FINANCIAL STABILITY INSTITUTE

BANK FOR INTERNATIONAL SETTLEMENTS

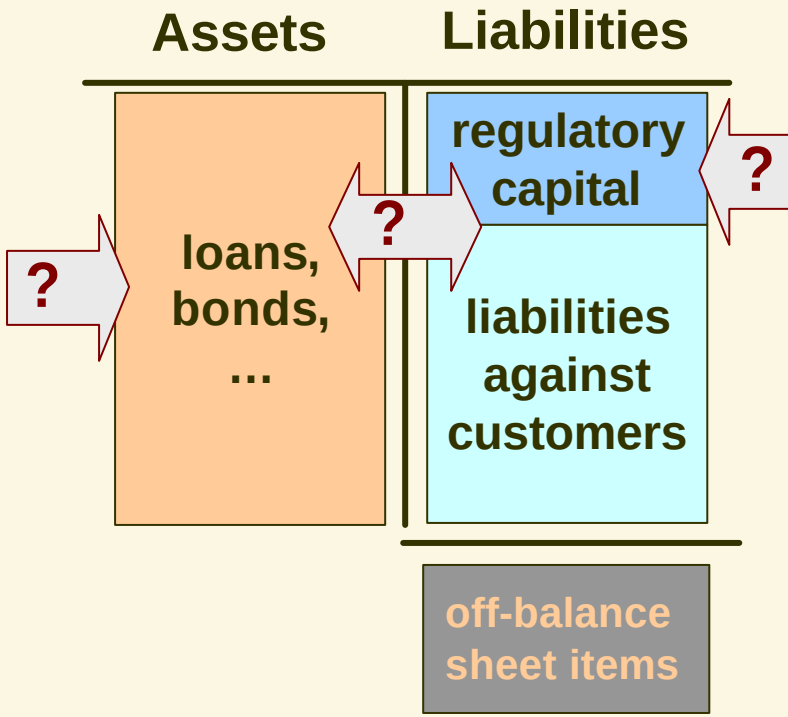
Regulatory Approach to Asset & Liability Management in Banks

FSI –Seminar
Basel, Switzerland
27 – 29 July 2004

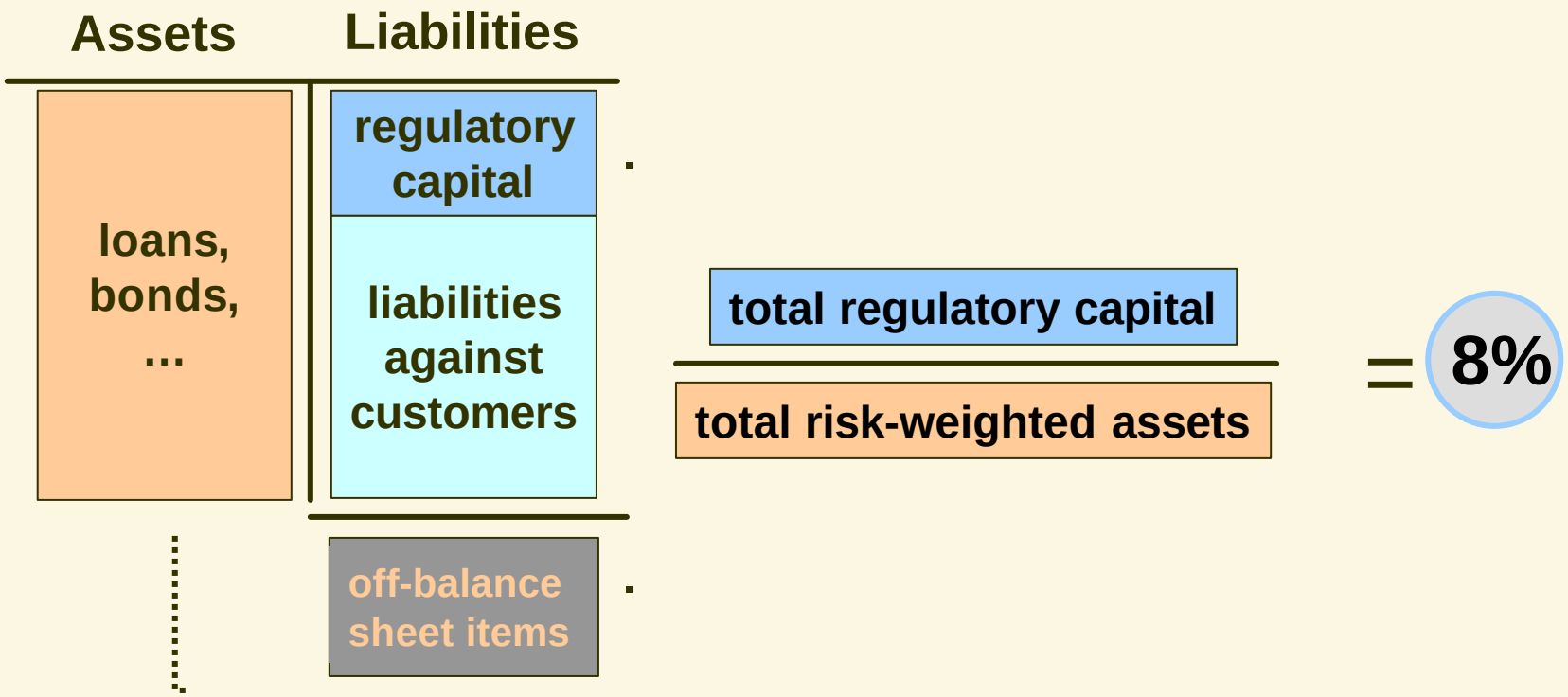
Karin Reichardt-Petry
Financial Stability Institute

Agenda

- Regulation on the Liability Side (regulatory capital)
- Regulation on the Asset Side
- Addressing the Gap between Assets & Liabilities

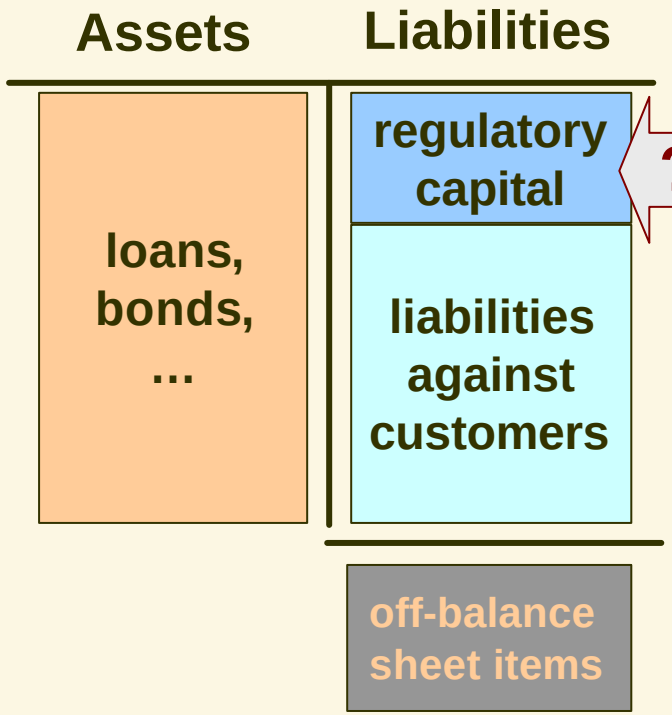


The Minimum Capital Ratio



Agenda

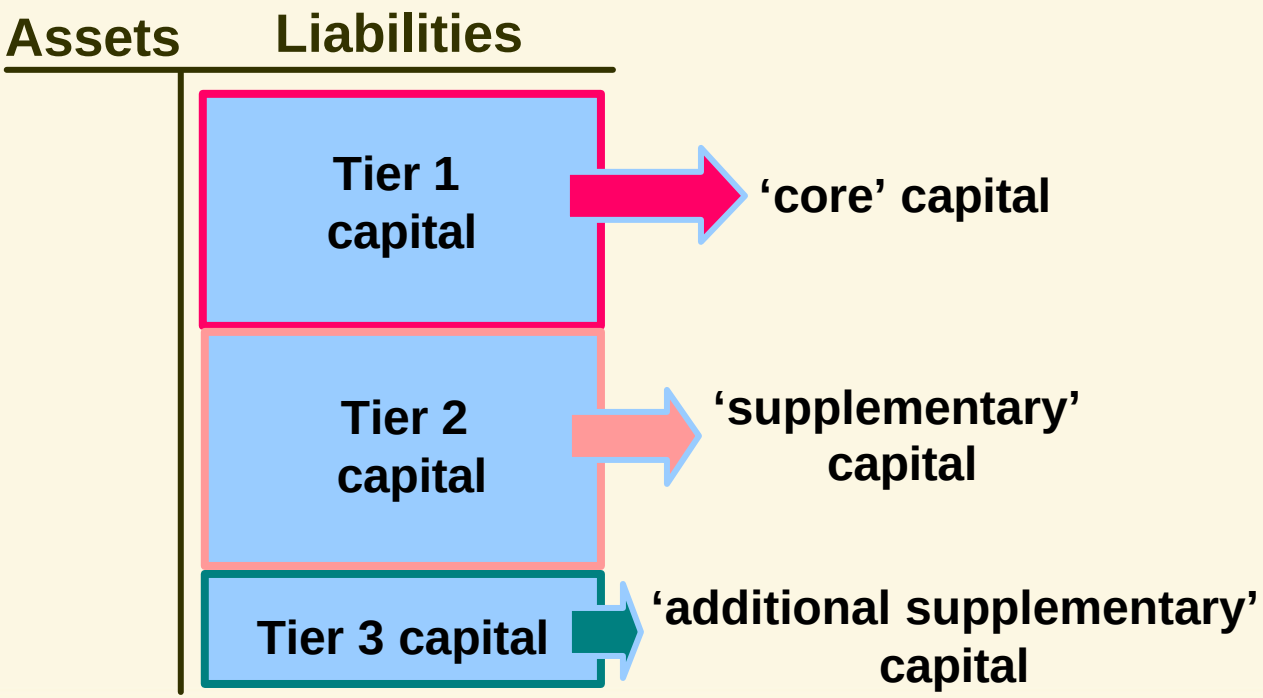
- Regulation on the Liability Side (regulatory capital)
- Regulation on the Asset Side (risk-weighted assets)
- Addressing the Gap between Assets & Liabilities



Definition of Regulatory Capital

Criteria:

- Permanence
- Ability to fully absorb losses on an ongoing basis
- Degree of subordination
- Bank's discretion on payments



Definition of Regulatory Capital

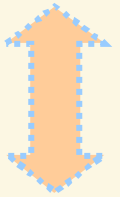
Tier 1

- Common equity
- Disclosed Reserves
- Non-cumulative perpetual stock
- (Tier 1) 'Innovative' capital instruments (max. 15% of Tier 1)

Tier 2

- Hybrid Debt-Capital Instruments
- Undisclosed and Revaluation Reserves
- General Provisions (Basel I and Basel II SA : max. 1.25% of rwa, Basel II IRB: max. *total* provisions max. 0.6% of credit risk weighted assets)

upper Tier 2
(max. 100% of Tier 1)



(max. 50% of Tier 1)
lower Tier 2

- Subordinated Term Debt

Tier 3

- Short-term Subordinated Debt
  - Only for supporting market risk, max. 250% of Tier 1

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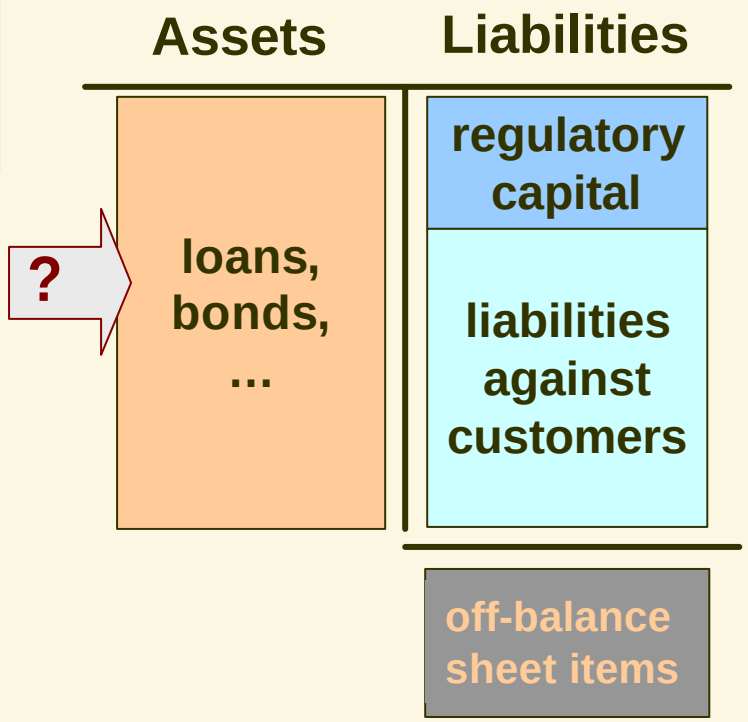


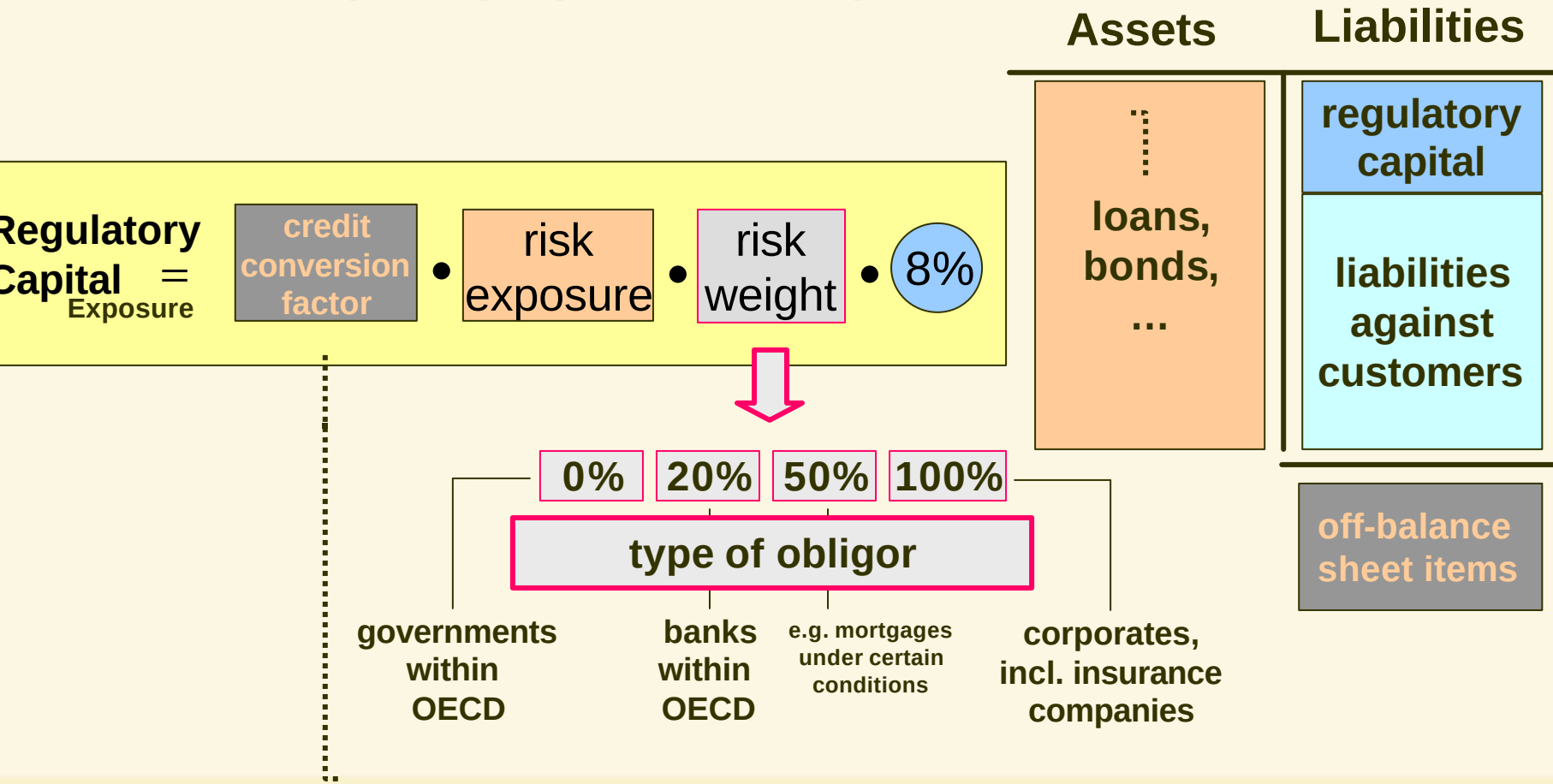
Capital Adequacy Standard Setting for Banks
- BASEL I (1988) -

- **Credit risk** ✓
- **Market risk** ✓
- **Operational risk** ✗
- **Liquidity risk** ✗

inherently but not explicitly

- Adopted by about 130 countries worldwide

Capital Adequacy Standard Setting for Banks - Basel I (1988) - (Credit Risk)



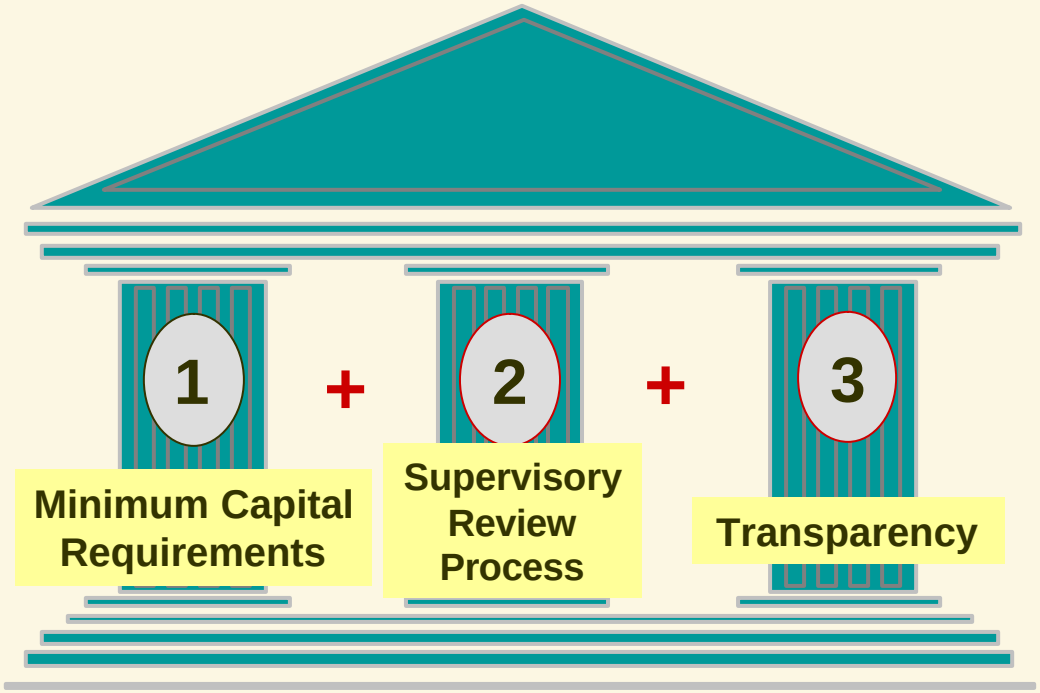
Basel I: Conclusions

- Only minimum capital requriements
- Limited set of risk weights according to the type of obligor
- Not risk sensitive enough
- Limited recognition of risk mitigation techniques
  - e.g. no regulatory relief for financial guarantees provided by private insurance companies or highly rated corporates
- Regulatory arbitrage incentives (accross countries and industries)
  - lay off less risky assets and retain riskier assets
  - do business with less regulated industries
- Level playing field issues

Basel II: The New Capital Adequacy Framework - Objectives of the New Framework -

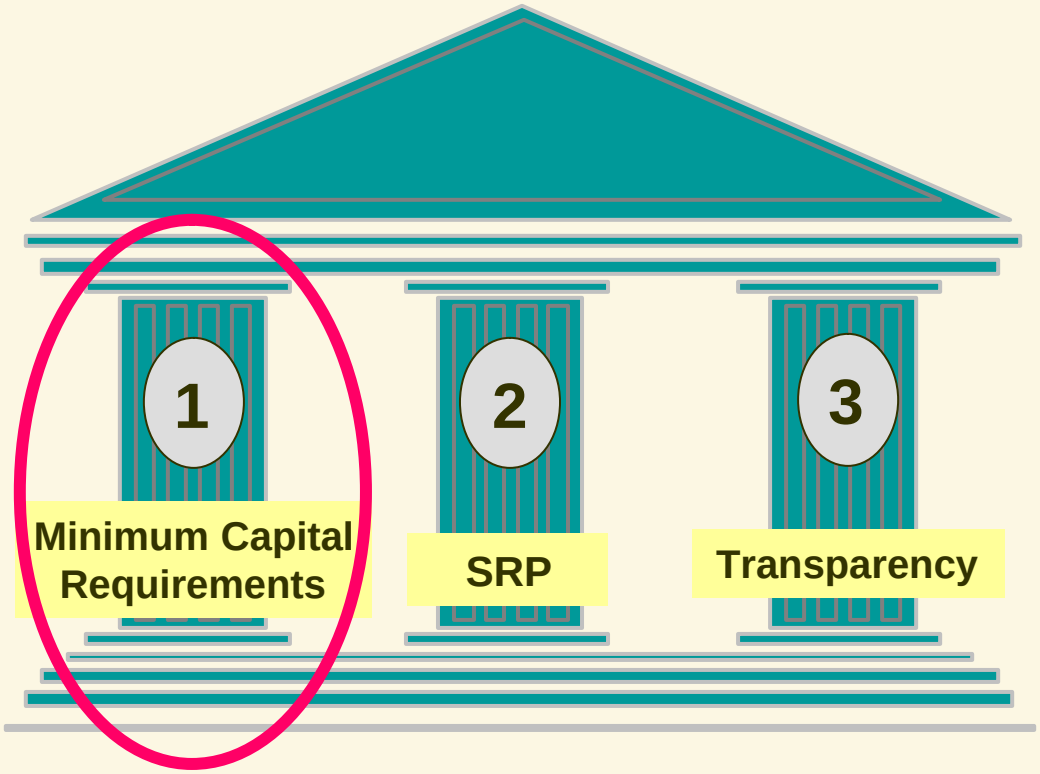
- Capital requirements based on the riskiness of a bank's positions and activities; more risk sensitive
- Better alignment of regulatory capital and economic risk
- Focus on internationally active banks but suitable for banks of varying complexity and sophistication because of standardised and internal ratings based minimum capital approaches
- Encourage banks to improve risk management by providing incentives to move from one approach to the next
- Promote safety and soundness of the financial system
- Foster level playing field

Basel II: The New Capital Adequacy Framework - The Three Mutually Reinforcing Pillars -

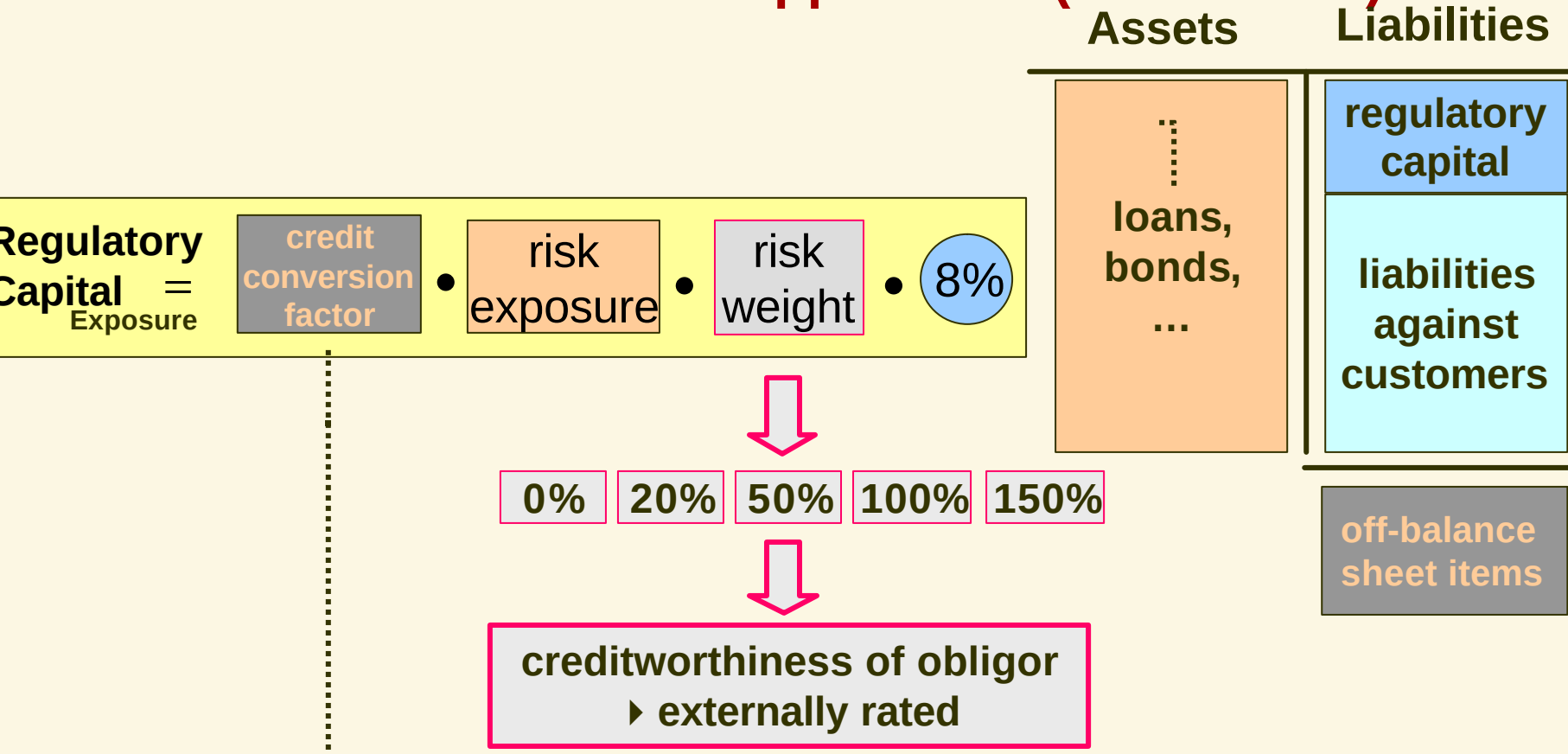


- The three pillars **together** are intended to achieve a level of capital commensurate with a bank's overall risk profile

Basel II: The New Capital Adequacy Framework



Capital Adequacy Standard Setting for Banks
Basel II – Standardised Approach – (Credit Risk)



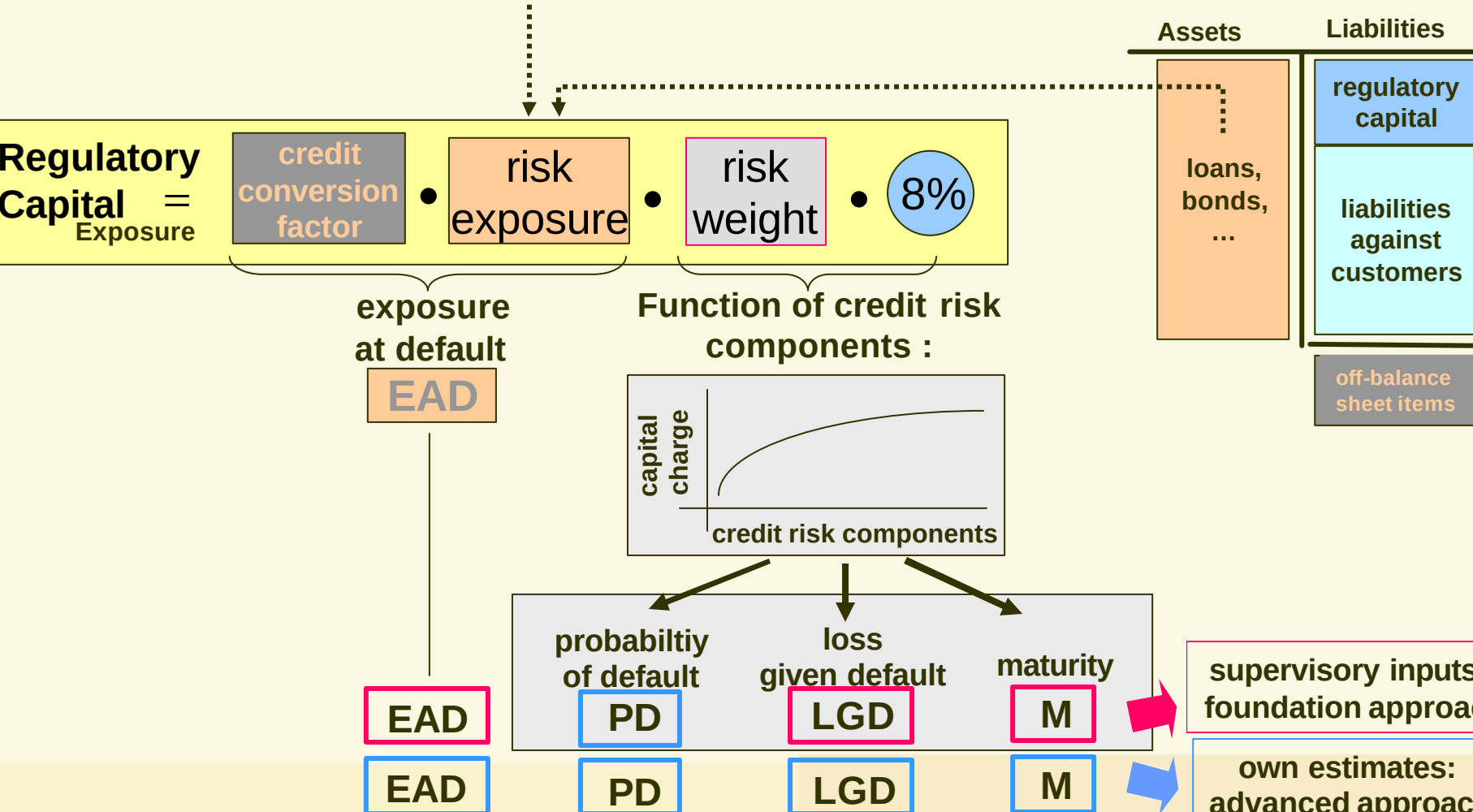
Basel II: The New Capital Adequacy Framework - The Standardised Approach (Credit Risk) -

Risk Exposures against		External Ratings						
		AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	below B-	not rated
Sovereigns		0 %	20 %	50 %	100 %	100 %	150 %	100 %
Banks	Option 1	20 %	50 %	100 %				50 %
	Option 2			50 %				
Corporates				100 %		150 %		100 %
Securitisations		20 %	50 %	100 %	350 %[1]	deduction		decuction with exceptions

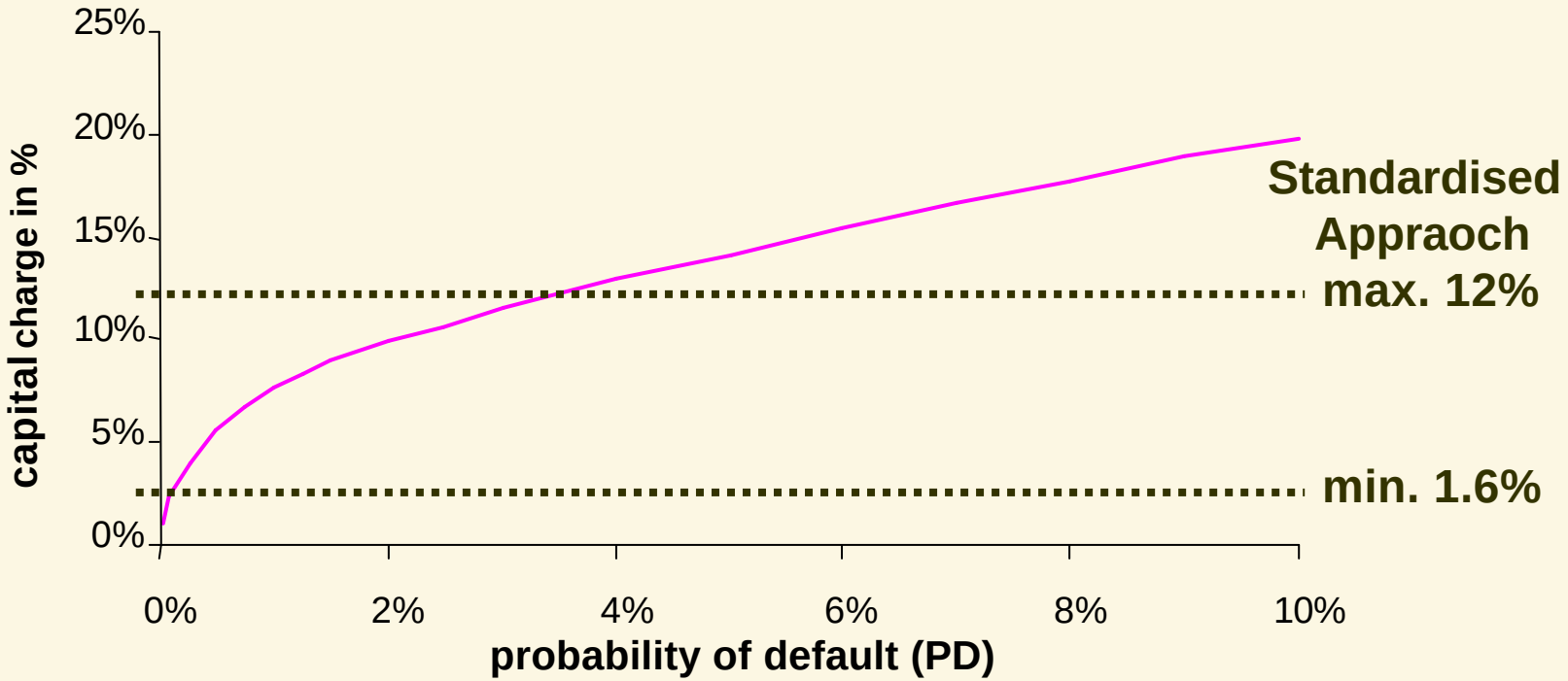
Option 1: in general one notch lower than the sovereign
Option 2: in general according to the external rating

[1] 350% only for investors, originators deduct

The New Capital Adequacy Framework
- The Internal Ratings Based Approach - (Credit Risk)



Example: Capital charges for corporate exposures under the IRB Foundation Approach



"IRB" does not always mean lower capital requirements

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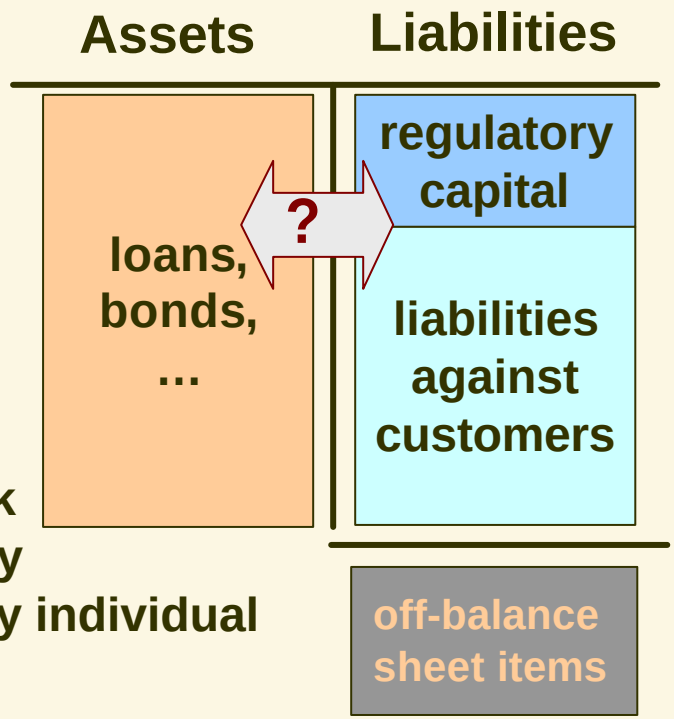
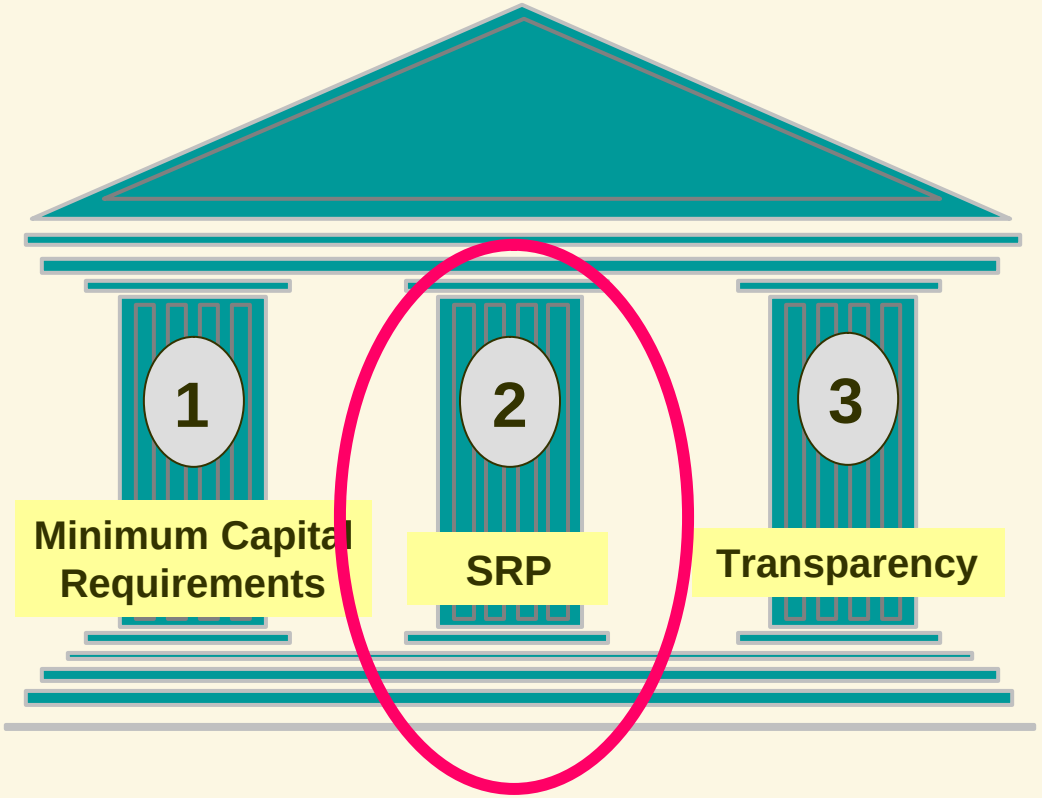


No mandatory capital charge for interest rate risk in the banking book and liquidity risk because complexity and range of activities undertaken by individual banks vary siginificantly.

Basel II: The New Capital Adequacy Framework



Supervisory Review of Capital Adequacy

Pillar 2 is based on four key principles:

- **Banks' Own Assessment of Capital Adequacy**
- **Supervisory Review Process**
- **Capital Above Regulatory Minima**
- **Supervisory Intervention**

Banks' Own Assessment of Capital Adequacy

- Level & sophistication of capital adequacy assessment process tailored to the bank's activities & risks involved in these activities
  - Board and senior management oversight + policies & procedures to ensure that the bank identifies, measures, monitors & controls all material risks, i.e. at a minimum:
    - credit risk
    - market risk
    - operational risk
    - interest rate risk in the banking book
    - liquidity risk

- Own assessment of correlations, quality of risk transfer, etc.
- Internal controls, reviews, audits to ensure integrity of the overall management process
- Strategic planning

Pillar 2: Interest Rate Risk in the Banking Book

739. ***Interest rate risk in the banking book:*** The **measurement process should include all material interest rate positions of the bank and consider all relevant repricing and maturity data**. Such information will generally include current balance and contractual rate of interest associated with the instruments and portfolios, principal payments, interest reset dates, maturities, the rate index used for repricing, and contractual interest rate ceilings or floors for adjustable-rate items. **The system should also have well-documented assumptions and techniques**.

740. Regardless of the type and level of complexity of the measurement system used, **bank management should ensure the adequacy and completeness of the system**. Because the quality and reliability of the measurement system is largely dependent on the quality of the data and various assumptions used in the model, management should give particular attention to these items.

Basel Committee on Banking Supervision: ‚Principles for the Management of Interest Rate Risk', July 20 - Key Interest Rate Risk concepts -

- Types of interest rate risk
  - Repricing risk
  - Basis risk
  - Yield curve risk
  - Options risk

- Management of interest rate risk
  - Earnings vs. Economic value perspective

Types of Interest Rate Risk (I)

- Repricing risk (maturity mismatch risk):
  - Arises through differences in timing of rate changes and cash flows that occur in pricing and maturity of financial instruments
  - Often the most apparent type of interest rate risk for a bank
- Basis risk:
  - Arises from a shift in the relationship of interest rates in different markets or on different financial instruments
- Yield curve risk:
  - Arises from variations in movements of interest rates across the maturity spectrum (yield curve)
  - Involves changes in the relationship between interest rates in different maturities of the same index

Types of Interest Rate Risk (II)

- Option risk:
  - Arises when the bank or its customer has the right (but not the obligation) to alter the level and timing of cash flows of a financial instrument, i.e. banks tend to write options
  - Typically result in asymmetrical risk profiles

E.g. ? ***Prepayment option:***

- equivalent to a written call option
- when rates decline, customers exercise by prepaying loans
- asset maturities shorten just when bank would like to extend them

? ***Early withdrawal:***

- equivalent to a written put option
- when rates increase, customers exercise by moving deposit elsewhere for better rate
- bank may have to pay higher rate maintain funding

Earnings vs. Economic Value

- **Earnings perspective:**
  - Considers how interest rate changes affect reported net interest income
  - Need to consider fee related business
  - Generally considers relatively short (1-2 years) time frame
  - Gap and simulation models most common measurement tools
- **Economic perspective:**
  - Evaluates sensitivity of economic value (EVE)
  - EVE = net PV (assets less liabilities ± off-balance sheet items)
  - captures PV of underlying cash flows
  - Measures longer-term IRR exposure
  - Duration and simulation models most common measurement tools.

Basel Committee on Banking Supervision: ‚Principles for the Management of Interest Rate Risk', July 200

Capital Adequacy

- *Principle 14*: Banks must provide the results of Interest Rate Risk measurement system expressed in terms of the threat to economic value using a standardised interest rate shock.
  - For exposures in G10 currencies
    - +/- 200 bp parallel rate shock for each (material) currency
    - VaR method (1st & 99th percentile of observed interest rate changes using a 1 year holding period and 5 years of observation)
  - For exposures in non-G10 countries
    - Parallel rate shock substantially consistent with 1st & 99th percentile
    - VaR method

Basel Committee on Banking Supervision: ‚Principles for the Management of Interest Rate Risk', July 200

Capital Adequacy

- *Principle 15*: If supervisors determine a bank is not holding capital commensurate with level of IRR, they should consider remedial action, requiring the bank to reduce its risk, to hold more capital, or a combination of the two.
  - In particular for 'outlier banks', i.e. banks where interest rate risk in the banking book leads to a decline in economic value of more than 20% of the sum of Tier 1 and Tier 2 capital under the standardized interest rate shock or its equivalent.

Pillar 2: Liquidity Risk

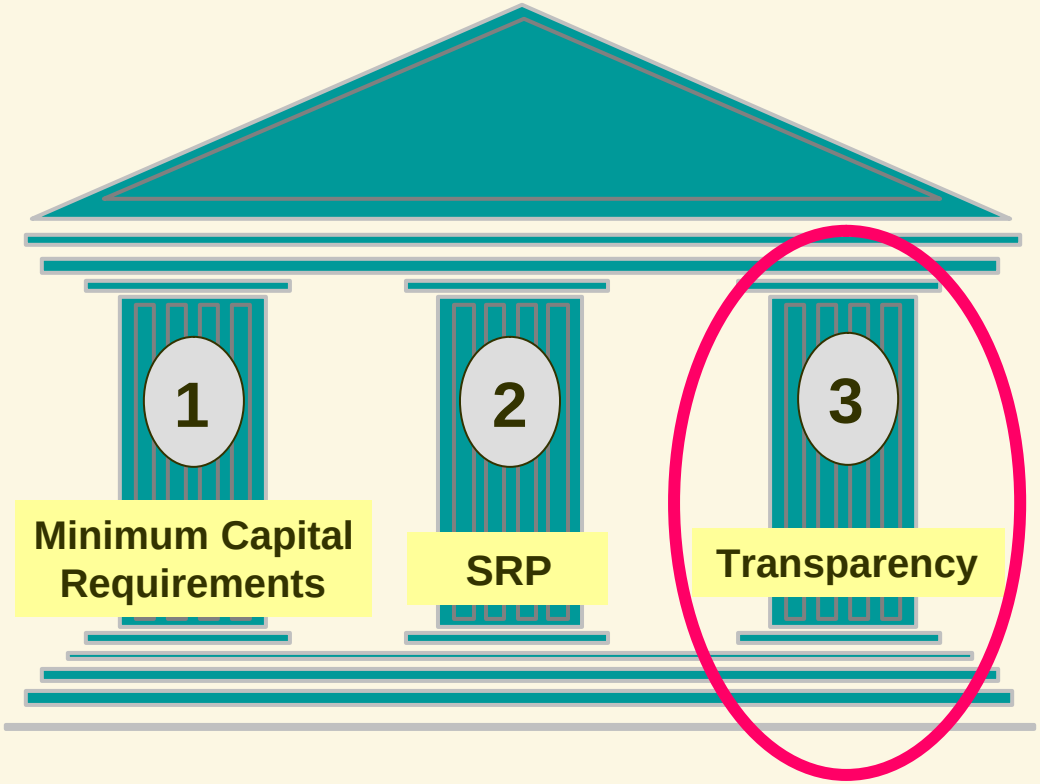
741. ***Liquidity risk:*** Liquidity is crucial to the ongoing viability of any banking organisation. Banks' capital positions can have an effect on their ability to obtain liquidity, especially in a crisis. **Each bank must have adequate systems for measuring, monitoring and controlling liquidity risk**. **Banks should evaluate the adequacy of capital given their own liquidity profile and the liquidity of the markets in which they operate**.

Regulatory Liquidity Requirements vs. Supervisory Review of Liquidity Risk

- Regulatory liquidity requirements
  - A number of countries have implemented regulation on liquidity ratios
  - Mechanical approach
- Supervisory review of liquidity risk
  - Assess stability of liability funding sources
  - Consider level of unfunded loan commitments
  - Determine asset liquidity sources
  - Market access
  - Risk management quality

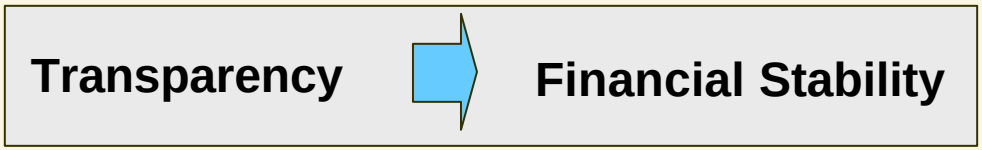
Supervisory Review of Capital Adequacy

Basel II: The New Capital Adequacy Framework



Objective of Pillar 3

- Promote safe and sound banking practices through market discipline



- Add a risk perspective to disclosure:
  Develop a set of disclosure requirements which will allow market participants and the public in general to assess key pieces of information about a bank's risk profile, risk management process and capital adequacy
- Enhance comparability of banks

Disclosure Requirements

- Management's responsibility for disclosure policy and process
- Pillar 3 requires that banks disclose
- General information on the bank's business (e.g. types of business conducted, rating agencies used, valuation approaches, etc.)
- the scope of application of Basel II
- Disclosure on regulatory capital
  - Structure and adequacy of regulatory capital
  - Aggregated capital requirements according to risk types (credit risk, market risk, operational risk)
- Disclosure on risk exposures and assessments

Certain Pillar 3 requirements are prerequisites for applying Pillar 1 approaches, e.g. quantitative and qualitative disclosure for portfolios subject to IRB approaches

Disclosure Requirements
– Interest Rate Risk in the Banking Book –

- 824. For each separate risk area (e.g. credit, market, operational, **banking book interest rate risk**, equity) banks must describe their risk management objectives and policies, including:
  - strategies and processes;
  - the structure and organisation of the relevant risk management function;
  - the scope and nature of risk reporting and/or measurement systems;
  - policies for hedging and/or mitigating risk and strategies and processes for monitoring the continuing effectiveness of hedges/mitigants.

Disclosure Requirements
– Interest Rate Risk in the Banking Book –

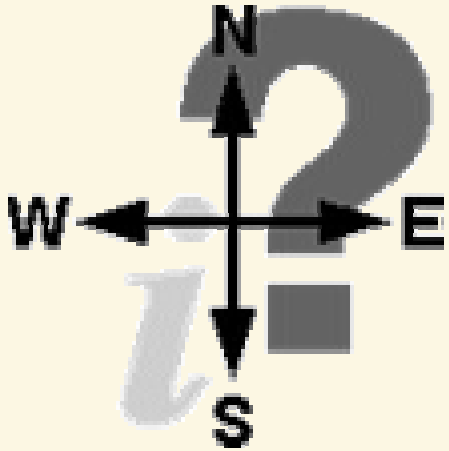
Table 13 **Interest rate risk in the banking book (IRRBB)**		
Qualitative disclosures		The general qualitative disclosure requirement (para 824), including the nature of IRRBB and key assumptions, including assumptions regarding loan prepayments and behaviour of non-maturity deposits, and frequency of IRRBB measurement.
Quantitative disclosures		The increase (decline) in earnings or economic value (or relevant measure used by management) for upward and downward rate shocks according to management's method for measuring IRRBB, broken down by currency (as relevant).

The New Capital Adequacy Framework
- Timetable -

- Timetable for Implementation
  - end of 2006
    - Standardised and Foundation IRB Approach for credit risk
    - Standardised and Basic Indicator Approach for Op Risk
  - end of 2007
    - Advanced IRB Approach for credit risk
    - Advanced Measurement Approach for Op Risk

Regulatory Approach to Assets and Liabilities in Banks

- Provides the current regime (Basel I) enough power to address ALM?
- How will the situation look under Basel II?
- What kind of level playing field issues are to be considered?
- Should there be mandatory capital charges for IRRBB and liquidity risk?



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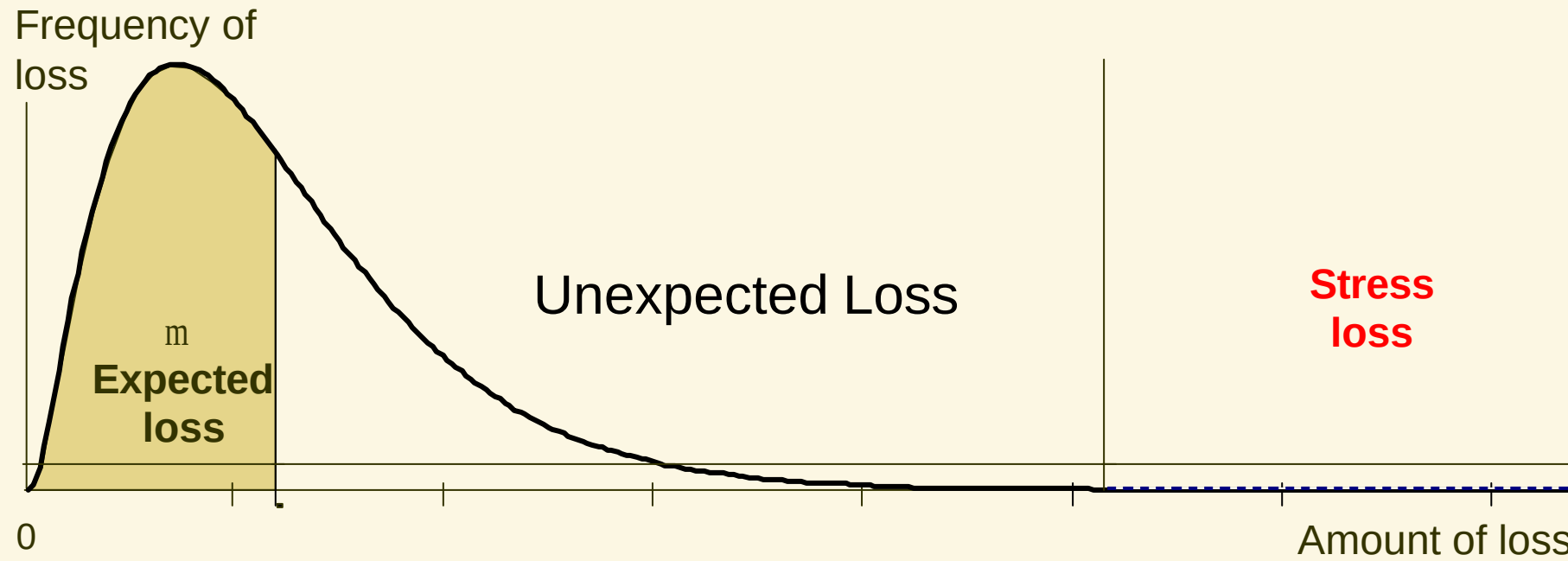
(Typical shape of a) Distribution for Credit Risk



Banks under IRB:

$$\frac{Tier1+\left[Tier2+(\mathrm{Pr}-EL)^{*}\right]+Tier\ 3}{12.5\times UL}\geq 8\%$$

*Shortfall to be deducted 50/50% from Tier 1/Tier 2, Excess to be added to Tier 2 up to 0.6% of RWA

Proposed changes to the framework

- CP3

$$\frac{Tier\ 1+(Tier\ \ 2+GP)}{12.5\times(UL+(EL-SP_{<EL}-EGP_{<EL}))}\geq 8\%$$

- New Proposal

$$\frac{Tier1+\left[Tier\,2+(\mathrm{Pr}-EL)^{*}\right]+\ Tier\ 3}{12.5\times UL}\geq 8\%$$

* { Shortfall to be deducted 50/50% from Tier 1/Tier 2
Excess to be added to Tier 2 up to 0.6% of RWA