Meeting between Federal Reserve Staff and Representatives of LCH.Clearnet
September 29, 2011

Participants: Jeff Stehm, Stuart Sperry, Stephanie Martin, Susan Foley, Jeff Walker, Stu Desch, Lyle Kumasaka, Chris Clubb, Melissa Leistra, Danielle Little, Malcolm Britton, and Mark Haley (Federal Reserve Board); Barry Maddix (Federal Reserve Bank of Boston); Kirstin Wells, John McPartland, Richard Heckinger, Anna Voytovich, Katie Wisby, Kelly Emery, Ralph Shnackel, and Keri Trolson (Federal Reserve Bank of Chicago); Stephanie Heller, Jim Mahoney, Annmarie Rowe-Straker, Patrick Dwyer, Brian Marchellos, and Joanna Barnish, (Federal Reserve Bank of New York)

Chris Jones, Andrew Howat, Dan Maguire, Simon Wheatley, and Susan Milligan (LCH.Clearnet)

Summary: At the request of LCH.Clearnet staff, Board and Reserve Bank staff met with representatives from LCH.Clearnet to discuss LCH.Clearnet Limited’s settlement and collateral practices and supporting banking arrangements. The meeting was held to help inform the Board’s rulemaking in relation to Section 806 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (“Dodd-Frank Act”), regarding designated financial market utilities’ potential access to Federal Reserve Bank accounts, services, and borrowing privileges.

LCH.Clearnet staff provided Board and Reserve Bank staff with a presentation and opened the meeting with an overview of LCH.Clearnet Group Limited and of its operating subsidiaries. The presentation followed with an overview of LCH.Clearnet Limited’s risk management framework, including a discussion of the clearinghouse’s settlement processes, financial resources, and banking arrangements. These discussions included an overview of LCH.Clearnet Limited’s Protected Payments System and the clearinghouse’s margining system. LCH.Clearnet staff concluded the presentation with a discussion of LCH.Clearnet Limited’s SwapClear services.

During the discussion, LCH.Clearnet staff mentioned that Federal accounts and services might be of use to the clearinghouse, but that further research and analysis were required to determine the benefits that these may provide.

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1 A version of this presentation redacting confidential information is attached to this public summary.
LCH.Clearnet Overview

Andrew Howat
Chris Jones
Daniel Maguire
Susan Milligan
Simon Wheatley

September 2011
Group Corporate Structure

LCH.Clearnet Group Limited (Incorporated in UK)

LCH.Clearnet Limited Location - London (Incorporated in UK)
- New York Rep. Office

LCH.Clearnet SA Location - Paris (Incorporated in France)
- Amsterdam Branch
- Brussels Branch
- Porto Rep. Office

Luxembourg Subsidiary

Branching down from LCH.Clearnet Group Limited 100% goes to LCH.Clearnet Limited Location - London (Incorporated in UK) and 100% goes to LCH.Clearnet SA Location - Paris (Incorporated in France). LCH.Clearnet Limited Location - London sends 51% to Luxembourg Subsidiary while LCH.Clearnet SA Location - Paris sends 49% to it.
LCH.Clearnet Group - Ownership

- The LCH.Clearnet group is the leading independent central counterparty group, serving local and global markets. It is the largest and most experienced clearer of OTC markets and also serves major international exchanges and platforms.

- LCH.Clearnet Group Ltd is owned 83% by users, 17% by exchanges.
Group Management Structure

- **CEO, SwapClear service**
- **CEO, ForexClear service**
- **SA Chief Executive Officer / CDS service**
- **MD, Commercial Services**
- **Exec Director, Group Treasury**
- **MD, Group Chief Financial Officer (Interim)**
- **General Counsel Group Legal**
- **MD, Corporate Services and Group HR**
- **Group Chief Information Officer**
- **Head of Public Affairs**
- **Head of Risk Management**
- **Head of Operations**
- **Head of Compliance & Regulation**
- **Head of Internal Audit**
Business Lines – Source and Settlement

ICAP Electronic Broking
- eSpeed
- ETCMS
- MTS
- tpRepo

Fixed Income Cash & Repo
- MarkitServ
- EDX London

Interest Rate Swaps
- LIFFE
- NYSE LIFFE
- London Metal Exchange

Exchange Traded Financial & Equity Derivatives
- HKMEx
- Nodal
- BlueNext
- Energy & Freight Brokers

Commodities
- HKMEx
- NYSE
- LIFFE
- London Metal Exchange
- Nodal
- BlueNext
- Energy & Freight Brokers

Energy
- BATS Trading Europe
- Chi-X Europe
- NYSE Arca Europe
- Turquoise
- SecFinex
- PLUS Markets
- Borse Berlin Equiduct Trading
- SmartPool
- Luxembourg Stock Exchange
- NYSE Euronext
- London Stock Exchange
- SIX Swiss Exchange AG

Securities
- LCH.Clearnet
- Euroclear UK & Ireland
- Euroclear Belgium
- Euroclear France
- Euroclear NL
- Euroclear Bank
- SIX SIS
- Clearstream International
- Clearstream Frankfurt
- VP
- VPS
- NCS
- Interbolsa
- Monte Titoli
- VP – Vaerdepapincentralen
- Banque National de Belgique
- DTCC

Additional Settlement Services for:
- Commodities
- Cash
Market Position

- No. 1 in European equities
- No. 1 in European commodities
- No.1 in interest rate swaps
- No. 2 in global fixed income & repo
- No. 3 in global futures & options
- 11 years experience in clearing OTC interest rate swaps
## LCH.Clearnet Group - Market Activity

<table>
<thead>
<tr>
<th></th>
<th>Continental Europe</th>
<th>UK</th>
<th>Global</th>
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</tr>
<tr>
<td>CDS</td>
<td>✓</td>
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</table>
Products

OTC &/OR EXCHANGE TRADED

EQUITIES
- CASH EQUITY
- SEL
- CFD
- WARRANTS
- STOCK FUTURES
- EQUITY SWAPS
- INDEX OPTIONS
- STOCK OPTIONS
- BASKET SWAPS
- CONVERTIBLE BONDS
- CONVERTIBLE BOND OPTIONS
- TOTAL RETURN SWAPS

RATES
- BONDS
  - GOVT
  - CORP
  - SUPRA
- REPOS
- BOND OPTIONS
- OIS
- FRA
- IRS
- CAFS/ FLOORS
- SWAPTIONS
- X-CCY SWAPS
- INFLATION SWAPS
- ASSET SWAPS
- CALLABLE/ EXTENDABLE SWAPS
- OPTIONS

CREDIT
- CDS SINGLE NAME
- CDS INDEX
- CDS TRANCHE
- CDO
- CLO/ CLN
- MBS/ ABS
- Nth TO DEFAULT
- -ve BASIS TRADES

FX
- SPOT
- NDF
- O/R FWD
- SPOT
- FUTURES
- CLO/ CLN
- OPTIONS

COMMODITIES
- FUTURES
- SWAPS
- BASE METALS
- PRECIOUS METALS
- FERTILISER
- IRON-ORE
- FREIGHT
- OTHER AGRI PRODUCTS
- CATASTROPHE DERIVATIVES
- OPTIONS

ENERGY
- SPOT
- FUTURES
- FORWARDS
- POWER
- GAS
- OIL
- COAL
- EMISSIONS

Simple

Vanilla Derivatives

Structured
Some Key Statistics

• Over 1.6 billion contracts (of all kinds) cleared in 2010
• Approx. €30 billion equivalent total cash collateral held daily (Sept 2011)
• Approx. €37 billion equivalent total non-cash collateral held daily (Sept 2011)
Members

Comprising

- Major financial groups (including almost all the major investment banks)
- Broker-dealers
- Specialist commodity houses

To be eligible for membership at LCH.Clearnet, firms must meet certain minimum requirements which are tailored to each asset class.

LCH.Clearnet members are of a high credit quality

- Minimum levels of Net Capital
- Appropriate banking arrangements
- Staff of sufficient experience and knowledge of the products being cleared
- Appropriate systems to cope with their clearing activities
LCH.Clearnet Limited - Layers of Protection

Financial Backing:

- Defaulting clearing member’s VM and IM contributions
- Defaulting clearing member’s Default Fund Contribution (DFC)
- Capital contribution by LCH.Clearnet Ltd up to max. £20 million
  (total Capital & Reserves £143 million as at June 2011)
- Remaining Default Fund (£584 million as at Aug 2011)
- SwapClear-specific non-pre-funded £50 million per member
- Remainder of clearing house assets > Replenishment
Default history

Robust risk management framework demonstrated by a proven track record of managing defaults:

• Drexel Burnham Lambert Limited (DBL) – 1991
• Woodhouse Drake & Carey (Commodities) Limited (WDC) – 1991
• Baring Brothers & Co. Limited (Barings) – 1995
• Griffin Trading Company (GTC) – 1998
• Lehman Brothers – 2008

...and situations where we have avoided member default altogether:

• Yamaichi International Europe Limited (YIEL) – 1997
• Enron Metals Limited (EML) – 2001
• Refco Securities and Overseas Limited – 2005
Regulatory Environment

Simon Wheatley
Group Structure and Regulatory Supervision

Holding Company

LCH.Clearnet Group Limited (Incorporated in UK)
- Regulated as a Compagnie financière by the Autorité de Contrôle Prudentiel (ACP) (France)

Operating Entities

LCH.Clearnet Limited Location - London (Incorporated in UK)
- New York Rep. Office
  - Regulated as a Recognised Clearing House by the UK Financial Services Authority, as a Derivatives Clearing Organization by the US Commodity Futures Trading Commission, and by other market regulators and central banks in jurisdictions in which business is carried out. Payment systems are overseen by the Bank of England.

LCH.Clearnet SA Location - Paris (Incorporated in France)
- Luxembourg Subsidiary
- Amsterdam Branch
- Brussels Branch
- Porto Rep. Office
  - Regulated as a Credit Institution and Clearing House by a regulatory college consisting of the market regulators and central banks from the jurisdictions of France, Netherlands, Belgium, and Portugal.
  - Regulated as a Recognised Overseas Clearing House by the UK Financial Services Authority and by other market regulators and central banks in jurisdictions in which business is carried out.
LCH.Clearnet Group Limited (Holding Company)

- Incorporated in the UK
- Designated as a French “Compagnie Financière”
- Regulated primarily by the French Autorité de Contrôle Prudentiel consolidated supervision for:
  - Group capital adequacy (subject to the EU Capital Requirements Directive)
  - Overall compliance with legal and regulatory provisions
  - Corporate licensing
LCH.Clearnet Limited (Operating Subsidiary)

- Incorporated in the UK

- Designated as a UK “Recognised Clearing House” under the Financial Services & Markets Act (FSMA) 2000
  - (i.e. not a bank, and not subject to the “approved persons” regime)

- Regulated primarily by the UK Financial Services Authority (FSA) as “home state regulator”
- Secondary regulation by:
  - Bank of England (oversight of payment systems);
  - US Commodity Futures Trading Commission (US OTC business);
  - Other EU, Swiss, Hong-Kong, Singaporean, Canadian regulators
LCH.Clearnet SA (Operating Subsidiary)

• Incorporated in France

• Designated as a Credit Institution ("Banque Centrale de Compensation")

• Regulated primarily by the French ACP, along with:
  • AMF, Banque de France (in France)
  • AFM, De Nederlandsche Bank (in the Netherlands)
  • CBFA, Bque. Nationale de Belgique (in Belgium)
  • CMVM, Bco. de Portugal (in Portugal)
  • UK Financial Services Authority (FSA) as a ROCH (Recognised Overseas Clearing House)
Regulatory History – LCH.Clearnet Group

- Since inception (2003),
- No formal regulatory breaches in
  - Conduct of Business;
  - Regulatory Capital Adequacy;
  - Anti-Money Laundering;
  - Market abuse;
  - Any other regulated activities.

- No regulatory fines.
- No regulatory disputes.
- No outstanding or pending regulatory suits.
LCH.Clearnet Ltd. – FSA Regulatory Treatment

- Recognition gives specific exemptions (compared with “firms”):
  - Immunity from litigation in UK when discharging regulatory obligations
  - Protection against “cherry picking” of assets in case of member default
  - Exemption from UK Stamp Duty Reserve Tax

- Additionally, Ltd has the following advantages:
  - EU Settlement Finality Directive designation
  - Not subject to EU Capital Requirements Directive (Ltd is not a bank or credit institution)
LCH.Clearnet Ltd - Current Regulatory Focuses

- **SwapClear**
  - Geographic expansion: US, Canada, Australia, etc.
  - Client Clearing (FCM model in US, SCCC model outside US)
- **ForexClear**: working with FSA, BoE, Fed, CFTC & founder banks on NDFs release
- **Exchanges etc**: e.g. HKMEx, FEX, Chi-East, Chi-X
- **DCO licence extension** being applied for so can settle for DCMs (in 2012)
- **FSA**
  - “Close and continuous” supervision
  - IT generally: SwapClear, RepoClear
  - Various reviews (OpRisk, RepoClear, BCP etc.)
  - Interoperability
- **Bank of England**
  - Central Bank funds
  - PPS System - payments control and improvements
- **Regulatory change is a constant**
  - FSA role to transfer to BoE by end 2013
  - European Market Infrastructure Regulations – ESMA responsibilities
  - US – Dodd-Frank etc. – potential structure, governance and general compliance implications
Protected Payments System (PPS)

Andrew Howat
Chris Jones
PPS Structure

- Structure of PPS arrangements and flows via SWIFT

PPS Banks

- Payment Instruction MT204 MT202/203

Concentration Bank

- Confirmation / Statements MT910 MT950

LCH.Clearnet

- Clearing Member

Money Market Deal

- Money Market Deal

CPS NYSE

- Liffe Nodal Exchange

LME

EquityClear

SwapClear

RepoClear

Turquoise Derivatives

ECS LCH EnClear OTC Services
Confidential Treatment Requested
Confidential Treatment Requested
Confidential Treatment Requested
SwapClear Overview

Daniel Maguire
LCH.Clearnet – US Presence

- US presence since 2009
- New York office has full time staff of 22
- 95% of LCH.Clearnet Ltd resources in NY dedicated to SwapClear:
  - Sales and marketing
  - Onboarding
  - Product/risk
  - Middle office
  - Public affairs/regulatory
## SwapClear Statistics

### Current Statistics

<table>
<thead>
<tr>
<th>Statistic</th>
<th>August 31, 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total notional outstanding (sides), USD equivalent</td>
<td>USD 307 trillion</td>
</tr>
<tr>
<td>Total compression to date (sides), USD equivalent</td>
<td>USD 67.0 trillion</td>
</tr>
<tr>
<td>Total number of trades outstanding</td>
<td>980,000</td>
</tr>
<tr>
<td>Market Share, % of adjusted notional, all IRS (end 2010)</td>
<td>51.8%</td>
</tr>
<tr>
<td>Number of clearing members</td>
<td>58</td>
</tr>
<tr>
<td>Number of members offering client clearing</td>
<td>36</td>
</tr>
<tr>
<td>Total number of trades cleared since inception</td>
<td>1.72 million</td>
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</tbody>
</table>
Trade Registration Performance

- Registration of new trades continues to accelerate, buoyed by the increased membership together with the commitment to clearing by major dealers.

- Trade sides cleared in August 2011: **95,606** – a new SwapClear record.
- Trade sides cleared in 2010: **765,600**, representing a daily average of **2,940**, up **25.3%** on 2009.
- In 2011 to date, **624,200** trade sides have been cleared, a daily average of **3,650**.
SwapClear triReduce: Trade Compression

- Increased volumes lengthen processing times and would increase the operational burden on members in the event of a member default.
- LCH.Clearnet has therefore worked with TriOptima to develop and refine a tear-up process for cleared trades using their triReduce service.
- Since the first compression run in February 2008, total notional value of trade sides removed from the service using triReduce has exceeded USD 67 tn.
- This chart illustrates how much larger the SwapClear portfolio might have been if these terminations had not been made.
OTC IRS Cleared by SwapClear

Global leader in Interest Rate Swaps clearing
Established in September 1999
Outstanding notional of $307 trillion (end August 2011)
Largest OTC IRS product range of any Clearing House, globally
RCH regulated by the FSA in the UK
DCO regulated by the CFTC in the USA
Client clearing in Europe December 2009, USA March 2011

In 2008-11, **565,146** trades have been torn up via the TriOptima triReduce service with total notional of USD **67.0** trillion.
Margin Requirement

- Initial margin requirement has gradually increased over time as the volume of business in SwapClear has grown.
- Post Lehman, the trend of Initial Margin as a percentage of notional was generally downwards until the end of 2009.
- Since then the IM requirement has moved in a narrow range around 0.6 bps of notional.
- At the end of August 2011, total SwapClear initial margin was GBP 13.3 bn.
Product Range

Full flexibility of OTC Interest Rate Swaps
Widest CCP product offer covering 95% of plain vanilla IRS market

Swap Products Supported
- Plain Vanilla
- Compounding
- Single currency basis
- Zero coupon
- OIS
- Pay frequency: M/Q/S/A
- Floating indices available: all liquid LIBOR indices between 1 month and 12 months
- Day count conventions: ACT/360, 30/360
- Spreads to LIBOR
- Front or backend stubs
- USD/GBP/EUR amortizers (Q4 2011)
- Additional currencies to be implemented, swaptions under review

Tenors and Currencies Supported
- 0-2 yrs OIS: CHF, EUR, GBP, USD
- 0-10 yrs LIBOR: DKK, HKD, NOK, NZD, PLN, ZAR, HUF, CZK, SGD
- 0-30 yrs LIBOR: AUD, CAD, CHF, JPY, SEK
- 0-50 yrs LIBOR: EUR, GBP, USD
### Default Handling – Expertise

LCH.Clearnet Ltd managed the Lehman Brothers IRS default, a $9 trillion portfolio of 66,390 trades in 5 currencies

Only 35% of Lehman’s initial margin was used across all assets cleared in LCH.Clearnet Ltd

### Robust default waterfall

<table>
<thead>
<tr>
<th>Membership Criteria</th>
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</thead>
<tbody>
<tr>
<td>Variation Margin</td>
</tr>
<tr>
<td>Initial Margin</td>
</tr>
<tr>
<td>Defaulter’s Default Fund Contribution</td>
</tr>
<tr>
<td>Initial Margin of Remaining Client Defaulting FCM</td>
</tr>
<tr>
<td>LCH.Clearnet Ltd’s Capital &amp; Reserves to £20mm</td>
</tr>
<tr>
<td>Remaining Default Fund</td>
</tr>
<tr>
<td>SwapClear Undertaking (£50mm per SwapClear Member)</td>
</tr>
<tr>
<td>Replenishment of LCH.Clearnet Ltd’s Capital</td>
</tr>
</tbody>
</table>

### Clearly defined risk neutralization process

**Morning Day 1 - Risk Analysis - Monday Sept. 15 2008**

- 9.15am Lehman’s declared in default
- 9.30am Default management group (DMG) members meet

**Days 1 - 3 - Risk Neutralization**

DMG Members:
- Acted on behalf of LCH.Clearnet Ltd
- Executed approximately 60 trades
- Faced SCMs as trade counterparts
- Neutralized the risk within three days

**Weeks 1 - 3 - Auction**

DMG Members:
- Continued trading to further neutralize risk
- Auctioned 5 currency portfolios (EUR, USD, GBP, JPY, CHF)
- Received aggressive prices
- Confirmed trades on a T+1 basis
SwapClear – US Regulation

- DCO regulated by the CFTC since 2001
- Domestic accounts are subject to US bankruptcy code and CFTC regulatory framework
- US clients clear through one of 12 FCM members
- All US client funds remain onshore in the US