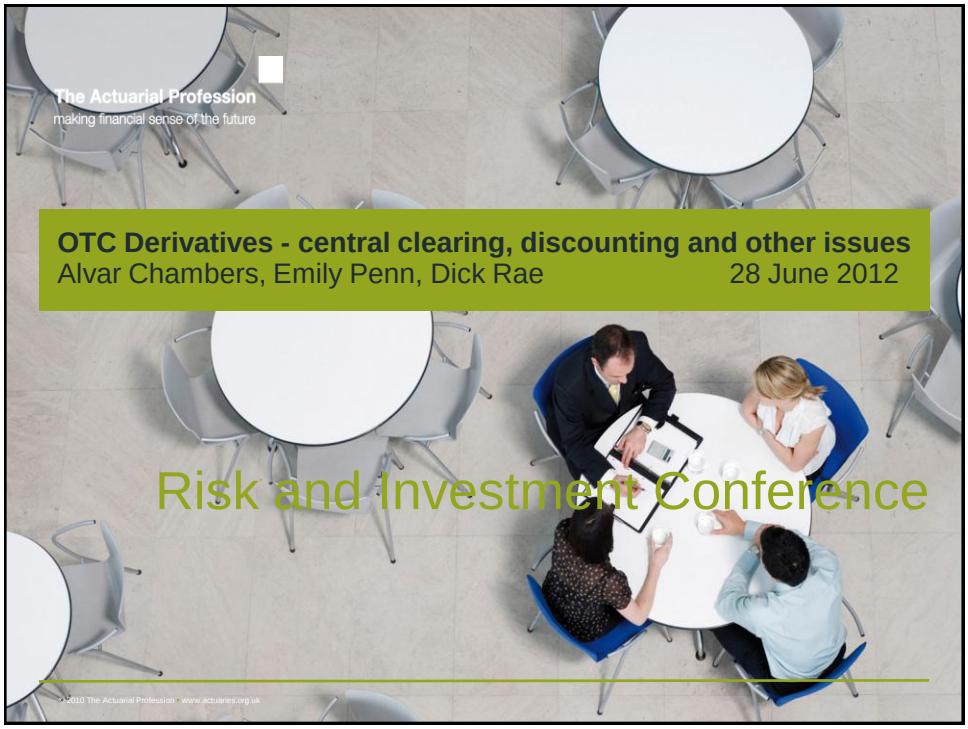


OTC Derivatives - central clearing, discounting and other issues

- Enrico Biffis
- Alvar Chambers
- David Epstein
- Jeff Neate
- Cyprian Njamma
- Emily Penn
- Dick Rae
- Bobby Riddaway

G20 response to the Global Banking Crisis

"All standardised OTC derivative contracts should be traded on exchanges or electronic trading platforms,… cleared through central counterparties by end-2012."

"OTC derivative contracts should be reported to trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements."

"We ask the Financial Stability Board ….. to assess ….. whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse."

OTC Derivatives

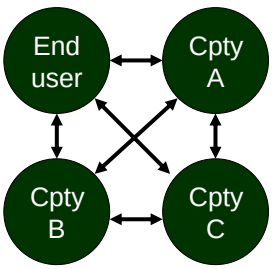
- Central clearing
- Discounting
- Other issues (including CVA)

European market infrastructure regulation (EMIR)

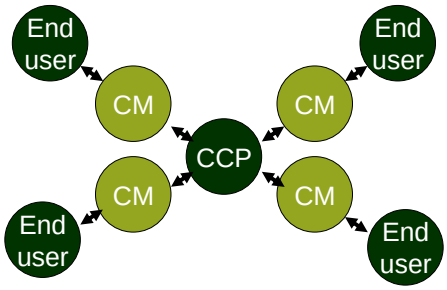
- Published by EMIR in September 2010
- Financial counterparties to clear new derivative contracts of certain types with a central counterparty (CCP)
- All derivatives, centrally cleared or not, must be reported to trade repositories
- Measures to reduce counterparty credit risk and operational risk for bilaterally cleared OTC derivatives
- Rules for the authorisation and supervision of CCPs
- Provisions for the registration and surveillance of trade repositories

Changes from OTC clearing

Current structure



Future structure



- Post trade risk management not execution
- End user still trades with chosen bank counterparty (Cpty)
- Transfer trade to clearing member who registers it at a CCP

Changes from OTC clearing contd.

	Current position	Centrally cleared
Legal agreements	ISDA/CSA with each counterparty.	Need ISDA/CSA with each counterparty and a clearing member bank (CM) to access clearing house (maybe >1 CM)
Initial margin	Typically none	Only cash or gilts
Variation margin	Varies; typically cash and gilts	Only cash
Default risk	Exposed to default of the counterparty you trade with	Directly affected only if your CM defaults LCH recommends having a back-up CM

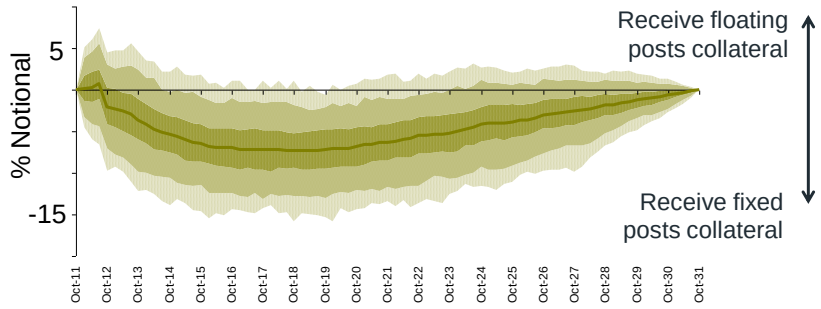
Changes from OTC clearing contd.

	Current position	Centrally cleared
What happens if default occurs?	Collateral should cover most of the value of the derivatives End user needs to try and replace positions in the market Unsecured creditor in respect of any losses incurred	Additional layers of protection: - initial margin - default buffers - clearing house's capital Clearing house coordinates replacement with other CMs Historically successful, but no guarantee

Value added?

Benefits	Disadvantages
Provides a range of **protection** in case of default	Requirements add to **cost** and reduce returns
Greater **transparency**, helping regulators detect systemic risk build up	Interest rate swaps cleared, but **inflation swaps not cleared** initially - **reduces possibility of netting margin** between the two
All trades going through one CM enables more opportunities to **net margin calls**	Only **cash variation margin** accepted by clearing houses -pension schemes / insurers generally don't hold cash
Political need for regulators to be seen to take action	Requirement to deliver **initial margin**

Variation margin – potential cash requirement



Distribution shown: 1st, 5th, 25th, 50th, 75th, 95th and 99th Percentile

- E.g. for a 20-year par swap, the potential requirement peaks at around 15% of notional

GBP Products Covered

- Rates
  - Libor indices
  - Interest rate swaps (up to 50yrs)
  - Overnight index swaps
  - Compounding swaps
  - Zero coupon swaps
  - Basis swaps
- Credit
  - CDS
- Equity
  - Forwards and Options (Short dated)

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GBP Products yet to be confirmed / not covered

- NOT supported
  - Interest rate swaps (over 50yrs)
  - Interest rate swaptions
  - Cross currency swaps
  - Inflation
  - Long dated options on FTSE

11

Pensions exemption

Temporary exemption

- for pension schemes and insurers' pensions business
- for **three years**, with a possible extension if concerns aren't resolved
- only **'risk-reducing'** derivatives are exempt: equity and credit derivatives may still need to be cleared from 2013
- does not apply to other aspects such as **trade reporting** and standards for risk management

- Regulation for trades outside central clearing still under discussion

Optimising for Solvency 2

Balance sheet management under Solvency 2

- Solvency II uses a 6m Libor curve
  - Favours swaps for duration (i.e. rates) management
  - Use of gilts will introduce basis risk
  - Does extra return on long dated gilts reward basis risk?
- Will life companies favour central clearing? If so
  - Where will there liquidity come from?
  - Cash or gilts?

OTC Derivatives

- Central clearing
- Discounting
- Other issues (including CVA)

CSA discounting

- Traditional method of swap valuation: 6m Libor swap curve
- Market moving to: CSA discounting

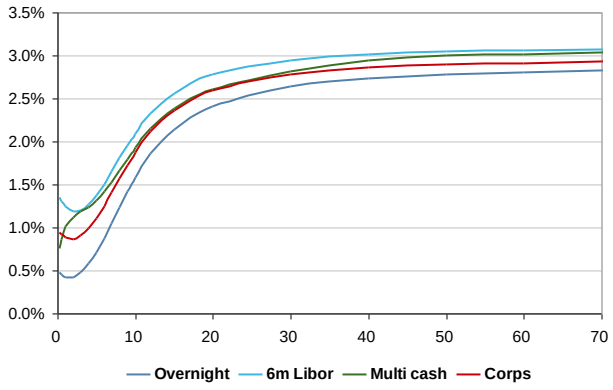
What does this mean?

- Derivatives are valued based on the cost of posting collateral
- Normally based on overnight index swaps (OIS)
- Some CSAs allow wider collateral

Why the move to CSA/OIS discounting?

- LIBOR was previously recognised as bank funding rate
  - No longer the case
  - Unpredictable and slow to react
  - Reactive to credit concerns
- Derivatives contracts which give rise to loans
  - Collateral at heart of risk management
  - Cost of collateral more closely aligned to OIS
- LCH moved to OIS in July 2010 following most major banks

Today's curves

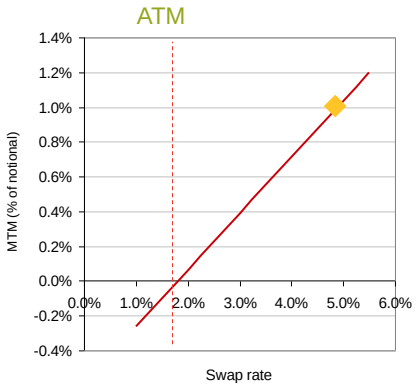


Source: RBS; 6 June 2012

Impact on swap MTM

Example:

Tenor	**10 year**
Notional	**£1m**
Strike	**5%**
Value on Libor Curve	**305,200**
Value on OIS curve	**315,400**
Difference	**10,200 (1%)**



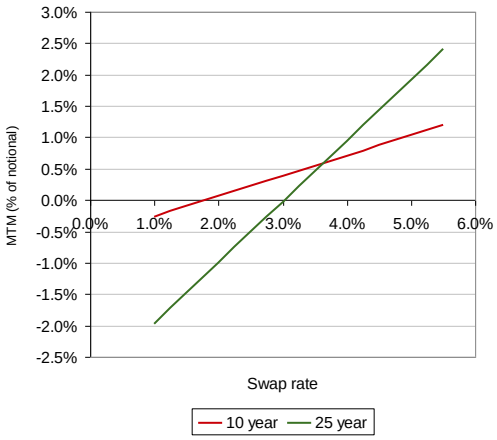
- Greater impact for ITM/OTM swaps

Source: RBS; 6 June 2012

Longer dated swaps

Example:

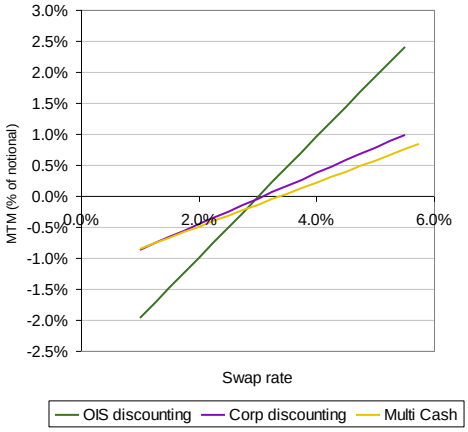
- Greater impact for longer dated swaps



Source: RBS; 6 June 2012

Wider CSA curves

- 25 year swap
- Less impact where CSA includes:
  - GBP corporates
  - Multi currency cash
- CSA standardisation likely to make thing of past



Source: RBS; 6 June 2012

Why does this matter?

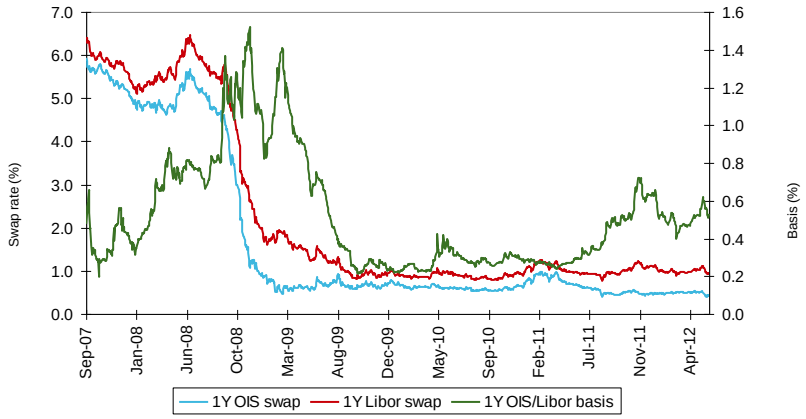
Existing positions

- Insurers/Pension fund's swaps are typically ITM – increase to valuation
- Greater focus on CSAs

Future balance sheet

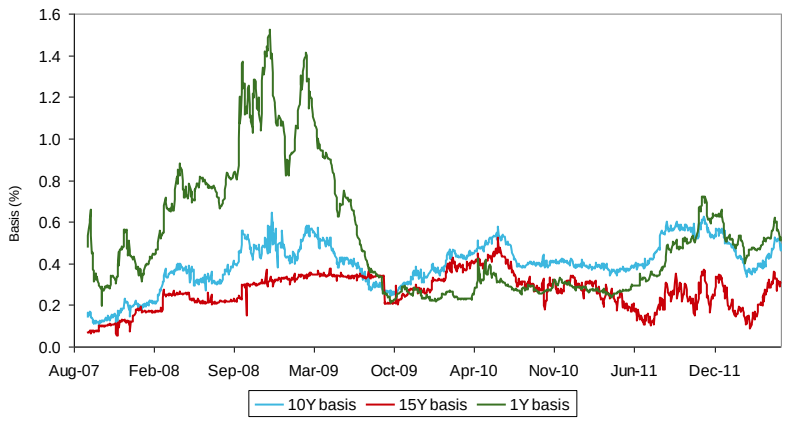
- Solvency II uses a 6m Libor curve
  - Creates a basis exposure for insurers hedging using swaps valued off OIS
- Potentially similar issue for pension funds using swaps valuation

Libor-OIS basis



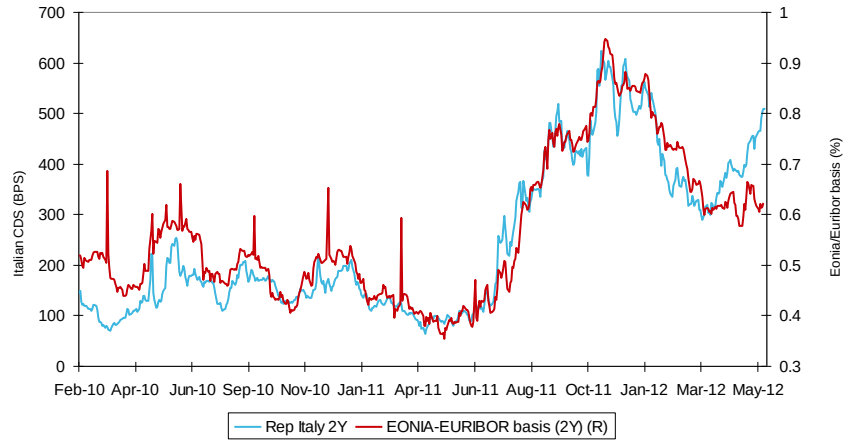
Source: RBS; 6 June 2012

Further down the curve



Source: RBS; 6 June 2012

EONIA/EURIBOR



Source: RBS; 6 June 2012

Managing the exposure

Re-coupon swaps

- Exposure greater for ITM/OTM swaps

Hedge the exposure

- OIS-LIBOR basis swaps

OIS – the future for interest rate swaps?

- Increasing demand for OIS as floating leg
- Liquidity developing
- Solvency II?

OTC Derivatives

- Central clearing
- Discounting
- Other issues (including CVA)

Basel III/CRD IV

- Capital Requirement Directive IV sets up risk management framework for non-centrally cleared OTC trades
  - Will apply from 1 January 2013
  - CVA charges for non-centrally cleared contracts
  - Initial margin for non centrally-cleared contracts?
  - CVA charges may not apply where there is initial margin
  - Pension funds may be exempt from CVA charges

CVA charging

- Credit Value Adjustment (CVA charge) takes account of counterparty risk in assessing cost of capital
- Default Value Adjustment (DVA charge) which is an allowance for the institution's own risk of fault that can offset the CVA charge
- Bank should adjust trade price for CVA charge to reflect counterparty risk of client and arguably offset DVA charge to represent own counterparty risk
  - Cost of trading increases for more risky counterparty and reduces for less risky counterparty
  - Impact greatest for long maturity contracts (e.g. may be 1.5-2bp for 20 year interest rate swap)

Other regulatory developments

- Dodd-Frank
  - concerns in Europe that Dodd-Frank also applies to non-US trading activities and so European trades may be subject to the worst of two regulatory regimes
- MIFID
  - Expected to be finalised over next 12-18 months
  - Trades to be reported to central repository
  - Limitation on reporting of large/block trades to avoid market impact

Outstanding issues

- Central clearing
  - Which trades are included/exempt?
  - Expansion of collateral?
- Regulations for trades outside of central clearing
  - Initial margin
  - Eligible collateral
  - Timing
- CVA charging - pension exemption?
- Third country issues
  - Dodd-Frank
  - Domicile of clearing houses

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenters.