Initial Assessment of LCH.Clearnet Limited

April 2013

The Minister announced on 10 April 2013 that he had granted a clearing and settlement (CS) facility licence to LCH.Clearnet Limited (LCH). This licence permits LCH to clear only commodity, energy and environmental derivatives traded on the market operated by FEX Global Pty Ltd. In respect of its responsibilities under Part 7.3 of the *Corporations Act 2001* (the Act), the Reserve Bank provided advice to the Minister on LCH's CS facility licence application in February. As part of its advice, the Reserve Bank carried out an initial assessment of the CS facility to be operated by LCH against the *Financial Stability Standard for Central Counterparties*.

The assessment was carried out against the relevant standard, and associated measures, in place at the time the advice was provided to the Minister. With effect from 29 March 2013, new financial stability standards have come into force. In accordance with the Reserve Bank's stated approach to oversight of CS facility licensees, LCH will be required to comply with the new standards on an ongoing basis and future assessments will be carried out against the new standards.

The initial assessment of LCH, provided to the Minister as an attachment to the Reserve Bank's advice, formed part of a broader assessment of the sufficient equivalence of LCH's home regulatory regime in the United Kingdom in relation to the degree of protection from systemic risk, a matter about which the Minister must be satisfied before granting a licence under section 824B(2) of the Act. The Reserve Bank has published guidance on its approach to assessing sufficient equivalence.

This approach includes considering observed outcomes in the overseas regulatory regime relative to those in Australia, as reflected in an initial assessment by the Reserve Bank of the CS facility licence applicant against the Reserve Bank's financial stability standard(s). As demonstrated for the first time here, it is also the Reserve Bank's stated intention to publish such assessments.

Attachment 2: Assessment against the Financial Stability Standard for Central Counterparties of LCH.Clearnet Limited's Proposed Clearing Facility for the FEX Market

Financial Stability Standard for Central Counterparties

There are 10 measures that the Reserve Bank of Australia (the Bank) considers relevant in determining whether a facility has met the *Financial Stability Standard for Central Counterparties* (Current FSS). The full text of the measures and associated guidance is available on the Bank's website.[1]

LCH.Clearnet Limited (LCH) has applied for a clearing and settlement (CS) facility licence under s824B(2) of the *Corporations Act 2001* to provide central counterparty (CCP) services for commodity, energy and environmental derivatives traded on the financial market to be operated by FEX Global Pty Ltd under *Australian Market Licence (FEX Global Pty Ltd) 2013* (the FEX market). The FEX market licence application has been considered by the Australian Securities and Investments Commission (ASIC), and does not require an assessment by the Bank. Initially, LCH proposes to provide CCP services for four contracts traded on the FEX market: Newcastle Coal Index Futures; Asian Oil Index Futures; and options on each of these contracts. The contracts will be cash settled (i.e. they will not involve physical delivery of the underlying commodity).

The following assesses LCH against the 10 measures of the Current FSS. Most text refers to LCH generally, whereas underlined text is specific to the proposed CCP service for the FEX market.

1. Legal Framework

The central counterparty must have a well-founded legal basis.

LCH is a wholly owned subsidiary of LCH.Clearnet Group Limited (LCH Group), a company limited by shares and registered in the United Kingdom.[2] LCH acts as the CCP for a range of markets and products, including exchange-traded products and over-the-counter (OTC) derivatives.[3] Currently, LCH provides clearing services for three UK derivatives exchanges – NYSE LIFFE, the London Metal Exchange and Turquoise Derivatives – as well as for the London Stock Exchange and SIX Swiss Exchange AG. LCH also clears equity trades conducted on a number of non-exchange platforms. Regarding OTC markets, LCH clears interest rate swaps through its SwapClear service, outright purchases and repo agreements involving European government and supranational bonds through its RepoClear facility, and non-deliverable foreign exchange forwards through its ForexClear service. LCH also clears cash-settled OTC freight forwards and cash-settled electricity futures for North American power markets traded on the Nodal Exchange. LCH Group also provides clearing services through two other wholly owned subsidiaries, LCH.Clearnet SA and LCH.Clearnet LLC (formerly the International Derivatives Clearinghouse LLC), but the LCH Group's three CCPs are legally separate entities with independent rulebooks and default waterfall resources.

LCH is a Recognised Clearing House (RCH) in the United Kingdom, and its operations as a CCP are principally overseen by the Financial Services Authority (FSA).[4] The payment arrangements that effect settlement of

---

1 See <http://www.rba.gov.au/payments-system/clearing-settlement/standards/ctrl-counterparties-std.html>.
2 Refer to Measure 8 on Governance for details of a proposed takeover of the LCH Group by the London Stock Exchange Group.
3 Full details of current markets served by the LCH Group are available at <http://www.lchclearnet.com/media_centre/press_releases/markets_served.asp>.
4 As discussed in Attachment 1, responsibility for the supervision of CCPs is being transferred from the FSA to the Bank of England.

financial obligations between clearing members and LCH are overseen by the Bank of England (BoE). LCH is also registered as a Derivatives Clearing Organization (DCO) in the United States, and regulated by the Commodity Futures Trading Commission (CFTC).

LCH's rules define the nature and scope of its obligations to provide clearing services to members for all markets it serves. Each LCH clearing member must enter into a Clearing Membership Agreement with LCH, providing a contractual agreement that the member will comply with the rules and procedures of the LCH Rulebook. The Rulebook defines the rights and obligations of LCH and members in the event of default by, or suspension of, a member. The LCH Rulebook is governed by English law, and subject to exclusive jurisdiction of the English courts.

LCH is protected by Part VII of the *Companies Act 1989* from the general application of the insolvency laws of England and Wales. Part VII protects LCH's rights in the exercise of its default procedures.

LCH is also protected under the *Financial Markets and Insolvency (Settlement Finality) Regulations 1999*. Amongst other things, designation under these regulations provides for, in certain circumstances, the default proceedings of a designated system to take precedence over insolvency proceedings. In practice, this gives LCH the right to manage the insolvency of a clearing member to mitigate risk and loss to the CCP and other clearing members. This default management right applies to any member, irrespective of that member's legal domicile.

The Settlement Finality Regulations section of the LCH Rulebook sets out the conditions under which the settlement obligations in respect of registered contracts are final and irrevocable.

To the extent possible, LCH has sought to minimise the risk of legal challenge relating to non-UK members by confirming the legal framework is robust to cross-border participants. Upon joining, participants must agree to be subject to the jurisdiction of English courts. LCH has obtained external legal advice on potential conflicts between Australian and UK insolvency law to confirm, as far as possible, that the legal framework supports the admission of Australian clearing members. Cash obligations arising from FEX contracts will be settled through LCH's Protected Payments System (PPS; see Measure 5 on Settlement below for details) and be subject to the Settlement Finality Regulations section of the LCH Rulebook.

2. Participation Requirements

The requirements for participation in the central counterparty must promote the safety and integrity of the central counterparty and ensure fair and open access. Participation requirements must:

(a) be based on objective and publicly disclosed criteria;

LCH sets, and publicly discloses as part of its Rulebook and Procedures,[5] objective participation requirements for clearing members for all markets it serves. LCH members and potential members have access to an independent appeals process, described in section 11 of the Procedures. This process enables, amongst other things, a member (or potential member) to appeal against LCH's decisions to allow, disallow, or remove authority to clear particular contracts.

A trading participant in the FEX market will be either a FEX Clearing Member or a Non-Clearing Member with a contractual arrangement in place with a FEX Clearing Member. A FEX Clearing Member will be required to enter into a Clearing Membership Agreement with LCH, which will bind the Clearing Member to LCH's Rulebook and Procedures.

(b) ensure that participants in the central counterparty are of a sufficient financial standing such that the central counterparty is not exposed to unacceptable credit risks;

Each of LCH's clearing and settlement services have minimum capital requirements tailored to products covered by that service; FEX Clearing Members will be required to have minimum net capital of £5 million. Furthermore, upon admission, each new LCH member is subject to a comprehensive credit assessment which, amongst other things, provides a basis for an internal credit rating.

On an ongoing basis, clearing members are subject to reporting obligations and monitoring by LCH. The monitoring process is risk based, and has a greater focus on those members not subject to external regulation and/or external credit ratings. LCH may review a range of private and public sources of information, including a

5 LCH's Procedures contain a mixture of both LCH-wide and service-specific provisions.

member's capital position, financial statements, and external credit ratings. For those of its participants subject to prudential regulation, their supervisor provides LCH with relevant financial returns lodged with it. Clearing members must notify LCH when they have reason to believe that they no longer satisfy or may cease to satisfy any of the admission criteria. In addition, clearing members must notify LCH when there is a significant (i.e. 10 per cent or more) reduction in shareholder net funds or net capital. *Ad hoc* reviews may be undertaken by LCH where there are doubts about a clearing member's compliance with the financial requirements for admission.

As part of the daily assessment of members, LCH reviews changes to clearing members' credit ratings, daily and cumulative profits and losses made by a member on LCH-cleared transactions, concentration of positions, hypothetical stress tested losses, and changes to initial and variation margin levels.

Where either the long-term or daily monitoring identifies an unacceptable risk to the CCP, LCH has wide-ranging authority to take action to reduce this risk. In the first instance, LCH may call for additional margin, or require a reduction in exposure of a particular clearing member.

(c) require that participants have the operational capacity to settle their obligations with the central counterparty in a timely manner; and

Clearing members are required to establish and maintain the operational capability to settle obligations. This includes maintaining bank accounts to effect settlement in all currencies in which they transact, as well as in the United States for late-day settlement obligations; and back-office support with adequate infrastructure and personnel to undertake required settlement processes.

<u>In addition to these requirements, LCH will require FEX Clearing Members to hold a USD bank account (possibly with a correspondent bank) in Hong Kong's USD real-time gross settlement (RTGS) system for the purposes of meeting intraday calls at times during the day when the PPS is closed in both the United Kingdom and the United States but LCH's clearing system is open.</u>

(d) allow the CS facility licensee as operator of the central counterparty to suspend or cancel the participation of an institution which breaches the applicable participation or other risk-control requirements.

LCH has extensive authority to manage or direct the operations of its clearing members to minimise risks faced by the CCP. If LCH determines that a clearing member no longer meets the eligibility requirements for a particular category of contract, it may remove the authority for contracts to be registered in that clearing member's name. As outlined above, a decline in a clearing member's credit rating may precipitate a forced resignation from the service. Similarly, if a clearing member is in default, or breaches any terms of the Clearing Membership Agreement or Rulebook, LCH may rescind authority to clear a particular product, or terminate a clearing authority for all products. A termination of the Clearing Membership Agreement by LCH takes effect at least 30 days from the notice of termination date, while a resignation by a clearing member requires three months' notice. As outlined above, excluding a default event, a clearing member may appeal against either of these decisions. The LCH Procedures outline the appeals process and associated time limits.

Should LCH take any disciplinary action against a clearing member in breach of a rule, or an appeal be lodged by a clearing member, LCH, as a RCH, is required to immediately notify the FSA.

3. Understanding Risks

The central counterparty's rules and procedures must enable each participant to understand the central counterparty's impact on each of the financial risks the participant incurs through participation in the central counterparty.

LCH's Rulebook and Procedures are publicly available and comprehensively outline the roles and responsibilities of LCH and its members. Rulebook provisions require LCH to inform members of alterations to the Rulebook or Procedures. Further, the recognition requirements for a RCH require LCH to have procedures for consulting users of the facilities in appropriate cases. Under the *Financial Services and Markets Act 2000* (FSMA) the FSA has the power to disallow 'excessive' regulatory provisions[6] and default rule changes proposed by UK RCHs.

6 Defined as provisions that are not required by law, and that are either not justified as pursuing a reasonable regulatory objective or disproportionate to the end to be achieved.

4. Novation

The rules and procedures governing the central counterparty must clearly identify:

(a) the nature and scope of novation; and

LCH's Rulebook outlines the nature and scope of novation. Specifically, upon registration of an original contract, LCH will replace (novate) this single contract with two open contracts on the same terms as the original contract. One contract will be between the seller and LCH as buyer, and one between the buyer and LCH as seller. Each party contracts as principal to these contracts, irrespective of whether the member is transacting on behalf of a client.

(b) the point in the clearing process at which trades are novated.

LCH's Rulebook sets out the point in the clearing process at which trades are novated. Trades are novated to LCH when trades are registered. For most FEX trades, registration will occur immediately upon the receipt by LCH of valid trade details from FEX. For block trades and position transfers, LCH will first need to approve any trades that exceed predetermined size and price limits before registration occurs.

There will be a short window of time each Australian weeknight, between 21:00 Sydney time and either 21:30, 22:30 or 23:30 Sydney time (depending on the time of year), when the FEX market will be open for evening session trading but LCH's clearing system will not be open for the registration of trades. Any trades made during this window will be queued by the FEX trading system and sent to LCH for registration only upon reopening of the clearing system. Margin requirements will not be imposed on trades until they have been registered and novated.

5. Settlement

Settlement arrangements must ensure that the central counterparty's exposures are clearly and irrevocably extinguished on settlement.

The settlement arrangements for obligations relating to FEX contracts will involve arrangements to settle:

- Obligations between LCH and its clearing members; for example, initial margin, default fund deposits and membership fees. These payments result in a net increase or net decrease in funds held by the CCP.
- Obligations notionally between clearing members; for example, variation margin and cash settlement of contracts. While legally all obligations are between the CCP and clearing members, in practice, if there are no defaults, these payments flow from one clearing member to another; funds flow across the books of the CCP, but do not result in a change in funds held by the CCP. The role of the CCP is to assume these liabilities in the event of a default of a clearing member.

As with all other LCH clearing members, obligations to and from FEX Clearing Members will typically be settled through LCH's PPS. The PPS provides for settlement of margins and other payments between LCH and each clearing member on a RTGS basis. In summary, LCH calls funds from, or pays funds to, clearing members across the books of PPS banks acting on behalf of those members. PPS banks then make (or receive) payments to the LCH 'concentration bank' via the relevant RTGS system for each currency (using a correspondent bank if they do not have a local presence). The concentration bank is the BoE for GBP and EUR, Citibank and BNY Mellon for USD, and HSBC for other currencies.

For each revaluation of clearing members' margin requirements where a net call is made on a clearing member, the PPS bank is required to make an irrevocable commitment to fund the obligation due to LCH by 09:00 London time or within one hour of an intraday call being made. Notwithstanding this irrevocable commitment by the PPS bank, the obligation of the clearing member to the CCP is only extinguished when the PPS bank has performed its concentration function, and any time permitted by the relevant payment settlement system for the recall of any such payment has expired. Where the call is made in GBP, EUR, USD or CAD, the PPS bank is required to send a payment to LCH at the concentration bank through the appropriate payment system (typically the local RTGS system) within two hours. Where the obligation is denominated in another currency, an irrevocable commitment occurs on the same timeline but actual payment is not required for an additional 24 hours (i.e. two hours later on the following day) due to time-zone differences. Where LCH owes net margin to clearing members at a PPS bank, payment flows from the concentration bank to that PPS bank according to the same timelines as outlined above.

The Settlement Finality Regulations contained within the LCH Rulebook set out the conditions under which the settlement obligations in respect of registered exchange-traded contracts and OTC contracts are final and irrevocable. The Regulations are protected under UK and EU law by LCH's designation under *Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems* (the Settlement Finality Directive). As outlined above, LCH ceases to have an exposure to a clearing member at the point that the PPS bank transfers the funds for that clearing member's position, although the member remains responsible for the payment in the event of the PPS bank's failure.

Initial margin on FEX contracts will be acceptable in nine currencies – GBP, EUR, USD, CHF, DKK, JPY, NOK, SEK or CAD – and eligible non-cash collateral. Because the FEX contracts to be cleared are USD-denominated, variation margin on these contracts will be payable in USD.

LCH will also have the ability to call FEX Clearing Members for intraday margin. Surplus cash or collateral posted will be used to cover intraday calls. Otherwise, intraday calls are payable in GBP, EUR or USD. Intraday calls on FEX contracts may occur at times when the PPS is not operating in either the United Kingdom or United States. These calls will be met by FEX Clearing Members paying LCH's correspondent bank in Hong Kong's USD RTGS system within one hour of the call being made. (This will require a FEX Clearing Member to have a representative in Hong Kong's USD RTGS system.) LCH will be able to monitor its correspondent bank account to ensure that funds have been received.

6. Default Arrangements

The CS facility licensee as operator of the central counterparty must ensure that it has clear rules and procedures to deal with the possibility of a participant being unable to fulfil its obligations to the central counterparty. The arrangements for dealing with a default must ensure that in this scenario timely action is taken by the central counterparty and the participants in the central counterparty, and that risks to the central counterparty and its participants are minimised. In meeting this requirement, the CS facility licensee as operator of the central counterparty must:

(a) require its participants to inform it immediately if they:

(i) become subject to external administration, or have reasonable grounds for suspecting that they will become subject to external administration; or

(ii) have breached, or are likely to breach, a risk-control requirement of the central counterparty; and

LCH's Clearing Membership Agreement establishes the notification requirements that members must meet in relation to specified events. In particular, a member must notify LCH when: it becomes aware of a petition for bankruptcy or administration order; it ceases, or believes it may cease, meeting the criteria for admission; or there has been a change in business that would prevent the member complying with the Clearing Membership Agreement and therefore the Rulebook.

(b) have the ability to close out, or otherwise deal with a participant's open contracts in order to appropriately control risk if a participant:

(i) becomes subject to external administration; or

(ii) breaches a risk-control requirement of the central counterparty.

The LCH Rulebook sets out the rights and obligations of both LCH and members in relation to a default. The Rulebook outlines events that may be considered events of default, including: member insolvency or administration; failure to make a required payment to LCH; or breaches of any rules or procedures of the clearing house.

LCH has extensive powers to manage the outstanding contracts and market risk associated with a defaulting clearing member. These include the right to close out, transfer, or sell open contracts registered to a defaulter. LCH may also facilitate a transfer of client accounts to a non-defaulting clearing member with the approval of the client and recipient clearing member. As outlined in Measure 1 on Legal Framework, LCH's protections under the Companies Act and the Financial Markets and Insolvency (Settlement Finality) Regulations mean that default arrangements take precedence over insolvency proceedings.

7. Risk Controls

The CS facility licensee as operator of a central counterparty must have comprehensive risk-control arrangements in place. These arrangements must provide the operator of the central counterparty with a high degree of confidence that, in the event of extreme volatility in relevant markets, the central counterparty will be able to settle all of its obligations in a timely manner. As a minimum, the risk-control arrangements must provide the CS facility licensee as operator of the central counterparty with a high degree of confidence that the central counterparty will be able to settle its obligations in the event that the participant with the largest settlement obligations cannot meet them. In all but the most extreme circumstances, a central counterparty must be able to settle its obligations using liquid assets as defined in this standard.

The CS facility licensee as operator of a central counterparty must:

(a) **ensure that its risk-control measures, typically a combination of its own capital, margins, guarantee funds and pre-determined loss-sharing arrangements, provide sufficient coverage and liquidity; and**

(b) **undertake regular and rigorous stress testing to ensure the adequacy of its risk controls.**

The adequacy of risk-control measures must be approved by the board of the central counterparty, or an appropriate body as delegated by the board.

The risk controls of a CCP are crucial in providing a high degree of confidence that it would be able to meet its obligations in the event of a participant failure. The inability of a CCP to meet its obligations could be extremely disruptive to the financial system. The focus of the Bank in this area is to ensure that the combination of risk controls applied achieves a low probability of failure of the CCP.

The risk control function, including adequacy of the risk control measures, at LCH is ultimately overseen by the LCH Board. However, the LCH Risk Committee – an independently chaired sub-committee of the LCH Board – has delegated authority to review and approve changes to a range of risk controls. More detail on the LCH Risk Committee is available in Measure 8 on Governance below.

LCH's risk controls include a range of financial resources for use in the event of a clearing member default. These consist of margin provided by members in respect of their outstanding positions; capital contributions from LCH; and separate, pooled default (or guarantee) funds for different clearing services comprised of paid-up contributions from clearing members that participate in those services, apportioned typically according to shares of initial margins in aggregate. These resources would be used in the following order to cover loss due to a member default: the defaulting member's margin and default fund contributions; LCH's capital contribution; and contributions of non-defaulting members to the relevant default fund. Each service has arrangements for further assessments and replenishment in order to top up the funds should they be utilised as a result of a clearing member default.

To manage credit and liquidity risk, LCH limits the range of acceptable collateral a clearing member may lodge to cover its obligations, and restricts its investment of any funds in terms of the range of products and counterparties with which it deals. The range of collateral accepted by LCH is publicly disclosed, and, as well as cash in a limited range of liquid currencies, includes government bonds, government-guaranteed bonds, a limited range of bonds issued by government related entities, and, for some markets, gold and performance bonds (bank guarantees).[7] Non-cash collateral is subject to valuation haircuts to cover LCH against adverse price movements.

LCH invests cash collateral in accordance with its Treasury Investment Policy, reviewed and approved regularly by the LCH Risk Committee. The principal objectives of this policy are to maximise capital preservation and minimise liquidity risk by investing as securely as possible. Investments are subject to strict limits based on counterparty credit status and concentration limits for both counterparties and products. Eligible counterparties include government and government-related entities, and highly rated commercial banks. LCH maintains a

7 The ability to accept performance bonds as acceptable collateral is restricted under new regulations in Europe and the United States; LCH is currently undertaking an impact assessment of this.

small number of multi-currency uncommitted lines of credit for liquidity purposes, although these are not taken into account as a primary financial resource available to meet liquidity stress testing requirements.

LCH undertakes daily stress testing to manage the risk associated with clearing members' existing positions, as well as monitor the overall adequacy of default resources. LCH may use the stress testing outcomes to call additional margin from a particular clearing member where the risk is deemed excessive. The stress testing arrangements are outlined in greater detail in subsection (ii) on guarantee fund below.

i. Margins

LCH will levy margins on contracts cleared through the FEX service. These funds, combined with any receipts due to the defaulter, represent the first financial resource utilised to cover losses associated with a clearing member default.

Initial margin provides cover in the event that a member defaults and an adverse price change occurs before the CCP can close out the member's positions. LCH uses the 'London' Standard Portfolio Analysis of risk (SPAN) algorithm, which is an adaptation of the SPAN method developed by the Chicago Mercantile Exchange (CME) to calculate initial margin for exchange-traded derivatives contracts. London SPAN is calibrated to ensure that initial margin covers three standard deviations of observed historical price variation over the assumed holding (close-out) period (which is one or two days, whichever gives the more conservative reading). LCH's risk appetite (as reflected in the stringency of the SPAN settings) is determined by the LCH Board and is reviewed at least quarterly through reports from LCH's Risk Management department to the LCH Risk Committee. Margin rates on individual FEX contracts will be reviewed at least monthly, with additional reviews to be conducted when margin levels are exceeded by price movements, or when an unexpected event occurs that could affect prices significantly. Back-testing assesses the adequacy of margin cover against actual price variation. This will be conducted at least monthly by LCH's Risk Management department.

Initial margin may be covered by cash in nine currencies (GBP, EUR, USD, CHF, DKK, JPY, NOK, SEK or CAD), or by acceptable non-cash collateral. Margins will be applied to a clearing member's house and client accounts separately.

LCH also collects and pays daily variation (mark-to-market) margin on exchange-traded derivatives contracts. An equivalent approach will be taken in respect of FEX contracts. Variation margin is calculated using end-of-day prices, and is payable in the currency in which the contract is denominated (i.e. USD).

At times of high price volatility, calling variation margin on an end-of-day basis will not provide sufficient intraday protection from erosion of margin. LCH can make intraday margin calls to restore the level of margin protection. The minimum threshold for intraday calls is £100 000, although the actual threshold will differ between clearing members based on the member's creditworthiness and share of aggregate initial margin held. FEX will provide LCH with a full set of prices at three scheduled times during the day: 15.00, 19.00 and 03.00 London time. LCH will recalculate members' initial and variation margin based on these prices and current positions, and make any necessary intraday calls. LCH will also monitor margin requirements on an hourly basis, although FEX will not be able to provide a full set of prices hourly; LCH will determine the necessary prices itself when these are not available from FEX. In periods of extreme market volatility, hourly margin recalculations may be used to make *ad hoc* margin calls.

Surplus cash or collateral posted by a clearing member may be used to cover intraday calls. Otherwise, intraday calls are payable in cash. Any intraday calculation showing a surplus of variation margin accruing to members is not paid out. However, surpluses are netted against any calculated increase in initial margin requirements, thereby reducing the size of potential intraday calls.

As discussed under Measure 5 on Settlement, margins in respect of FEX will be settled through the PPS, with the exception of intraday margin calls which occur at times when the PPS is not operating in either the United Kingdom or United States. For the markets that it currently clears, LCH calculates end-of-day initial and variation margin requirements (and informs clearing members and their PPS banks of these) overnight London time. Members' PPS banks must then make an irrevocable commitment to fund these obligations by 09:00 London time the following morning. However, the FEX market's day trading session will not close until 17:00 Sydney time (06:00, 07:00 or 08:00 London time, depending on the time of year) on day t, and given the processing time required LCH will not be able to calculate end-of-day initial and variation margin requirements for FEX contracts until 09:30 London time on day t. In the case where these updated margin requirements show that a FEX Clearing Member's liability to LCH has increased, LCH will call this member for cover immediately and the member's PPS bank will have until 10:30 London time to make an irrevocable commitment to meet the call. In other cases, FEX Clearing Members will be notified of updated margin requirements and will have variation margin surpluses paid to them through the normal PPS process on day t+1.

ii. Guarantee fund

LCH maintains mutualised pools of financial resources as default funds to protect against losses in excess of margin and other financial commitments posted by a defaulting member. The Rulebook provides clear guidance on which losses are covered by these resources.

LCH has committed £20 million of capital and reserves as the second resource utilised (after the defaulter's margin and default fund contributions) in the event of a default in any market cleared by LCH.

LCH also maintains separate default funds for its different clearing services, each with a specified floor and/or cap. These are: the ForexClear Fund (currently US$278 million, with a floor of US$70 million); the SwapClear Fund (currently £2.5 billion, with a floor of £1 billion and a cap of £5 billion); the RepoClear Fund (currently €620 million, with a floor of €500 million and a cap of €1.5 billion); and the General Default Fund (nominally comprised of the EquityClear Fund and Exchange Fund, currently at its capped amount of £410 million). Notwithstanding the separation of the funds, a defaulter's contribution to any fund will be available to cover a loss arising from any clearing service.[8] By contrast, surviving participants' contributions to a particular fund will be available only to cover losses arising from the clearing service(s) relevant to that fund.

LCH uses scenario-based stress testing, undertaken daily, to monitor the adequacy of its default funds. Adequacy is assessed with reference to the sum of the two largest stress losses. This is calculated separately per fund based on a specific set of scenarios for each. Every member's portfolio is re-valued daily using a set of historical and theoretical stress testing scenarios incorporating price and volatility shifts to create a worst-case hypothetical loss over initial margin per member. The LCH Risk Committee is responsible for recommending changes to default funds, both in terms of size or apportionment between markets, to the LCH Group Board. Because of the mutualised nature of the funds, any proposal to alter the size of the fund beyond the agreed floor or cap is subject to a member ballot.

Note that FEX Clearing Members will make a contribution to the Exchange Fund component of the General Default Fund, pro-rated on the basis of initial margin and cleared volume; the default fund rules in LCH's Rulebook set out the full calculation methodology. Contributors to the Exchange Fund are not liable for its compulsory replenishment in the event of a default.

The remaining capital and reserves of LCH (approximately £197 million) are also available as a final financial resource should the General Default Fund or the RepoClear Default Fund – including any assessments, loss sharing arrangements and further top-ups – be exhausted.[9]

iii. Loss sharing

Initially, LCH will not have loss-sharing arrangements for losses incurred in the FEX service by a defaulting FEX Clearing Member. However, the introduction of loss sharing arrangements may be required in the future under forthcoming EU regulation.

8. Governance

The central counterparty must have effective, accountable and transparent governance arrangements.

LCH Group, which wholly owns LCH, is itself currently owned approximately 80 per cent by members – comprising major global banks, broker-dealers, and specialist commodity houses – and 20 per cent by a number of the exchanges that have a clearing relationship with LCH Group. However, the London Stock Exchange Group

8 If LCH calls a member into default for any reason it is deemed to put that member in default in respect of all LCH-cleared markets.

9 LCH is looking at putting in place measures that would, in the event of a default that draws down on the General Default Fund, allow for the protection of LCH's remaining capital and the closure of the relevant clearing service(s). These measures could include loss sharing arrangements and mandatory assessments on participants. Arrangements to facilitate service closure and protection of LCH's remaining capital already exist for the ForexClear and SwapClear services.

is proposing to take a majority (up to 60 per cent) stake in the LCH Group. The takeover has received shareholder approval at both companies, but remains subject to regulatory approval.

LCH's governance arrangements ensure accountability. The LCH Board is accountable to the LCH Group Board, which is itself ultimately accountable to shareholders. LCH discloses information about its corporate governance arrangements in the LCH Group Annual Report. In accordance with the UK Corporate Governance Code, the LCH Board undertakes an annual evaluation of its own performance and the performance of its committees, Chairman and individual directors.

LCH's governance arrangements are transparent. LCH Group publishes information about these arrangements on its website and in its annual report. This information includes: details of the LCH Group structure; membership of subsidiary Boards and Committees; attendance at meetings by Board members; and responsibilities of audit and risk committees.

LCH provides clearing members with input to decision-making through representation on the LCH Risk Committee (discussed below) and Risk Working Groups (comprised of additional clearing members), which the LCH Risk Committee may form from time to time. As discussed in Measure 3 on Understanding Risks, the FSA requires LCH, as a RCH, to have procedures for consulting users of the facilities in appropriate cases.

(a) The board of the CS facility licensee [must] have appropriate expertise and independence.

The LCH Board is comprised of 11 members: four independent directors (including the Chair), four other non-executive directors who are user representatives, and three executive directors. Members of the Board are appointed based on their experience, knowledge and skills in relation to the operation of a CCP; for this reason representatives from LCH clearing members, LCH Group management and markets cleared by LCH sit on the Board. The four independent directors ensure the independence of the Board.

LCH has developed an induction programme that is designed to enhance new directors' understanding of the business of the LCH Group and of the sector. Additional training is also available to directors on request.

(b) The board of the CS facility licensee [must] be responsible for oversight of the operation of the central counterparty.

The LCH Board, which meets at least quarterly throughout the year, has oversight of the operations of the CCP through regular reporting from LCH senior management, and internal and external audit.

(c) The risk control function of the central counterparty must not be adversely influenced by its business, marketing or other operations.

LCH's Chief Risk Officer (CRO) has overall responsibility for management of LCH's risk across all CCP services offered by LCH. The CRO is a member of the LCH Risk Committee and reports directly to the CRO of the LCH Group. <u>Day-to-day risk will be managed for the FEX service by the Head of Commodity Risk, who reports to the Group Head of Market Risk, who in turn reports to the LCH CRO.</u>

The LCH Risk Committee is a sub-committee of the LCH Board and oversees risk aspects of all CCP services offered by LCH. It is chaired by an independent director of the LCH Group Board, and is comprised of:[10]

- members (notionally the committee has at least nine members drawn from LCH's clearing members)
- LCH Group management (five ex-officio members)
- representatives from major markets cleared (currently London Metal Exchange, London Stock Exchange, and NYSE LIFFE)
- two representatives from OTCDerivNet (an independent company owned by large bank participants in the OTC interest rate derivatives market, which provides strategic direction and development funding for the SwapClear service).

There is also further provision for clients of clearing members to be members of the LCH Risk Committee.

The LCH Risk Committee has a broad mandate to review, propose or approve various aspects of the risk control arrangements of the CCP services provided by LCH to various markets, including approval of all risk policies. The composition of the LCH Risk Committee reflects the broader usage of LCH CCP services, and accordingly has the

10 LCH expects that changes will be required to the structure of its Risk Committee under forthcoming regulations in Europe and the United States.

relevant experience and necessary resources to contribute to the risk management function of the CCP. Although this composition has the potential to create conflicts of interest, there is an appropriate process for dealing with conflicts of interest. Indeed, the Committee must be chaired by an independent director, providing comfort that potential conflicts of interest are managed appropriately.

9. Operational Risk

The CS facility licensee as operator of a central counterparty must identify sources of operational risk and minimise these through the development of appropriate systems, controls and procedures.

i. Security and operational reliability

LCH has detailed policies and procedures for ensuring the security and operational reliability of key systems. These include a capacity management policy, which sets capacity goals for LCH's IT infrastructure against which statistics on actual utilisation are regularly compared. Detailed policies also govern information classification, physical and environmental security, and access controls relating to information and computer systems. The IT Operations team conducts regular internal and external security penetration testing, assisted by external consultants. In March 2012, LCH underwent an independent penetration test on its external facing systems. The risk assessment levels that were identified were categorised as low. In addition, external monthly vulnerability scans are performed to detect weak points.

A comprehensive test environment has been established to test new developments outside live systems. Further, all user access to LCH systems is monitored to minimise the likelihood of unauthorised changes being introduced into the system.

LCH's staff are evaluated through an annual Performance Management Review (PMR) programme. The PMR programme establishes standards of performance against which an individual can be objectively assessed; staff members are required to provide evidence of demonstrated competencies during the review process, upon which they are rated. The PMR programme is also used to identify the training needs of staff.

ii. Business continuity procedures

LCH has in place business continuity arrangements, comprised of a set of recovery plans for key support services and critical business units. The Business Continuity Management Policy outlines the objectives, scope and responsibilities for business continuity planning, while the Security Manual outlines continuity plans for computer systems.

All business platforms have disaster recovery backup and all have specified minimum times for recovery. LCH operates a backup site for key systems and banking arrangements in addition to the main site. Data are mirrored across the sites to ensure no loss of data in the event of a contingency.

LCH undertakes testing of the business continuity arrangements. A yearly plan is developed to encompass live system operation from the backup site, staff relocation exercises and connectivity tests. The business continuity arrangements are reviewed annually and following any major incidents, the identification of any significant new vulnerabilities, fundamental changes to the technical infrastructure, or major organisational changes. For prudentially-regulated clearing members, LCH relies on the relevant regulator's continuity management requirements for those clearing members.

iii. Outsourcing

LCH does not currently outsource any key business functions to third parties.

iv. External administration of a related body

LCH's continued operation does not rely on any of its related bodies corporate.

10. Regulatory Reporting

CS facility licensees, as operators of CCPs, are required to meet certain reporting obligations to the Bank under the Current FSS. These obligations include: the reporting of breaches of regulatory requirements (e.g. the Current FSS); the failure of a participant to fulfil the CCP's risk-control requirements; and the CCP's failure to enforce its own risk-control requirements. There are also obligations to report financial and stress-testing results on a quarterly basis. LCH's reporting obligations to its primary regulator, the FSA, encompass these requirements.

Arrangements have been established to facilitate the Bank's receipt of the information necessary to provide confidence that LCH continues to comply with the FSA's regulatory requirements, including details of any material changes in LCH's activities, processes or people.