comments more efficiently, please use only one method. The Commission will post all comments on the Commission's Internet website (http://www.sec.gov/rules/sro.shtml). Copies of the submission, all subsequent amendments, all written statements with respect to the proposed rule change that are filed with the Commission, and all written communications relating to the proposed rule change between the Commission and any person, other than those that may be withheld from the public in accordance with the provisions of 5 U.S.C. 552, will be available for website viewing and printing in the Commission's Public Reference Room, 100 F Street, NE, Washington, DC 20549, on official business days between the hours of 10:00 a.m. and 3:00 p.m. Copies of such filings will also be available for inspection and copying at the principal office of LCH SA and on LCH SA's website at http://www.lch.com/resources/rules-and-regulations/proposed-rule-changes-0. Do not include personal identifiable information in submissions; you should submit only information that you wish to make available publicly. We may redact in part or withhold entirely from publication submitted material that is obscene or subject to copyright protection. All submissions should refer to File Number SR-LCH SA-2023-

007 and should be submitted on or before [insert date 21 days from publication in the Federal Register].

For the Commission, by the Division of Trading and Markets, pursuant to delegated authority.[45]

Secretary

[45] 17 C.F.R. §200.30-3(a)(12).

EXHIBIT 5

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