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# Balance Sheet Risk Management in an Ever More Challenging Context (Basel IV)

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# Basel IV

- Basel IV: intended to ‘finalize’ some outstanding reforms & ‘calibrate’ the whole package, following on from Basel III
- 3 broad categories:
  - Enhancing risk sensitivity & robustness of standardized approaches (SA)
  - Reviewing role of internal models in capital framework
  - Finalizing design & calibration of leverage ratio & capital floors

  Basel IV fundamentally changes calculation of risk weighted assets & capital ratios of all banks

  In addition, there are the revised IRRBB & introduction of IFRS 9, among other things, to deal with

# Basel IV- Current State of Affairs

| Pillar 1 | Internal Models | Standardised Models |
|---|---|---|
| **Credit Risk** | Consultative Document (March, 2016) | Consultative Document (December, 2015) |
| **Market Risk** | New Approach (January, 2016) | New Approach (January, 2016) |
| **Operational Risk** | Eliminated (January, 2016) | Consultative Document (March, 2016) |

# BCBS Capital Requirements

Focus of BASEL 3 on ***Numerator:***
Higher Quantity and Quality of Capital

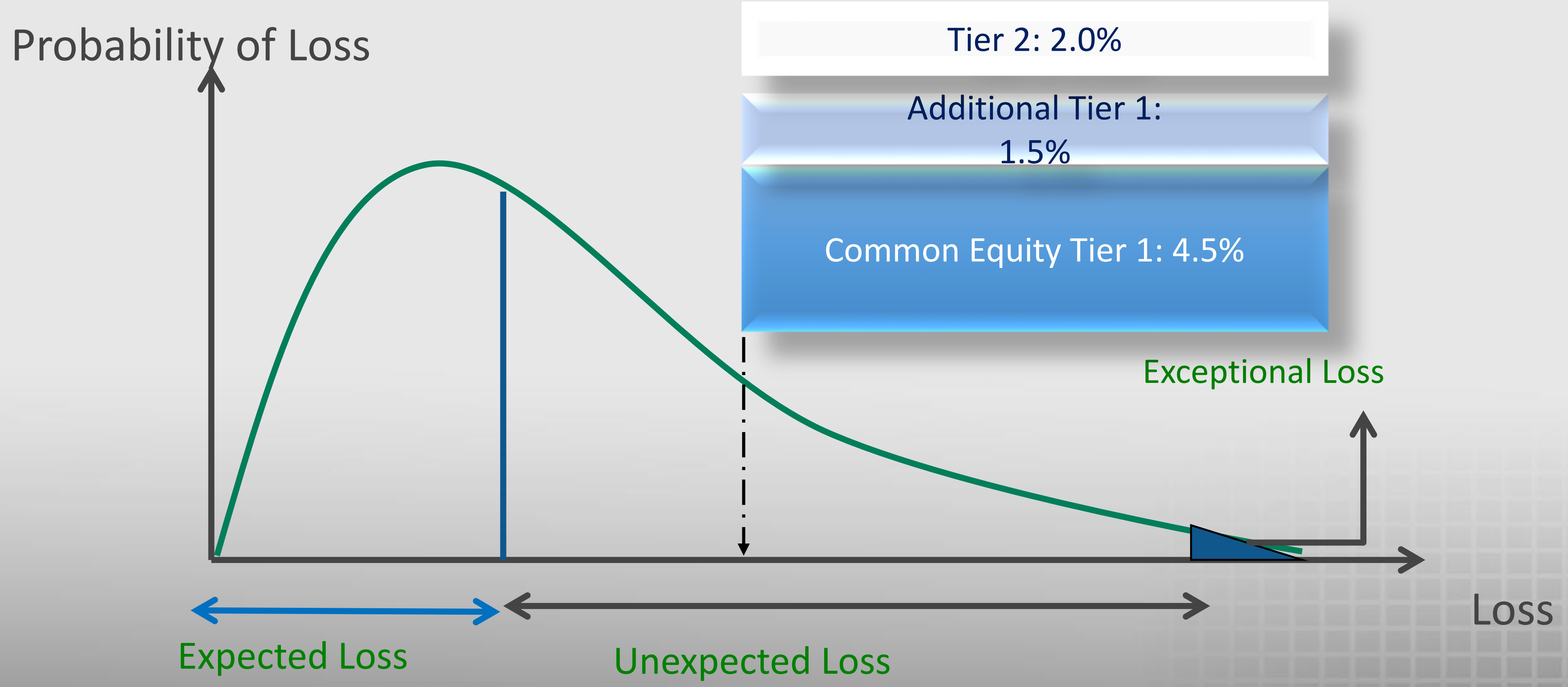
$$CAR = \frac{Capital}{RWA} >= 8\%$$

**Another Capital Ratio – Leverage Ratio**

Towards Basel 4 on ***Denominator***

- More risk-sensitive weight
- Seeking more transparency and comparability
- Less chance of falling victim to Goodhart's Law*

# Risk and Capital



# Challenge faced by European banks

- Many European banks will face significant capital shortfalls under the Basel IV reforms proposed
- If banks did nothing, rules will require about Euro 120 billion in additional capital, while reducing banking sector's return on equity by 0.6%
- Impact of Basel IV will be much greater than initially anticipated
- Gradual implementation of Basel IV rules, once finalized, from 2021 to 2025

# Issues addressed by capital floors & leverage ratios

| Issue | Addressed by: risk wtd cap floor? | lev ratio? |
|---|---|---|
| Use of low RWAs to boost leverage | No | Yes |
| Unexpectedly big losses in low RWA portfolios | No | Yes |
| Lack of market confidence in RWAs | No | Yes |
| RWA inconsistency & dispersion | Yes | No |
| Low level of models based RWAs | Yes | No |
| Horizontal inequity in risk wtd cap | Yes | No |

# Summary of Basel IV Proposals

- A major problem from Basel perspective is that varied implementation in Basel 2 internal models in different jurisdictions has resulted in **too much variation in RWA (Risk Weighted Assets) outputs**
- **Aim to reduce Variation in Credit RWA arising from IRB (Internal Risk Based) models**
  - harmonising input parameters
  - excluding IRB for certain categories eg large corporates
  - applying a capital floor at portfolio level
- **Adopting new Standardised Approach to Operational Risk**
  - abolishing internal model approach for operational risk (*good*)
- **Making revisions to Standardised Credit Risk**
  - reduce reliance on external ratings (*good*)
  - make approach more risk sensitive (*good*)
- These are being treated as a package of proposals; nothing agreed until all is agreed

# Constraints on IRB Models

- **Removing IRB approach altogether for the following low default portfolios:**
  - banks and other financial institutions
  - large corporates (total assets > EUR 50bn)

  and equities, on the grounds of **simplicity, consistency and comparability**
- For corporates with assets < EUR 50bn but turnover > EUR 200m eg Sainsbury's, Foundation IRB still permitted but A-IRB (Advanced) is precluded
- **Removing IRB for specialised lending that uses banks' estimates of model parameters,** leaving only standardised approach or IRB supervisory slotting approach
- For the remaining exposures, that can continue to use A-IRB, new floors at exposure level in respect of PD (Probability of Default), LGD (Loss Given Default) & the credit conversion factors used to determine EAD (Exposure At Default) for off-balance sheet items, eg the minimum PD for any corporate exposure or mortgage will be 5bps
- Introducing a floor at the portfolio level for A-IRB based on a % of the applicable standardised approach. This is not yet agreed but the range is narrowing around 75%

# Revisions to Standardised Credit Risk

- Even when banks use an External Credit Risk Assessment Approach **banks must perform separate due diligence at origination & thereafter on a regular basis**
- Bank risk weightings remain tied to credit rating, eg A+ to BBB- to have weighting of 50% but short term exposures with original maturity less than 3 months may have lower weighting
- Corporate exposures also to follow credit rating, from 20% for AAA to AA- up to 150% for BB- or lower. Unrated exposures will continue to attract 100% weighting (remains ***perverse***). SMEs (sales less than €50m) will be given preferential weighting of 85%
- Object & Commodities finance to attract weighting of 120% whereas Project Finance weighted at 150% pre-operational phase, reducing to 100% during operational phase
- Retail unsecured exposures of < €1m continue to attract 75% weighting
- Owner occupied residential real estate exposures become more risk sensitive with LTV (loan to value)

# Owner occupied real estate at various LTV levels

| | LTV <=40% | 40%<LTV<=60% | 60%<LTV<=80% | 80%<LTV<=90% | 90%<LTV<=100% | LTV>100% |
|---|---|---|---|---|---|---|
| Risk Weight | 25% | 30% | 35% | 45% | 55% | RW counterparty |

# Towards BASEL 4: Credit Risk

**Residential Mortgages:** Risk weights determined by 2 risk drivers: loan-to-value (LTV) & debt-service coverage (DSC) ratios

| | **LTV < 40%** | **40%≤LTV< 60%** | **60%≤LTV < 80%** | **80%≤LTV<90%** | **90%≤ LTV < 100%** | **LTV ≥ 100%** |
|---|---|---|---|---|---|---|
| RWs for Loans to indiv. with DSC≤ 35% | 25% | 30% | 40% | 50% | 60% | 80% |
| RWs for other Loans | 30% | 40% | 50% | 70% | 80% | 100% |

# Revisions to Standardised Credit Risk (Cont'd)

- Significant proposed increase in weighting for **buy to let mortgages**

| | LTV <=60% | 60%<LTV<=80% | LTV>80% |
|---|---|---|---|
| Risk Weight | 70% | 90% | 120% |

- Similarly facilities secured by commercial real estate may attract preferential weighting of 60% if LTV <= 60% but if the property is the prime source of the cash flows then weightings vary from 80%-130%. Land acquisition, development & construction lending to attract a weighting of 150%
- Some increases in off balance sheet exposures eg undrawn credit card exposures to go from 0% to (10-20%) . For some full-payer books this increase is significant
- In contrast, changes to methodology for repo-style transactions do allow firms to incorporate up to 40% of the benefits arising from correlation between positions

# Towards Basel 4

## Bank Exposures to Senior Corporates

| RISK WEIGHTS | Rev ≤ € 5m | €5m < Rev ≤€ 50 m | €50m < Rev ≤€1B | Rev >€1B |
|---|---|---|---|---|
| Leverage: 1x-3x | 100% | 90% | 80% | 60% |
| Leverage: 3x-5x | 110% | 100% | 90% | 70% |
| Leverage: > 5x | 130% | 120% | 110% | 90% |
| Negative Equity | 300% | 300% | 300% | 300% |

RW=300% if obligor has not provided Leverage & Revenue Info

# Towards Basel 4

- **Exposure to Banks**

| | **CET1 ratio ≥12%** | **12% > CET1 ratio≥ 9.5%** | **9.5% > CET1 ratio ≥ 7%** | **7% > CET1 ratio ≥ 5.5%** | **5.5% > CET1 ratio ≥ 4.5%** | **CET1 ratio < 4.5%** |
|---|---|---|---|---|---|---|
| Net NPA ratio ≤ 1% | 30% | 40% | 60% | 80% | 100% | 300% |
| 1% < Net NPA ratio ≤ 3% | 45% | 60% | 80% | 100% | 120% | 300% |
| Net NPA ratio >3% | 60% | 80% | 100% | 120% | 140% | 300% |

# Impact of Proposed Changes

- **Assuming a 75% IRB output floor, RWAs could increase on average by 15% due to A-IRB changes**
- The largest absolute increase in RWAs is, for example, for BNPP, of €100bn, with Rabobank 2nd at €89bn
- In relative terms the Nordic banks are hit hard with a bank like Swedbank finding average RWA weighting for mortgages going from 5% to 19% and corporate from 35% to 57%
- In complete contrast, the Irish banks suffer no increase as their A-IRB models are already impacted by high historic losses
- Perhaps given the above it is not surprising to hear that France, Germany & the Netherlands are delaying agreement at Basel & still arguing strongly for a lower output floor

# Operational Risk

- **Withdrawal of Advanced Measurement Approach due to inherent complexity and variability of approach leading to variability in RWAs**
- **The new Standardised Measurement Approach (SMA) combines a simple standardised measure of operational risk with bank-specific loss data**
- The Business Indicator (BI) has three components, namely Financial Component, Services Component and an Interest, Lease and Dividend Component
- Under SMA banks divided into 5 buckets according to the size of BI with bucket 1 being €0 to €1bn whereas bucket 5 is > €30bn. The BI component increases at a higher rate the higher the bucket, reflecting experience that operational loss exposure increases more than proportionally with BI
- **Banks in buckets 2-5 must adjust for internal losses & calculate Internal Loss Multiplier (ILM)**
- The Loss Component = 7*Average Total Annual Loss + 7* Average Total Annual Loss only including loss events above €10m + 5* Average Total Annual Loss only including loss events above €100m
- Lots of maths in SMA, eg ILM = Ln( exp(1) – 1 + Loss Component/BI Component)

# FRTB (Fundamental Review of Trading Book)

SA Capital Requirement

- Sensitivity-Based Risk Charge
- Default Risk Charge
- Residual Risk Add-On

The new regulation requires use of a 97.5% ES (Expected Shortfall) to replace the former 99% VaR.
This is because it can be shown theoretically that 97.5% ES is equal to 99.0% VaR when the loss variable is normally distributed.

# Towards Basel IV: IRB Market Risk VaR & ES


Take the discrete case.
N=1000 Portfolio Losses.

For 99% VaR:
Take the 10 largest losses. 99% VaR = the minimum of the 10 largest losses.
99% ES is the average of the 10 largest losses.

# Expected Capital Impact for European bank industry (-29%)

| | |
|---|---|
| **Final stds:** | **CET 1 ratio 1H 2016** 13.4 |
| Basel III deductions | (0.5) |
| FRTB | (0.3) |
| IRRBB | tbd |
| **CET 1 ratio post final stds** | 12.6 |
| **Reg considerations**: revised credit risk SA | (0.2) |
| Removal of IRB for LDPs (low default portfolios) | (0.1) |
| IRB parameter floors | tbd |
| Aggregated IRB RWA floor 75% | (1.3) |
| Revised optl risk SMA | (0.8) |
| CET 1 ratio post consultations | 10.1 |
| **Related discussions:** IFRS 9 | **(0.3)** |
| RWs for sovereigns | (0.3) |
| CET 1 post regulation | 9.5 |

# How banks can react

Use combination of technical, business & strategic levers (bps) ROE Cap ratio

| Levers | ROE | Cap ratio |
| --- | --- | --- |
| **Technical levers**: addressing data quality & process issues (eg, unrecognized collateral, ratings, cash flow based eff. Mat.) Reducing capital deductions & buffer requirements (eg, goodwill, intangibles, minorities, other buffers) | 50-100 | ~100 |
| **Business levers:** tactical actions (eg, pdt & collateral optimization), Client exits (reviewing & exiting unprofitable relationships), Commercial actions (cross selling, pricing, commercial offerings) | 50-100 | ~100 |
| **Strategic levers**: holistic b/s optimization , location strategy, portfolio strategy | >100 | TBD |

(source: McKinsey & Co)

# Structural enablers

- Embedding into strategic planning
- Timely & accurate RWA reporting for management & front line
- Capital conscious behavior & culture at the front line
- Capital steering metrics
- Sustainable IT & process solutions for RWA inaccuracies
- Effective performance management around capital usage

# Strategic ALM:
# proactive balance sheet management that seeks to integrate origination principles for both assets and liabilities

- The 3D optimisation challenge
- ALM: old school reactive and new school proactive
- Post-crash practical best-practice risk management: Strategic ALM and aligning asset and liabilities origination

# The market environment

- Market environment has created a 3-D optimisation challenge for banks…
- …or at least, banks serious about competing & serious about being well-respected by customers & peers alike
- "Balance sheet optimisation" is no longer what it used to mean pre-crash: basically doing what one needs to do to make more money / higher RoC
- Today it must mean structuring the balance sheet to meet the competing needs of Regulators, Customers and Shareholders. This is the 3D challenge
- Risk management practice an integral part of meeting optimisation challenge

# How Was Basel 3 Adopted into Legislation?

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**Basel 3**
*Global set of capital adequacy standards (BCBS)*

## European Union (EU)

**Capital Requirements Directive and Regulation IV**
*European Commission implementation of Basel 3*

**Directive**
*Strong links to national law, less prescriptive*

**National Law**
*Transpose the directive into National law/rules*

**Regulation**
*Applies to EU member states*

**European Technical Standards (EBA)**
*Binding Technical Standards & Guidelines adding additional detail to the primary legislation*

## Rest of the World

**Local**
*Local implementation of Basel 3*

**BCBS members:**

- Hong Kong
- India
- Indonesia
- Australia
- China
- Japan
- Singapore
- USA
- Brazil
- Argentina
- Mexico
- Canada
- Korea
- Russia

# Capital Ratio Changes and Additional Buffers

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- Required Capital Ratios increase with the implementation of CRR/CRDIV
- The new Capital Ratios to be fully implemented in 2019, after a transition period

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| Minimum Common Equity Capital Ratio | 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 Ratio plus Capital Conservation Buffer | 4.0% | 4.5% | 5.125% | 5.75% | 6.375% | 7.0% |
| Phase in of Deductions from CET1 | 20% | 40% | 60% | 80% | 100% | 100% |
| Minimum Tier 1 Capital | 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% |
| Minimum Total Capital plus Conservation Buffer | 8.0% | 8.0% | 8.625% | 9.25% | 9.875% | 10.5% |

- PRA implemented changes to Deductions from 1 January 2014 without a transition period
- Table excludes Counter-cyclical Buffer and Systemic Risk Buffer, both of which may be 0%

# BCBS Liquidity Rules

The Basel Committee adopted a three pronged approach to address the weaknesses in bank liquidity management that were evident during the financial crisis:

Basel Committee’s ‘Principles for Sound Liquidity Risk Management and Supervision’ (Published in September 2008 – shortly after Lehman Brothers filed for bankruptcy!)

Two new quantitative calculations, the **Liquidity Coverage Ratio** and the **Net Stable Funding Ratio** (published in December 2010)

A set of monitoring metrics to assist supervisors in the analysis of bank- specific and system-wide liquidity risk trends (published in December 2010)

# Cost of Basel 3 Implementation

System changes- amendments to existing calculations

Reporting infrastructure, e.g., COREP

New Policies, e.g., HR on Remuneration

Data quality improvement

QIS Calibration studies

Restructure of capital instruments – inc. legal input on compliance

Programme Management/ Co-ordination

System Changes – New Calculations, e.g., CVA Charge

Training and Education

# Mitigating the Impacts of Basel 3 (& 4)

**Increase Resources to Achieve Compliance**

- Increase holdings of Liquid Assets
- Increase Capital

**Decrease Risk**

- Adopt more sophisticated calculation methodologies (Standardised to Advanced)
- Hedging (e.g., CDS)
- Exit business lines

**Re-Design Customer Offering**

- Restructure transactions with customers
- Re-design products
- Review product pricing
- Exit business lines

**Manage Balance Sheets more efficiently**

- Restructure and/or Collapse legal entities
- Improve data collection processes

# Strategic Asset Liability Management (ALM) & Risk Management

- A single, integrated approach that ties in asset origination with liabilities raising. The two parts of the business process – assets & liabilities – are integrated & aligned
  - No more "silo'd" organisation
- *A business strategy approach at bank-wide level driven by balance sheet ALM considerations*
- Asset type is relevant & appropriate to funding type & source…
- ….and funding type and source is appropriate to asset type
- An explicit, articulated liabilities strategy looking to optimise funding mix & align it to asset origination
- A high-level, strategic discipline driven from top down…
- *It addresses the 3D optimisation problem:*
  - *Regulator requirements*
  - *Customer franchise requirements*
  - *Shareholder requirements*

# Which means…

- Proactive balance sheet management (BSM)…
- …not the "reactive" b/s management philosophy of traditional banking practice
- Consider the process by which ALM is undertaken at banks…
  - Business lines – which at large banks are many & varied & geographically dispersed – going out & originating business according to a supposed high level strategy often not clear even to the line head
  - This creates the b/s exposure that is then "risk managed" by the 'risk triumvirate' of Treasury, Finance & Risk
- Proactive BSM means the asset-side product line is managed by a business head closely aligned (in strategic terms) with the liabilities-side product line head – with liaison monitored by ALCO (Asset & Liability Committee)
- To be effective the process must look in granular detail at product types & how they are funded / deployed
- ONLY THEN can the bank start thinking in terms of optimising the b/s

***Proactive not reactive***

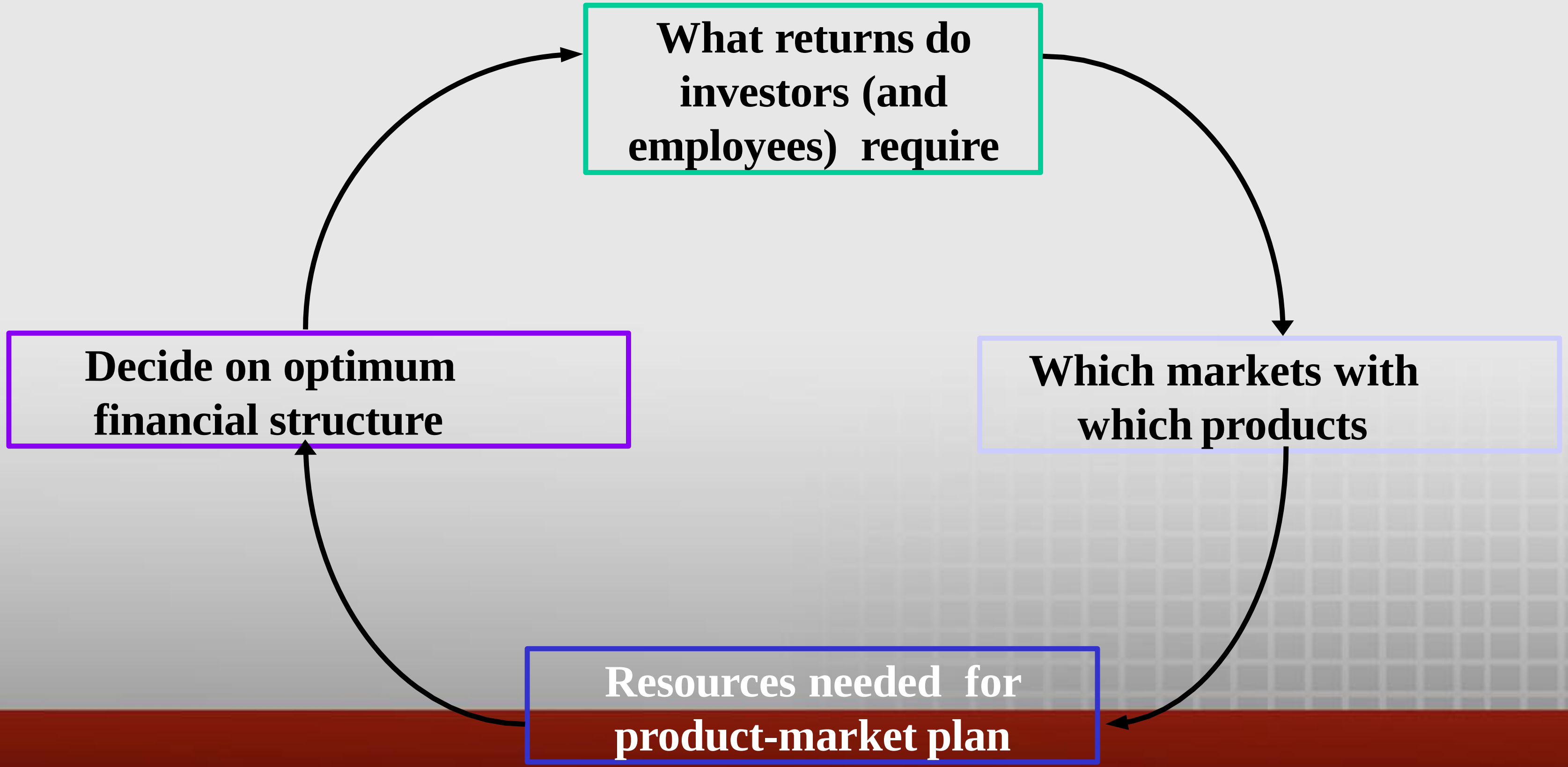
# Strategy setting: reprised!

- Consider, even in a highly summarised manner, how “strategy setting” in a bank is undertaken in practice (if not necessarily in theory)
- What driver sets the target rate of return? A mirage-like “cost of equity” or “cost of capital”. Which leads to…

# Strategy setting…

## Pre-crisis:

- Capital finite but available
- Funding finite but available
- Risk/reward profile



# Strategy setting post-crisis: recommended!

**What returns do investors require ……and others**

- **Post-tax Return to Shareholders**
- **Dividend & Capital Gain**

  ***ie, income and expectations***
- **…..and also Govt, Regulator**

**Which markets with which products**

- **Overall Strategy?**
- **Business Model?**
- **Products:**
  - **Loan**
  - **Deposit**
  - **Risk**
  - **Advice**
  - **Payments**
- **Growth?**
- **Survival?**

**Resources needed for product-market plan**

- **Capital/Allocation**
- **Funding Sources**
- **People**
- **Infrastructure**

**Decide on optimum financial structure**

- **Growth?**
- **Income?**
- **Risk Appetite?**
- **Capital Plan?**
- **Funding Plan?**

# Post-crash Operating Model Framework for Governance of the Balance Sheet

## Board Risk Appetite Statement

- An articulated explicit statement of Board appetite for & tolerance of balance sheet risk, incorporating qualitative & quantitative metrics & limits, becomes the most important document the Board must sign….
- Next slide summarizes recommended Board risk appetite framework, including description of each risk appetite pillar & key measures used to confirm on a monthly basis that the bank is within risk appetite
- For each of the measures identified, an overall bank-wide “macro-tolerance” is set, which is then broken down into tolerances for individual business lines (eg., Retail / Corporate).

# Risk appetite framework overview template

## Strategic Objective

ABC Bank aims to become the Commercial Bank respected & trusted by all istakeholders providing “concierge banking services for ultimate customer service quality", through: committed people; recognising that our long term sustainability is dependent on having sufficient capital & liquidity to meet liabilities as they fall due through the cycle; the protection of our reputation; & the integrity of our relationship with our customers & wider stakeholders.

## Target Credit Rating

Credit rating in line with ABC’s closest peers and UK bank average (A/A-)

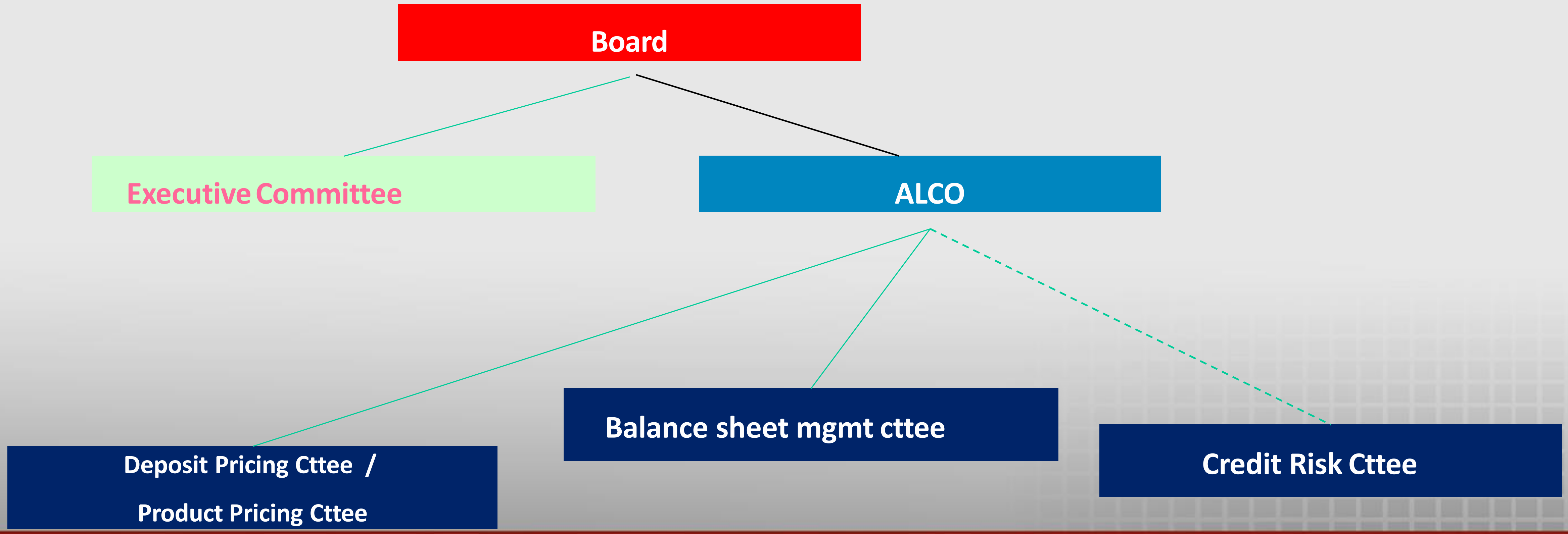
## Risk appetite pillars

| P1 Capital Adequacy | P2 Stable Earnings Growth | P3 Liquidity & Funding | P4 Stakeholder Confidence |
|---|---|---|---|
| **Maintain sufficient capital, quantity and quality, substantially over Regulatory minimums, to cover existing projected risks in extreme but plausible scenarios** | **Be an agile, sustainable UK Retail & Corporate commercial bank that maintains capital adequacy in terms of amount & quality, able to withstand appropriate capital related stress.** | **Be an agile, sustainable UK Retail & Corporate bank with stable, efficient access to funding & liquidity,, hence able to withstand appropriate liquidity related stress, with relevant liquid asset holdings.** | **Be an agile, sustainable UK Retail & Corporate commercial bank that is respected and trusted by all its stakeholders and hence maintains stakeholder confidence at all times.** |
| 1. CT1 ratio<br>2. Leverage ratio<br>3. Available capital | 1. Earnings volatility<br>2. Return on Capital<br>3. Return on RWA<br>4. Cost to income ratio | 1. Loan to deposit ratio<br>2. Liquid asset buffer minimum<br>3. Coverage of net outflows under a funding stress<br>4. NSFR minimum<br>5. Wholesale funding limits<br>6. Internal funds pricing regime | 1. Employees<br>2. Regulators<br>3. Investors<br>4. Customers<br>5. Ratings agencies |

# Paramount importance of ALCO

- What executive committees have a responsibility to oversee b/s risk?
  - Executive committee
  - Risk Management Committee (CRO chaired)
  - Credit risk committee
  - ALCO (Asset Liability Committee)
- The senior committee most closely concerned with b/s risk on a *strategic* & *integrated* basis (both sides of the b/s & all aspects of risk) is the ALCO
- Given this, what is the most effective way to ensure above- satisfactory and effective governance from Board perspective? (see next slide for recommended structure)

# Recommended organisation structure*




* Does not show every committee!

# Example: asset side of the B/S…

- Increase liquid assets as share of b/s
  - The LCR a 30-day metric: should be seen as more of a minimum than maximum. But there is an "optimum" share addressing liquidity risk concerns & also returns
- De-link the bank – sovereign risk exposure connection
  - The LCR doesn't have to be sovereign debt. It could be cash (going down the CBs, RMBS and equity route is risky…)
- Beware relaxing loan origination standards as the cycle moves into bull market phase
- Address asset quality problems. Ring-fence NPLs & impaired loans? (A "non-core" part of the b/s that indicates you are addressing the problem & looking at disposal)
- Reduce leverage
- Assets funded by….appropriate type of funding
- Review operating model. Retail-W/S mix? Franchise viability? Comparative advantage?
- Limit asset encumbrance: this contradicts pressure for secured funding

# Benchmarking with one's peers

- To be more, rather than less, certain of best-practice demands a benchmarking process with the market and with one's peers
- Managing a bank in blissful ignorance, often with a belief that one knows best, is a recipe, ultimately, for disaster
- However you wish to do it – market statistics, attending trade events, presenting, interacting, networking, etc , etc – it is a vital part of the "proactive balance sheet management and strategic ALM" process
- It can be formal and/or informal but it must be done

# Conclusions

- Perhaps the best way to implement "strategic ALM" – which means proactive management of the b/s, so that a structural b/s position is achieved by ***design*** rather than well-intended accident – is to have Head of Lending sitting next to Head of Deposits (*with thanks to Moorad Choudhry, Chris Westcott & Ian Tyler*)
- Failing that, in the Basel III-IV era, to meet the 3D optimisation challenge, balance sheet optimisation must be sought
- The "triumvirate" (CRO, CFO, Treasury) must have a bigger influence in origination & customer pricing
- This is now the modern approach to "risk management" in banks
- Otherwise, it will be difficult to optimise the A-L mix that addresses the triple problem of regulatory compliance, NIM enhancement & customer franchise satisfaction

# Summary

- Traditionally “ALM” meant managing liquidity risk & interest-rate risk
- But this isn’t full “ALM” ie, managing all the assets & all the liabilities from one integrated, coherent aggregate viewpoint
- Balance sheet is everything – the bank’s most important risk exposure
- Managing ALM risk on the balance sheet IS therefore managing everything that generates balance sheet risk
- Proactive ALM or “Strategic ALM” is best-practice in the Basel III-IV environment, where one can’t expect to originate assets & raise liabilities in isolation from each other and & “optimise” the balance sheet