

Trading challenges due to new regime.

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Global Capital Markets

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Old World:

Market, Credit and Funding related:

- single discounting and forecasting curve (e.g. Euribor, Libor, ...)
- standardized margins
- reasonable hardware and software requirements

Regulatory, Legal and politically related:

- basic regulatory requirements
- rare legal processes
- no financial tax
- good reputation

New World:

Market, Credit and Funding related:

- spectrum of curves (e.g. EUR: EONIA, 1M, 3M, 6M, 12M Euribor)
- separate margins for market, credit and funding risk
- challenging hardware and software issues

Regulatory, Legal and politically related:

- huge regulatory burden
- legal process can become standard
- financial and transactional tax
- worse and slowly improving reputation

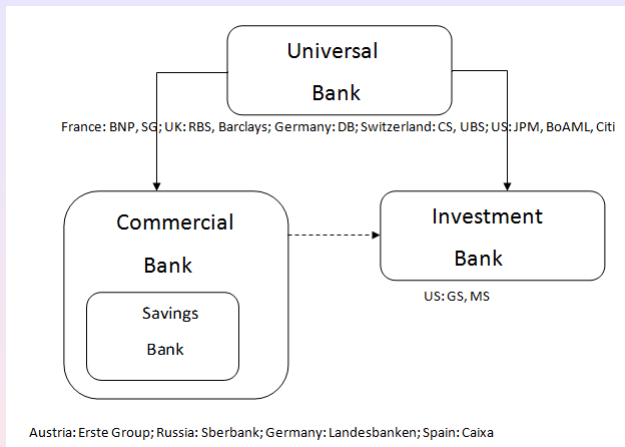
City trader retires at 41 with 450Mio GBP fortune:



- Greg Coffey, 41, announced he was calling it a day as he quit Moore Capital Management to enjoy his long retirement with his family.
- 'I plan on seeing much more of my wife and children and spending time in my home country, Australia.'

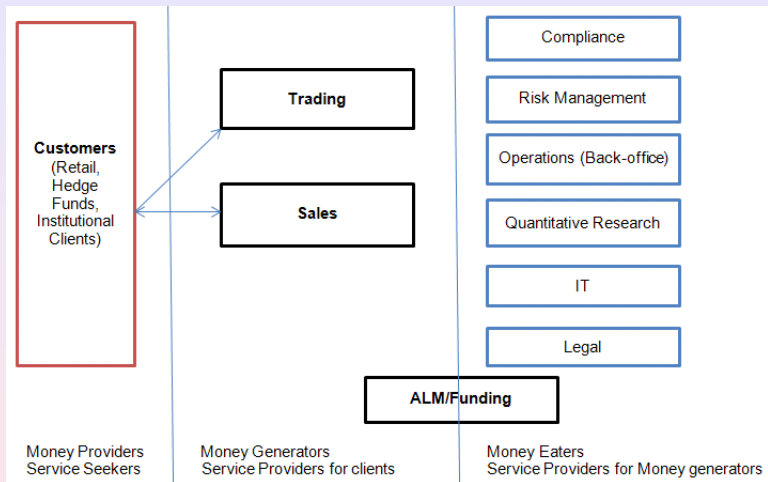
Read more: <http://www.metro.co.uk/news/915446-city-trader-retires-at-41-with-450m-fortune>

Banks - Purpose



- **Commercial bank**
 - transaction services, take deposits and provide loans to clients
- **Investment bank**
 - raises capital or issues securities for clients, mergers and acquisitions, trading, market making

Markets - Investment Banks - Capital Markets



Rough split:

- Service providers to Clients/Money generators : Trading and Sales department
- Service providers to Money generators/Money eaters : the remainder

Market risk

- Market risk is the risk of losses in positions arising from movements in market prices.

Investment banks - Trading Activities

Capital Markets:

- **Fixed income**
 - trading bonds, fx forwards, swaps, inflation, vanilla and exotic derivatives
- **Equity**
 - single stock, baskets, ETFs, derivatives
- **FX**
 - spot, fx forwards, fx swaps, fx derivatives
- **Commodity**
 - metals, agricultural products, gas, energy, derivatives
- **Hybrids**
 - rates and fx, rates and equity, etc.

Market Risk in Fixed Income:

- **Swaps** : interest rate (IR) curve risk

Exchanges of fixed vs. floating payments.
- **Caps/Floors** : IR curve risk, IR volatility risk

Cap/Floor is like call/put option on Libor rate.
- **More complicated products**: IR curve risk, IR volatility risk, IR correlation risk, etc.

Spread products (e.g. $\max(10y - 2y, 0)$), Bermudans, Range Accruals, Quanto products etc.

Market risk - Zeeman effect



Figure 1: Pieter Zeeman (left) and Hendrik A. Lorentz (right).

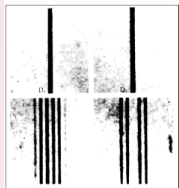
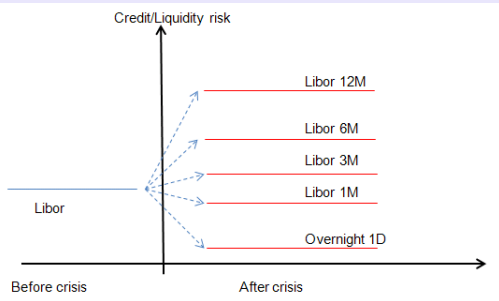


Figure 2: original Zeeman's picture of the Zeeman effect in Sodium.



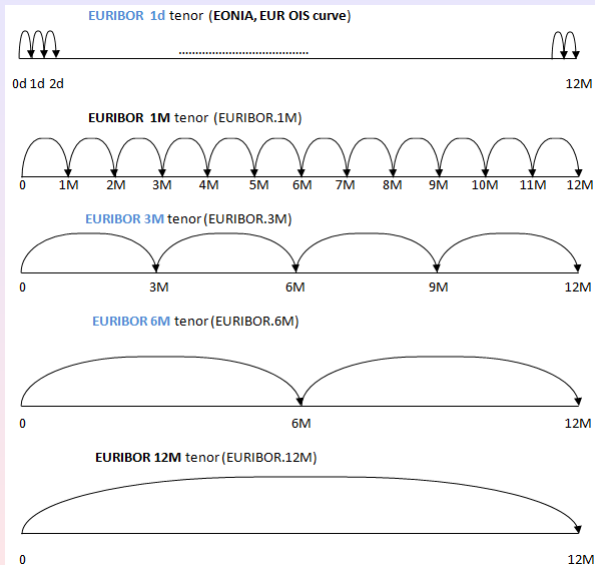
Physics:

- 1902 : Pieter Zeeman and H. Lorentz won Nobel Prize in Physics for the discovery of what is known as Zeeman effect.
- Atoms and molecules absorb spectral lines which characterize their chemical composition.
- Sodium is characterized by 2 lines (589 and 589.59nm) which are split when exposed to static magnetic field.

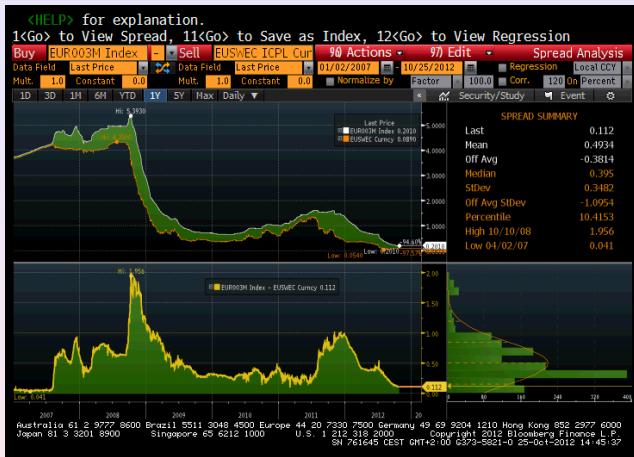
Finance:

- 8/2007 : significant split of the between Libor rates of different tenors quoted in the market.

Zeeman effect - EUR Curves



Zeeman effect - basis spread



- Figure: historical series of the market fixings of two interest rates: EURIBOR and EONIA over 3M period.
- 3M EURIBOR: rate associated with Certificate of Deposit starting at spot (T+2BD) and maturing in 3M later.
- 3M EONIA : swap rate of the OIS (over-night indexed swap) with the same start and maturity dates as EURIBOR

Why it happened?

- No liquidity in the market then banks can default within these periods. Lehman(overnight), Bear Sterns(weekend), etc.

Zeeman effect - Influence on trading - Example: delta

Delta				Delta					
19/10/2012	Euribor.3M			19/10/2012	EONIA	Euribor.1M	Euribor.3M	Euribor.6M	Euribor.12M
O/N	...			O/N	...	...	...	...	...
T/N	...			T/N	...	...	...	...	...
1w	...			1w	...	...	...	...	...
1m	...			1m	...	...	...	...	...
3m	...			3m	...	...	...	...	...
6m	...			6m	...	...	...	...	...
9m	...			9m	...	...	...	...	...
1y	...			1y	...	...	...	...	...
2y	...			2y	...	...	...	...	...
3y	...			3y	...	...	...	...	...
4y	...			4y	...	...	...	...	...
5y	...			5y	...	...	...	...	...
6y	...			6y	...	...	...	...	...
7y	...			7y	...	...	...	...	...
8y	...			8y	...	...	...	...	...
9y	...			9y	...	...	...	...	...
10y	...			10y	...	...	...	...	...
12y	...			12y	...	...	...	...	...
15y	...			15y	...	...	...	...	...
20y	...			20y	...	...	...	...	...
25y	...			25y	...	...	...	...	...
30y	...			30y	...	...	...	...	...
40y	...			40y	...	...	...	...	...
50y	...			50y	...	...	...	...	...
Total	...			Total	...	...	...	...	...



- curves must be generated
- curves must be stored to provide historical data
- trades need to have information about the curves and ideally sorted based on tenors
- risk reports for different curves have to be run separately to aggregate results correctly
- managing risk become cumbersome

Zeeman effect - Influence on trading - Example: cap vega

Cap Vega Expiry	Euribor.3M										
Strike	-4%	-3%	-2%	-1%	-0.50%	0%	0.50%	1%	2%	3%	4%
19/10/2012
20/10/2012
21/10/2012
26/10/2012
18/11/2012
17/01/2013
19/04/2013
19/07/2013
19/10/2013
19/10/2014
19/10/2015
19/10/2016
19/10/2017
19/10/2018
19/10/2019
19/10/2020
19/10/2021
19/10/2022
19/10/2024
19/10/2027
19/10/2032
19/10/2037
19/10/2042
19/10/2052
19/10/2062



Cap Vega Expiry	EURIBOR.1M										
Strike	-4%	-3%	-2%	-1%	-0.50%	0%	0.50%	1%	2%	3%	4%
19/10/2012
20/10/2012
21/10/2012
26/10/2012
18/11/2012
17/01/2013
19/04/2013
19/07/2013
19/10/2013
19/10/2014
19/10/2015
19/10/2016
19/10/2017
19/10/2018
19/10/2019
19/10/2020
19/10/2021
19/10/2022
19/10/2024
19/10/2027
19/10/2032
19/10/2037
19/10/2042
19/10/2052
19/10/2062

- similar story but significantly more data

Zeeman effect - Electronic trading of swaps helps

BBTI

Interest Rate Swaps Tools Settings Trading Access IRS Multi-Dealer RFQ

14:27

20 EUR 21 USD 22 GBP 23 CHF 24 AUD 25 SEK

10 Vanilla 6M 11 Vanilla 3M 12 OIS 13 Curve 6M 14 Curve Long 6M 15 Bfly 16 Bond Fut. X

3M Euribor			3M Euribor		
30) 6 Month	0.209 / 0.212	+0.002	48) 16 Year	2.234 / 2.240	+0.046
31) 1 Year	0.237 / 0.241	+0.007	49) 17 Year	2.267 / 2.274	+0.044
32) 15 Month	0.258 / 0.262	+0.008	50) 18 Year	2.292 / 2.298	+0.044
33) 18 Month	0.280 / 0.285	+0.011	51) 19 Year	2.310 / 2.317	+0.046
34) 2 Year	0.339 / 0.342	+0.015	52) 20 Year	2.324 / 2.332	+0.047
35) 3 Year	0.486 / 0.490	+0.024	53) 25 Year	2.366 / 2.373	+0.049
36) 4 Year	0.673 / 0.677	+0.031	54) 30 Year	2.384 / 2.392	+0.051
37) 5 Year	0.879 / 0.884	+0.033	55) 40 Year	2.464 / 2.475	+0.049
38) 6 Year	1.088 / 1.093	+0.036	56) 50 Year	2.538 / 2.549	+0.046
39) 7 Year	1.281 / 1.286	+0.038	Other Markets		
40) 8 Year	1.455 / 1.460	+0.041	57) EURO-SCHATZ	14:27	110.575 - 0.020
41) 9 Year	1.606 / 1.611	+0.043	58) EURO-BOBL	14:27	125.120 - 0.170
42) 10 Year	1.739 / 1.744	+0.044	59) EURO-BUND	14:27	140.000 - 0.470
43) 11 Year	1.858 / 1.863	+0.044	60) EURO-BUXL	14:26	128.520 - 1.140
44) 12 Year	1.962 / 1.968	+0.044			
45) 13 Year	2.053 / 2.059	+0.046			
46) 14 Year	2.128 / 2.134	+0.045			
47) 15 Year	2.187 / 2.194	+0.044			

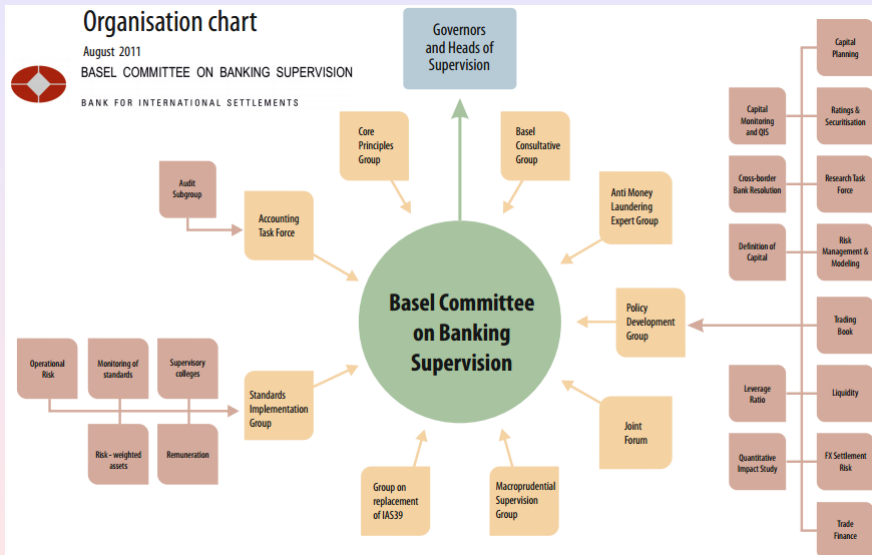
Australia 61 2 9777 8600 Brazil 5511 3048 4500 Europe 44 20 7330 7500 Germany 49 69 9204 1210 Hong Kong 852 2977 6000
 Japan 81 3 3201 8900 Singapore 65 6212 1000 U.S. 1 212 318 2000 Copyright 2012 Bloomberg Finance L.P.
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- in some cases electronic (delta) trading helps but bid-ask spreads are wider and margin for error is greater
- bid-ask spreads: EONIA: 0.7-1.6bps, EUR 1M: 1.95-3bps, EUR 3M: 0.3-1.4bps, EUR 6M 0.4-1.3bp, EUR 12M: 1.3-1.8bps

Regulatory risk

- Regulatory risk is the process used by a regulatory authority (the regulator) to treat entities based on the regulator's assessment of the risks of the entity's non-compliance.

Basel Committee on Banking Supervision - Organisation



Basel requirement - Purpose

- The Basel Committee on Banking Supervision is a committee of banking supervisory authorities, which was established by the central bank governors of the Group of Ten (G10) countries in 1975.
- Basel I (1988) - The Basel Accord

1988, the Basel Capital Accord sets down the agreement among the G10 central banks to apply common minimum capital standards to their banking industries, to be achieved by end-year 1992. The objective was to introduce international convergence of capital measurement and capital standards. The standards are almost entirely addressed to credit risk, the main risk incurred by banks.

The credit exposures were divided into five categories that represented similar types of borrowers. Each category is tied to a specific risk weight of the asset, which is used to calculate the total capital requirements. 0% - cash, gold bullion, OECD government bonds, 20% - OECD banks and public sector, 50% - uninsured residential mortgages, 100% - corporate bonds, less developed country debt, equity, real estate premises

Total Capital Ratio = $\frac{\text{Total Capital (Tier 1 and 2)}}{\text{Risk Weighted Assets}}$
Min. total 8%, min. Tier 1 Capital 4%

Credit risk assessment under Basel I was not risk-sensitive enough (AAA corporate and B corporate had the same weight) or it did not take into account maturity of the instrument into effect (long term capital vs. short term capital), introduction of new instruments (CDS).

- Basel II (June 2004) - International Convergence of Capital Measurement and Capital Standards: A Revised Framework.
The Basel Accord is based on three pillars:
 - Minimum Capital Requirements
 - Supervisory Review Process
 - Market Discipline

Basel III - Summary

Pillar 1			Pillar 2		Pillar 3
Available Capital	Required Capital	Leverage Ratio	Capital Buffer	Liquidity	Disclosure
Tier 1	Counterparty Risk	Global Leverage Ratio	Systematic Risk	Liquidity Coverage Ratio	Leverage Ratio
Tier 1 Deductions	Securitized Risk		Countercyclical Capital Buffer		Liquidity
Tier 2	Incremental Risk Charge		Capital Conservation Buffer	Net Stable Funding Ratio	Disclosure Risk Weighted Assets (RWA) Calculation
Tier 2 Restrictions	Operation Risk		Pillar 2 Capital Buffer		
Tier 3 Abolished	Credit Risk				
	Stressed VaR				
	Value at Risk (VaR)				

■ Basel I and II
 ■ Basel II ½
 ■ Basel III

- **Basel III (June 2012)**

After the default of few big banks and liquidity squeeze all over the world (2008) Base Committee decided that it has dig deeper in the regulation.

- **Definition Capital**

Tier 1 Capital - common shares and retained earnings(disclosed reserves)

Tier 2 Capital - supplementary capital - undisclosed reserves, revaluation reserves, loan-loss reserves, hybrid instruments (CoCos - Contingent Capital bonds), subordinated debt

$$\text{Tier 1 Capital Ratio} = \frac{\text{Tier 1 Capital}}{\text{Risk Weighted Assets}} \quad (1)$$

- **Global Leverage Ratio**

Global Leverage Ratio was set to 3%, so banks can be leveraged up to 33 times.

$$\text{Leverage ratio} = \frac{\text{Tier 1 Capital}}{\text{Average total consolidated assets}} \quad (2)$$

Average total consolidated assets equals quarterly average assets from a bank's most recent Call Report less goodwill and other intangible assets.

- **Liquidity Coverage Ratio**

It requires banks to hold enough liquid assets to cover expected net outflows during a 30-day stress period. (Northern Rock in UK)

- **Net Stable Funding Ratio**

It requires the available amount of stable funding to exceed the required amount of stable funding over a one-year period of extended stress.

$\text{NSFR} = \text{Stable Funding} / \text{Long Term Assets} > 100\%$

Stable Funding: customer deposits, long-term wholesale funding, equity

Long Term Assets have the following weight 100% loans longer than 1 year, 80% loans to retail shorter than 1 year, 50% loans to corporates shorter than 1 year, 20% corporate and government bonds

Basel - What is going to happen ?

Calibration of the capital framework

Calibration of the Capital Framework			
Capital requirements and buffers (all numbers in percent)			
	Common Equity Tier 1	Tier 1 Capital	Total Capital
Minimum	4.5	6.0	8.0
Conservation buffer	2.5		
Minimum plus conservation buffer	7.0	8.5	10.5
Countercyclical buffer range*	0 – 2.5		

● Capital Conservation buffer

It is a buffer to ensure that banks are more resilient going into downturn. The capital buffer will be rebuild outside periods of stress and will act as a drawdown as losses are incurred inside period of stress.

The Conservation buffer is set to 2.5% of the risk weighted assets and it is going to be filled in by reducing distributions, share buybacks, staff bonus payments and/or raising new capital.

Companies will be restricted to make distributions when the requirements are not satisfied.

● Capital Countercyclical buffer

It is a buffer to prevent excessive credit growth that leads to systematic risk.

It will be up to 2.5% of the capital requirement and will be applied on systematic basis by local regulators so it will become additional tool of the regulators.

Relevant institution would be restricted from paying distributions in case of shortfall of countercyclical buffer.

Basel III - Implementation development

Phase-in arrangements

(shading indicates transition periods - all dates are as of 1 January)

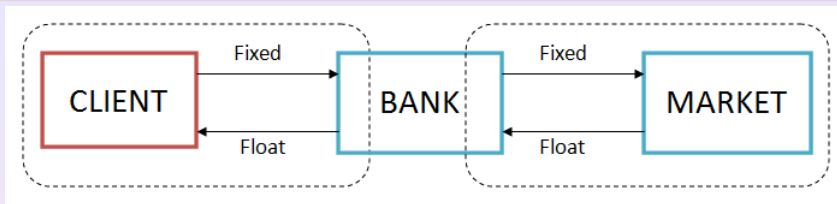
	2011	2012	2013	2014	2015	2016	2017	2018	As of 1 January 2019
Leverage Ratio	Supervisory monitoring		Parallel run 1 Jan 2013 – 1 Jan 2017 Disclosure starts 1 Jan 2015					Migration to Pillar 1	
Minimum Common Equity Capital Ratio			3.5%	4.0%	4.5%	4.5%	4.5%	4.5%	4.5%
Capital Conservation Buffer						0.625%	1.25%	1.875%	2.50%
Minimum common equity plus capital conservation buffer			3.5%	4.0%	4.5%	5.125%	5.75%	6.375%	7.0%
Phase-in of deductions from CET1 (including amounts exceeding the limit for DTAs, MSRs and financials)				20%	40%	60%	80%	100%	100%
Minimum Tier 1 Capital			4.5%	5.5%	6.0%	6.0%	6.0%	6.0%	6.0%
Minimum Total Capital			8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Minimum Total Capital plus conservation buffer			8.0%	8.0%	8.0%	8.625%	9.25%	9.875%	10.5%
Capital instruments that no longer qualify as non-core Tier 1 capital or Tier 2 capital			Phased out over 10 year horizon beginning 2013						
Liquidity coverage ratio	Observation period begins				Introduce minimum standard				
Net stable funding ratio	Observation period begins							Introduce minimum standard	

- Detailed set of rules to calculate Risk Weighted Assets, Counterparty Credit Risk, Funding risk
- Internal Model Method (IMM)
If one does not implement IMM the risk charges become very steep and the business loses its competitiveness. This is mainly valid for smaller banks where implementation brings additional costs.
- Business types that generate too much Risk Weighted Assets are going to disappear or become expensive for customers.
- Decrease of annual GDP by 0.15% which in the low growth scenario can be damaging to recovery.

Funding liquidity risk

- Risk that liabilities cannot be met when they fall due or can only be met at an uneconomic price.

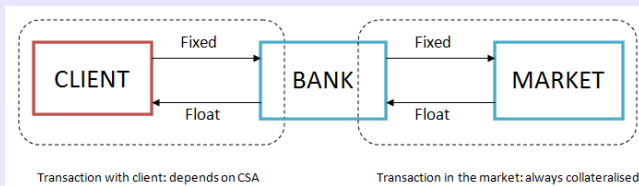
Funding Valuation Adjustment (FVA) - CSA intro



ISDA Master Agreement - Credit Support Annex (CSA)

- Different types of agreements
 - No CSA: most corporates and sovereigns
 - Asymmetrical/1-way CSA: some sovereigns, agencies, supranationals and covered pools of banks (benefit to counterparty)
 - Symmetrical/2-way CSA: most banks, other financial institutions and some large corporates
- Details provided by CSA:
 - Netting frequency: daily, weekly, monthly
 - Threshold: 0, 1Mio, 3Mio, 5Mio, 10Mio, ...
 - Eligible collateral: cash, bonds(with relevant haircut) in different currencies
 - Margin rate paid on cash: Eonia (EUR), Fed Funds(USD), Sonia(GBP), etc. ... plus spread
 - further details: netting of portfolio

FVA - Why do we need FVA?



- **Transaction in the market**
 - CSA type: 2-way CSA
 - Netting: daily netting
 - Threshold: 0 threshold
 - Eligible collateral: cash
 - Margin rate: paying/receiving EONIA(EUR)
- **Transaction with client:**
 - if the client has similar CSA then we have no risk and no cash imbalance: **perfect hedge**
 - if the client is NOT collateralised (no CSA):
 - $PV < 0$ for the bank with client, then $PV > 0$ in the market, so bank receives cash under the CSA and will not pass it to the client (no CSA): **funding benefit**
 - $PV > 0$ for the bank with client, then $PV < 0$ in the market, so bank posts cash under the CSA but bank will have to borrow as client will not give anything (no CSA): **funding cost**

How do we calculate FVA?

Use discount curve that reflects CSA:

- no CSA: funding curve of the bank
- CSA : margining curve (often OIS curve) of the currency(ies) stated in CSA

The difference in PV between 2 cases is FVA.

Other cases can be complicated given the details in CSA.

- 1-way CSA: portfolio analysis is required
- symmetric/2-way CSA with high thresholds : same as 1-way CSA or no CSA

Additional complexity if cash can be posted in 2 or more currencies and the eligible instrument is different to cash

Credit risk

- The risk that a borrower will default on any type of debt by failing to make payments which it is obligated to do.

Credit risk - Counterparty risk

Counterparty risk is a credit risk that a counterparty can default on its obligations to pay the bank the full PV of a transaction for which the bank is receiver.

- For a loan: the value of the loan
 - If bank lends 100Mio, bank is owed 100Mio so ...
 - ... risk is the notional of 100Mio
- For derivative transaction:
 - It is MtM (Mark-to-Market) value that goes in banks favour
 - The value of derivative changes over time so does the risk

Bank has to protect against this risk. It is also part of the regulatory valuation of the capital requirements.

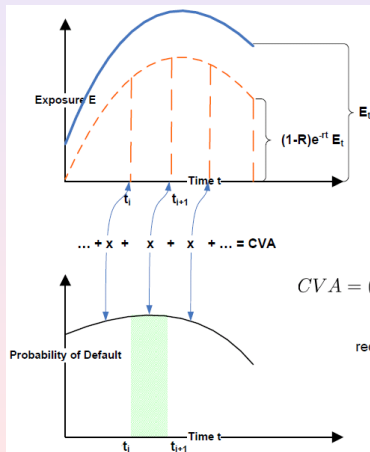
- What is CVA ?
 - Fair-value charge(margin) made to compensate the bank for the credit risk within every trade portfolio: Expected loss
 - For the same trade we can have different credit exposure depending on counterparty quality/rating
 - CVA in this sense is a mean value by which 1 unit of currency can be put on that risk
- Why do we need it ?
 - Fair-value marking positions (if it is not priced then there is not compensation for Expected loss and the trade as such is mis-priced)
 - One of the observable credit measures that can be stressed and dynamically hedged
 - regulatory calculation of the capital requirements
- How to calculate it?
 - Present Value of the trade
 - Expected Exposure (negative PVs do not give a loss, so only positive ones are kept)
 - Probability of Default
 - Recovery rate in case of default
 - Documentation: ISDA,CSA

CVA - Valuation

- PV of the Expected Loss over the life of the transaction is calculated where we have incorporated the probability of default
- This PV is then discounted sum over small Expected Loss contributions across the profile

Simple formula:

$$CVA = (1 - \text{Recovery Rate}) * \text{Expected Positive Exposure} * \text{Default Probability} \quad (3)$$



- Usually pricing of derivatives does not take the possibility of default into account
→ E.g. Value of Option $V(t,T)$
- Price should be adjusted for default risk
→ $V_{\text{Risky}}(t,T) = V(t,T) - CVA(t,T)$
- CVA is correction for credit-risk free calculations

$$CVA = (1 - R_C) \int_t^T E^Q \left[\exp\left(-\int_t^s r_u du\right) E_s \mid \tau_C = s \right] dPD_C(t, s)$$

expected value short rate exposure at time t
 recovery rate of counterpart time of default probability of default of the counterpart

- Cost of hardware (1 swap approx. 10^{-5} secs (Mio swaps) , 1 bermudan 10^1 (000's berms))
- Cost of implementation (dedicated team of quants)
- Risk management education
- Sales: explanation to customers what is included in the price of the product
- Additional trading department ?
 - Taking reserves
 - Money generator
- Do we release CVA when one of the deals is closed early?

Operational risk

- Operational risk is the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.

Mis-selling products

Q: What is complex product ? A: Everything is complex.

Mis-selling of inappropriate products:

- Payment Protection Insurance (PPI)

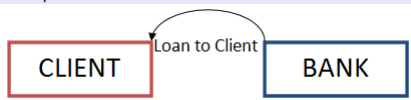
- PPI covers customers who may be unable to keep up payments on their mortgages, loans and credit cards if they are made redundant or fall sick, but successful claims on these policies by customers are quite rare.
- 18 Oct 2012 - Barclays increases provision for PPI mis-selling to 2bn (Barclays probably making loss in Q4)
- Lloyds took a 3.2bn provision in May 2011, although this has now risen to 4.3bn
- Royal Bank of Scotland's bill is 1.3bn
- HSBC's bill is 1.1bn
- Santander has made a 550m provision.
- including other sellers of PPI total of 9bn

- Swaps and structured products (LOBO)

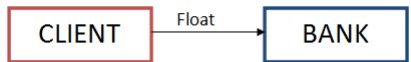
- The FSA agreed the deal with Barclays, HSBC, Lloyds and Royal Bank of Scotland (RBS) to compensate small and medium-sized companies mis-sold the most complex interest rate hedging products, which were supposed to protect against a fall in interest rates but left business owners facing huge costs they say they were not warned about. Banks have been accused of failing to mention the "break costs" of exiting the swap should a customer wish to terminate the agreement.
- Santander, Co-operative Bank, Allied Irish Bank, Bank of Ireland, Clydesdale and Yorkshire banks, and Northern Bank have joined other banks and total compensation is expected to be 100's mio up to several bn, 6+bn.
- RBS won case against building society due to explicitly advising client to seek independent advisor.
- On-going progress: Evidence has already been submitted to the Parliamentary committee by several major institutions, including Britain largest banks, and a final report is expected by December 18 with a view to incorporating any recommendations into the upcoming banking legislation.

LOBO - Lender Option Borrower Option

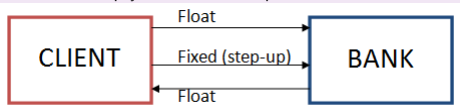
Bank provides loan:



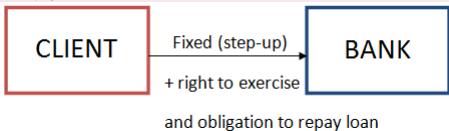
Client pays Floating rate (usually Floating + spread depending on rating) and repayment of the loan is at maturity



Client wants to pay Fixed for certain period so enters LOBO.



The result is that Client pays Fixed where coupon is increasing, has the right to cancel paying Fixed and obligation to repay loan at the same time.



A Lobo is a Bermudan callable interest rate swap tied to a loan facility, meaning the client pays a fixed rate, and the bank has the option to raise that rate at fixed intervals if the client declines to pay a higher rate, the swap is cancelled and the customer has to repay its floating-rate loan.

Mohideen: "What's the call on the Libor?"

Trader 2: "Where would you like it, Libor that is?"

Trader 3: "Mixed feelings, but mostly I'd like it all lower so the world starts to make a little sense."

Trader 4: "The whole HF [hedge fund] world will be kissing you instead of calling me if Libor move lower."

Trader 2: "OK, I will move the curve down 1 basis point, maybe more if I can."

- **What is Libor?**

LIBOR stands for the London Inter-Bank Offered Rate. It is the interest rate which shows how much it costs for banks to borrow money from each other.

- **How it is calculated ?**

Group of leading banks submit rates for 10 currencies and 15 lengths of loan ranging from overnight to 12 months. Banks submit their rates and rate is calculated as an average of the rates where top and bottom quartiles of the entries are removed.

- **What is the problem ?**

Libor underpins approximately 350 trillion dollars in derivatives. The scandal arose when it was discovered that banks were falsely inflating or deflating their rates so as to profit from trades, or to give the impression that they were more creditworthy than they were.

- **Costs ?**

Libor scandal further undermined trust in banks.

Barclays - 360Mio USD in the USA and 60Mio GBP in the UK, resignation of CEO Bob Diamond.

RBS - 200-300Mio GBP, multiple traders were dismissed (Jezri Mohideen)

Further banks investigated by US and UK authorities

- **Further steps ?**

Wheatly report: Financial Conduct Authority (FCA), Banks must keep records of their transactions supporting those submissions, criminal sanctions specifically for manipulation of benchmark interest rates such as the LIBOR.

Old World:

Market, Credit and Funding related:

- single discounting and forecasting curve (e.g. Euribor, Libor, ...)
- standardized margins
- reasonable hardware and software requirements

Regulatory, Legal and politically related:

- basic regulatory requirements
- rare legal processes
- no financial tax
- good reputation

New World:

Market, Credit and Funding related:

- spectrum of curves (e.g. EUR: EONIA, 1M, 3M, 6M, 12M Euribor)
- separate margins for market, credit and funding risk
- challenging hardware and software issues

Regulatory, Legal and politically related:

- huge regulatory burden
- legal process can become standard
- financial and transactional tax
- worse and slowly improving reputation

Final question: Who is going to pay for it ?

- M. Bianchetti, The Zeeman Effekt in Finance, 2011
- V. Piterbarg, Funding beyond discounting: collateral agreements and derivatives pricing, Risk, 2/2010
- Basel : <http://www.bis.org/bcbs/>
- G. Cesari, J. Aquilina, N. Charpillon, Z. Filipovic, G. Lee, I. Manda, Modelling, Pricing and Hedging Counterparty Exposure: A Technical Guide, Springer, 2010
- CCR,FVA,CVA: <http://www.damianobrigio.it>
- CSA: <http://www.isda.org>
- http://en.wikipedia.org/wiki/Payment_protection_insurance
- UK banks face up to SME swap misselling claims, Risk, 8/2012
- <http://www.fsa.gov.uk/doing/events/wheatley-review-libor>