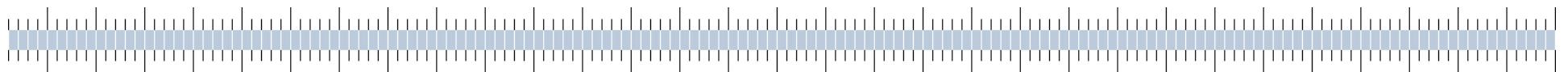


Features of IRB Approaches to Credit Risk

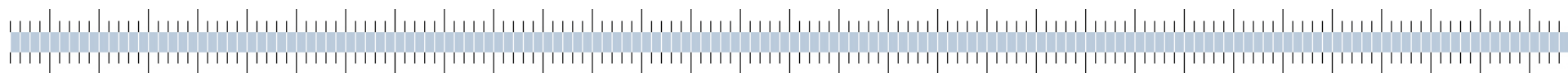
Overview of Basel II Framework

Dr. Jens Bruderhausen

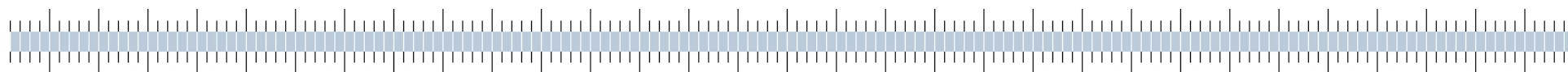


Agenda

- | **Introduction to Basel II: Three pillar approach**
- | **Standard approach to credit risk**
- | **Internal Ratings Based Approach**
- | **Definition of a rating system**
- | **Exposure classes**
- | **Approval process**
- | **CRM (brief)**
- | **Qualitative Minimum Requirements**



THREE PILLAR APPROACH



Basel II – The three pillars of the Revised Framework

Basel II (Stability of the financial market)

Pillar I “Minimum Capital Requirements”

Credit Risk

- Revised Standard Approach (RSA)
- Internal rating Based Approach (IRBA)

Market Risk

- Standardized Approaches
- Internal models

Operational Risk

- Standardized Approaches
- Internal models

Quantity / Regulators’ Perspective

Pillar II “Supervisory Review Process of Capital Adequacy”

- Banking Supervisors’ Analyses of specific Risk Situation of a Single Bank;
- Holistic View of all Risks;
- Evaluation of the Risk Management

Additional Risks to include:

e.g. IRR Banking Book, Risk Concentrations, Liquidity risk

Quality / Institutions’ Perspective

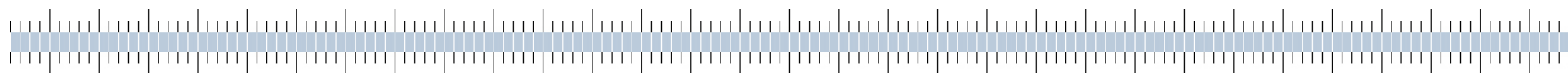
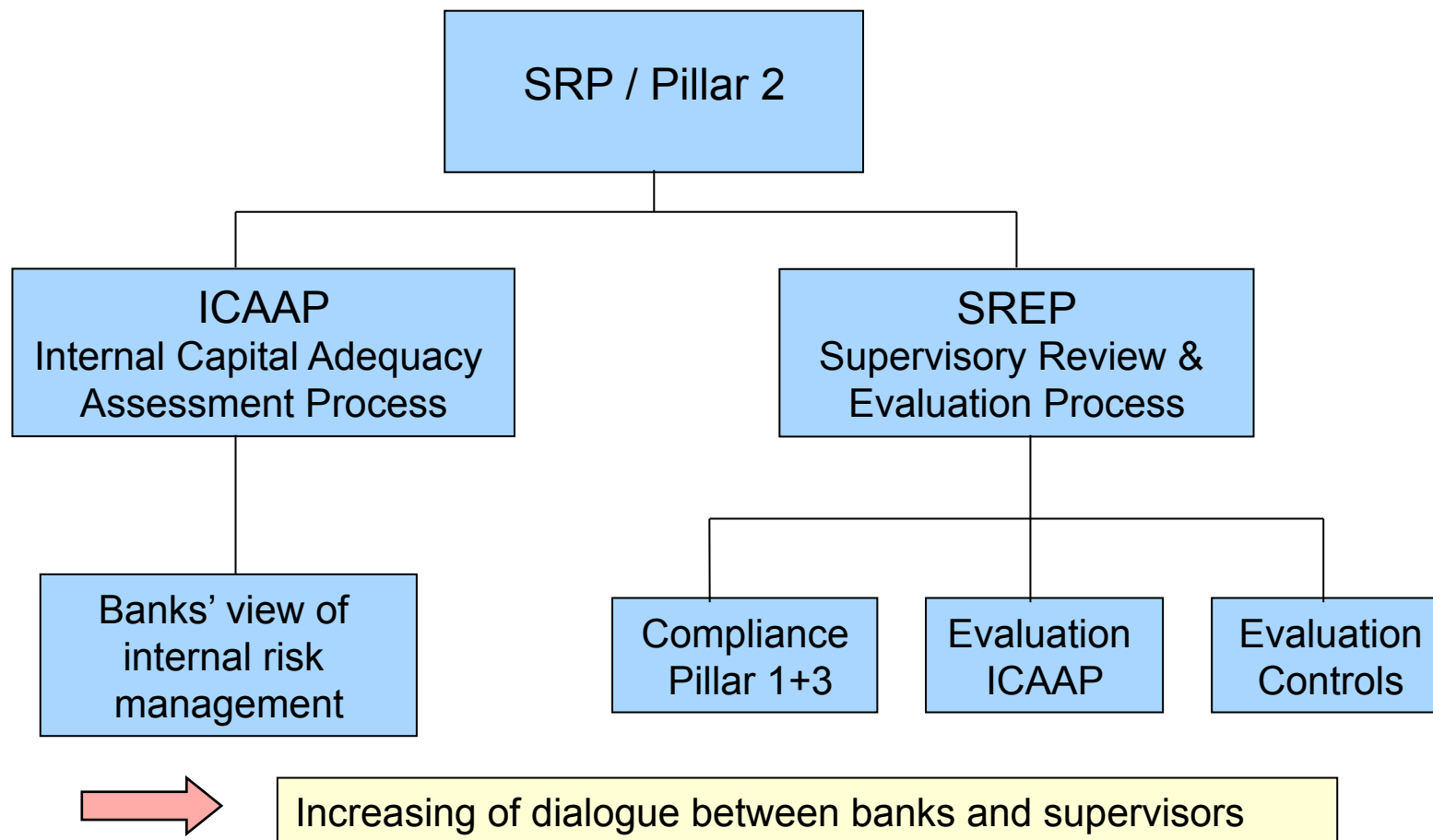
Pillar III “Market Discipline”

Promotion of Market Discipline by expanded Disclosure of Information

Additional Informations about:
e.g. capital, Risks, Risk Management, Methods of Risk Quantification

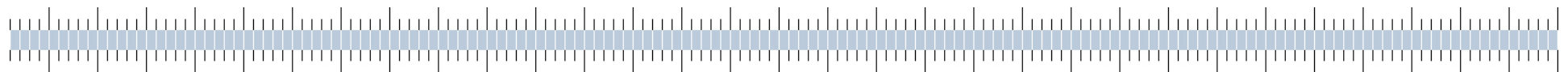
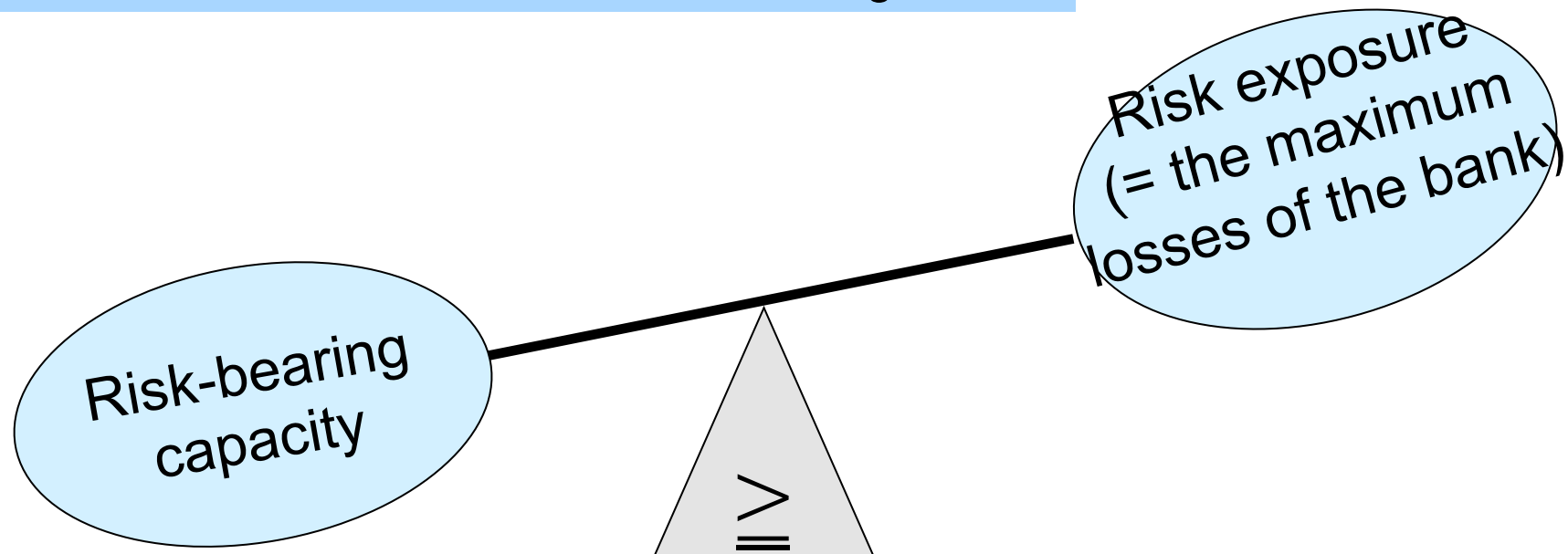
Transparency / Market Perspective

Supervisory Review Process (SRP) Overview

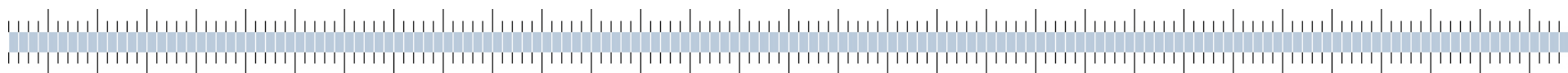


Risk-bearing capacity

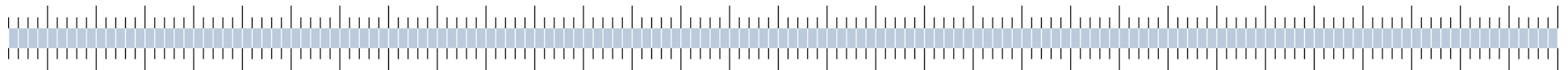
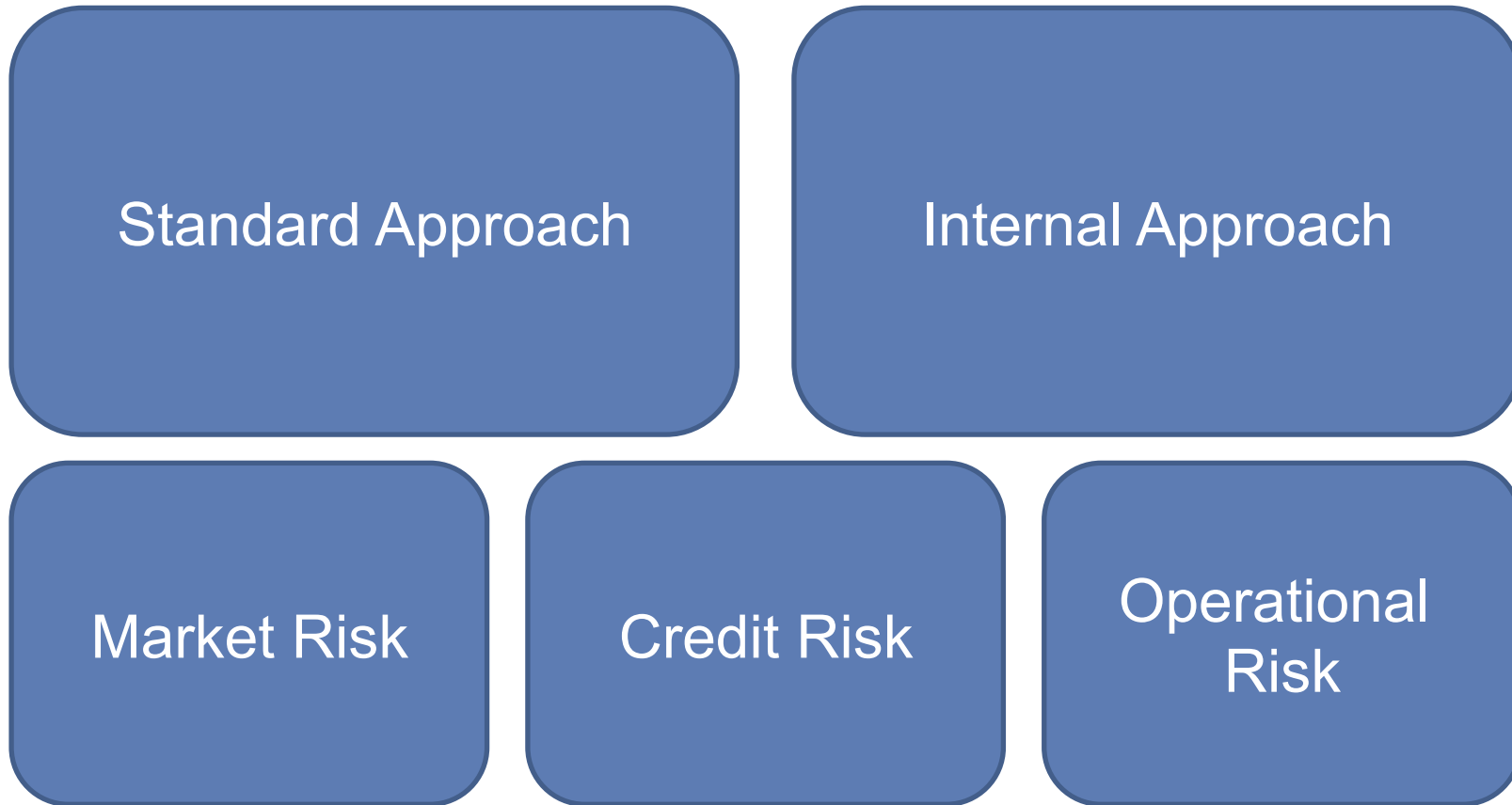
AT 4.1 MaRisk: Basic rule for risk management



Risk-bearing capacity

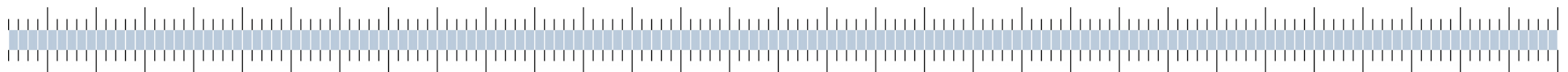


Minimum Capital Requirements (Pillar 1)

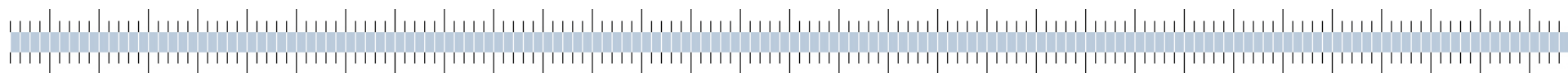
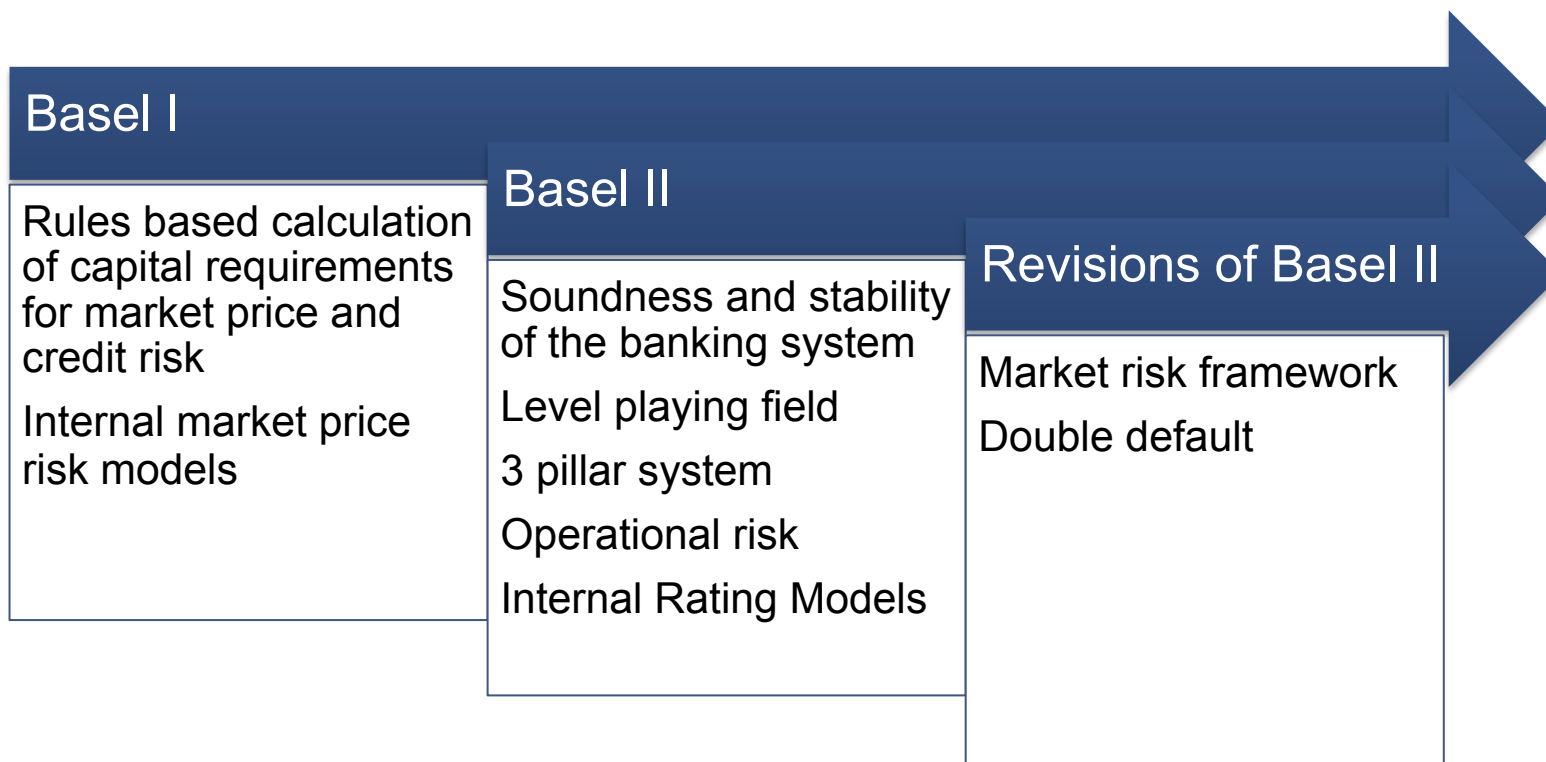


Market Discipline (Pillar 3)

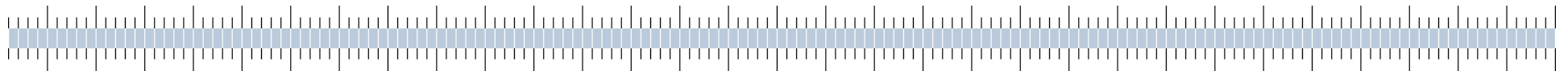
- **Promotion of disclosure and transparency of banks' information**
- **Market participants will have access to insightful information on**
 - Scope of application
 - Capital structure
 - Capital adequacy
 - Risk exposure and risk assessment
- **Promotion of market discipline**
 - Evaluation of bank's risk management
 - Reward adequate risk-return-relationship
 - Leading to additional incentives for banks to effectively manage their risks
- **Use of market mechanisms for banking supervision**



The Road to Basel II



CREDIT RISK STANDARD APPROACH



Overview

- Measurement approaches for credit risk -

Credit Risk Standardised Approach (CRSA)

- based on **external ratings** (credit assessments from rating agencies, export credit agencies)
- **risk weight categories** defined by supervisory authorities

limited recognition of **collateral**

IRB-Approach (IRBA)

Foundation IRB Approach

- based on **internal ratings** (bank determines the obligor's resp. claim's individual risk parameters)

- **risk weight functions** determined by supervisory authorities

- additional **minimum requirements**

certain collaterals recognised

Advanced IRB Approach

high implementation efforts

all types of collaterals

Capital requirements

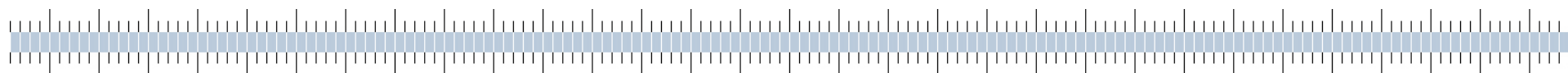
System requirements

Standardised Approach

- CRSA is based on external credit assessments
- Risk weights derived from external ratings

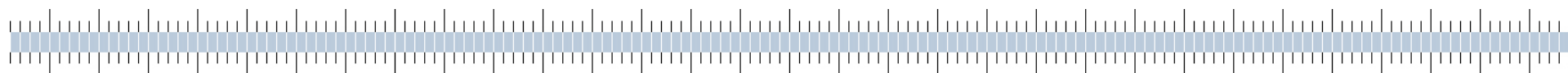
S & P	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ to B-	Worse than B-
Credit quality	1	2	3	4	5	6

- Approval of external credit assessments institution (ECAI) by supervisor
- Nomination per exposure class to prevent cherry-picking
- Disclosure of chosen ECAI and ratio of risk weighted assets per ECAI



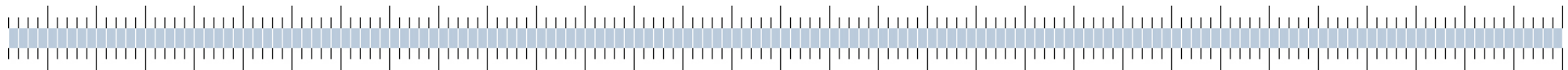
CRSA Capital Requirements

$$\begin{aligned} & \text{CRSA assessment basis} \\ & \quad \text{conversion factor} \\ = & \quad \text{CRSA exposure value} \\ \\ X & \quad \text{CRSA risk weights} \\ = & \quad \text{Risk-weighted CRSA exposure value} \\ \\ X & \quad 8 \% \\ = & \quad \text{Capital Requirement} \end{aligned}$$



CRSA Exposure Classes

- | **Central governments**
- | **Regional governments and local authorities**
- | **Other public-sector entities**
- | **Multilateral development banks**
- | **International organisations**
- | **Institutions**
- | **Covered bonds issued by credit institutions**
- | **Corporates**
- | **Retail business**
- | **Exposures secured by real estate property**
- | **Exposures in the form of collective investment undertakings (CIU)**
- | **Equity exposures**
- | **Securitisation positions**
- | **Other items**
- | **Past due items**



CRSA Assessment Basis

On
balance
sheet
items

Off balance sheet items

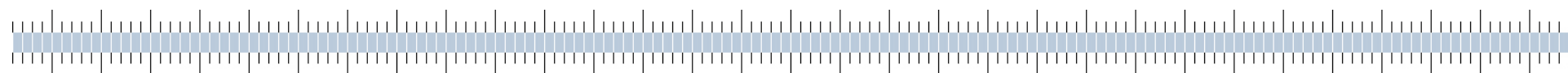
Derivative
exposures

Book
value

Book
value of
claims

Contingent
claims

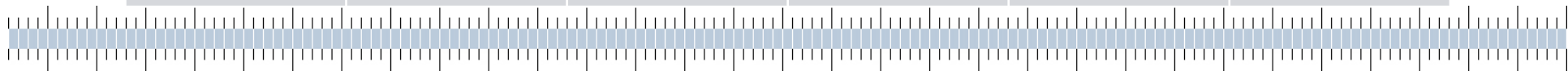
Basis of
calculation
product
specific



CRSA Credit Conversion Factor



Credit quality step	Central governments	Institutions	Corporates	Securitisations	Retail
1	0 %	20 %	20 %	20 %	75 % Private customers Small enterprises Diversification
2	20 %	50 %	50 %	50 %	
3	50 %	100 %	100 %	100 %	
4	100 %	100 %	100 %	350 %	
5	100 %	100 %	100 %	1250 %	
6	100 %	100 %	100 %	1250 %	
Unrated	100 %	100 %	100 %	1250 % or inspection	



CRSA Securitisation Provisions

| A CRSA securitisation transaction is any securitisation transaction whose securitised portfolio, measured in terms of assessment bases, consists mostly of.'

| Assessment base: CRSA / IRBA

| Mostly: > 50 % of secured loans

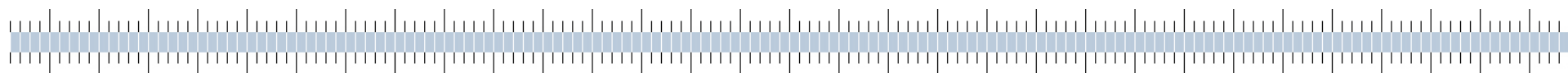
| Securitisation framework applies to CRSA and IRB

| Separate exposure class: Securitisations

| Calculation of capital requirements

| Based on external ratings

| Different risk weights for CSRA and IRBA

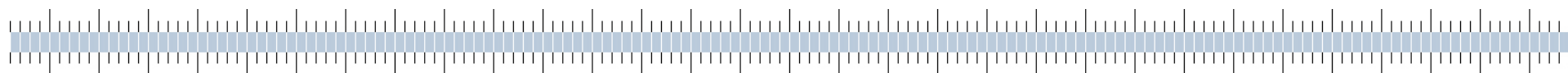


CRSA Capital Requirements for Securitisations



Assessment basis
X Conversion factor
X Risk weights
= Risk-weighted exposure value

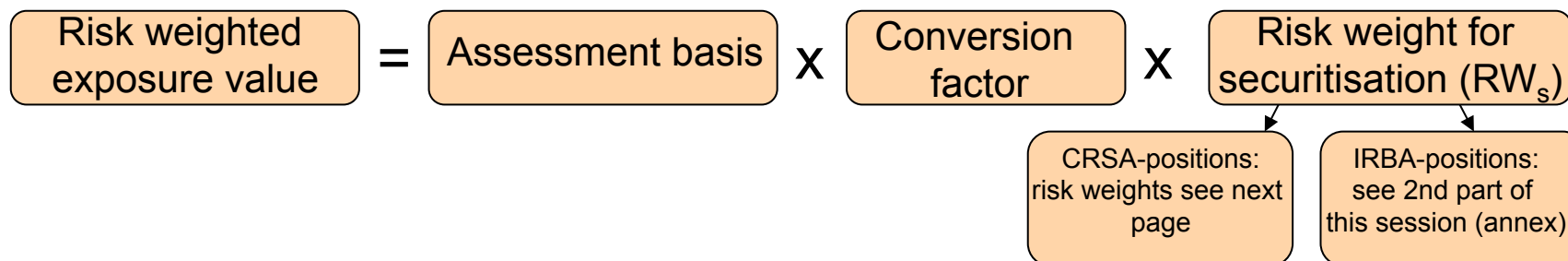
X 8 %
= Capital Requirement



Capital requirements and parameters

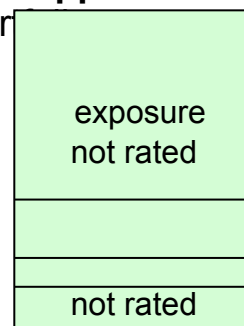
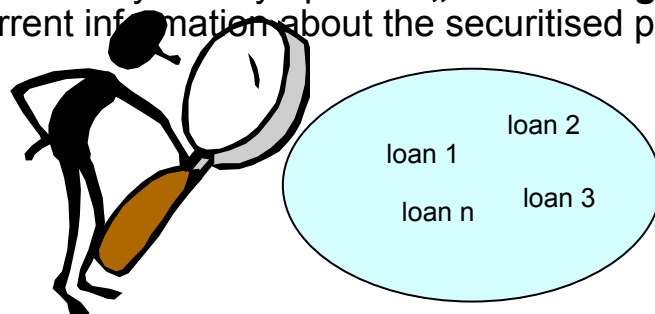
4. Securitisation provisions – CRSA capital requirements

Calculation of capital requirements :



Conversion Factor: 100%, but for the undrawn portion of market disruption and liquidity facility 0%, 20% or 50% (factors will be revised as a consequence to the financial crisis)

If a CRSA securitisation position has no external rating, you may apply a risk weight of 1250% or you may opt for a „look-through“-approach – precondition: the bank has sufficient current information about the securitised portfolio



only worthwhile for „most senior“ tranches:

$RW_s = \emptyset - RW$ of underlying assets
 \times „risk concentration ratio*“

*depends on the nominal amount of junior or pari passu tranches !

Capital requirements and parameters

4. Securitisation provisions – CRSA risk weights



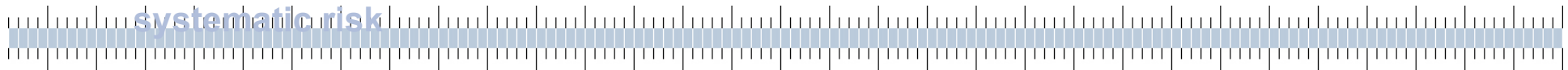
Credit quality step	1	2	3	4 (for long-term assessments only)	rest
CRSA-risk weight (without resecuritisations)	20 %	50 %	100%	350 %	1250 %
CRSA-risk weight for resecuritisations	40%	100%	225%	650%	1250%

from 2012 on

Treatment of resecuritisations:

- **Complexity** of resecuritisations structures was not fully considered by external rating agencies
- High impact of **correlation effects**
- Resecuritisations can lead to **portfolio diversification** but: **high systematic risks!**

=> External ratings overestimate diversification effects and underestimate the systematic risk



Berechnungsbeispiel

Stufe 1: Zuordnung zur KSA-Forderungsklasse: „Unternehmen“

Stufe 2: Zuordnung externes Rating zur Bonitätsstufe

- | AMB Generali: S&P-Rating: AA → Bonitätsstufe : 1
- | Dt.Telekom: S&P-Rating: BBB+ → Bonitätsstufe : 3
- | Air Canada: S&P-Rating: B- → Bonitätsstufe : 5

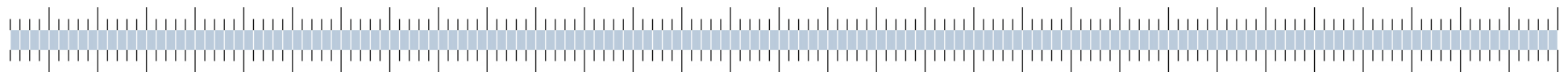
Stufe 3: Bestimmung Risikogewicht gemäß aufsichtlicher Tabelle

- | AMB Generali: Bonitätsstufe : 1 → KSA-Risikogewicht: 20 %
- | Dt.Telekom: Bonitätsstufe : 3 → KSA-Risikogewicht : 100 %
- | Air Canada: Bonitätsstufe : 5 → KSA-Risikogewicht : 150 %

Stufe 4: Positionswert x KSA-Risikogewicht x 8 % = Kapitalanforderung

AMB Generali:	1.000 EUR x 20 %	x	8 %	= <u>16 EUR</u>
Dt.Telekom:	1.000 EUR x 100 %	x	8 %	= <u>80 EUR</u>
Air Canada:	1.000 EUR x 150 %	x	8 %	= <u>120 EUR</u>

INTERNAL RATINGS BASED APPROACH

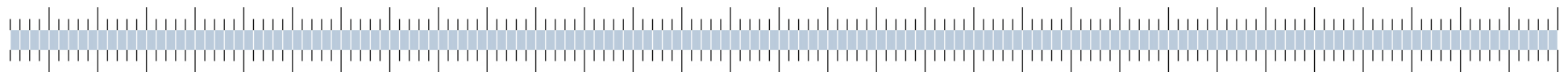


Internal Ratings Based Approach



■ Risk based calculation of capital requirements

- Depending on portfolio / risk appetite
- Sophistication of risk measurement reflect level of risk management
- Incentive to adopt more sophisticated approaches via reduced capital requirements



Q & A

