



Institute
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Battle of the Balance Sheets

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07 November 2016

Agenda

- **Risk-based capital requirements:** Banks vs. Insurers
- **Available capital**
- **Case study:** Corporate bond investment
- **The future**

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2

Overview | Balance Sheet Comparison

Banks		Insurance Companies	
Assets	Liabilities	Assets	Liabilities
Equity Securities	Capital	Cash	Capital
Cash	Debt Issued	Loans	Debt Issued
Debt Securities	Deposits	Debt Securities	Insurance Technical Reserves
Loans		Equity Securities	
		Unit-Linked Assets	Unit-Linked Liabilities

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3

Hypothesis

- Under an **arbitrage-free** financial system:
 - Different institutions will have the **same capital requirements** for the same risk
 - No reason for **internal risk transfers** within financial conglomerates
 - Institutions can compete **across lines of service**

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4

Alternative Hypothesis

- Activities performed by **different institutions** need to be regulated differently
- Capital is a **scarce resource**:
 - Deployment is **guided by regulation** but **driven by business model**

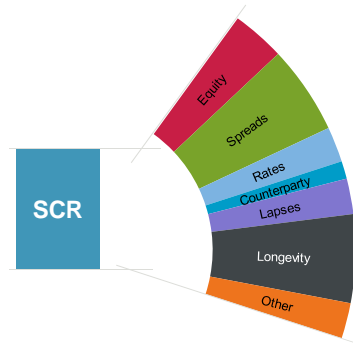
Risk-Based Capital Requirements



Insurers | Capital Requirements

Insurers under Solvency II

- The **Solvency Capital Requirement**, SCR shall correspond to the Value-at-Risk of the Basic Own Funds of an insurance or reinsurance undertaking subject to a confidence level of 99.5% over a one-year period.

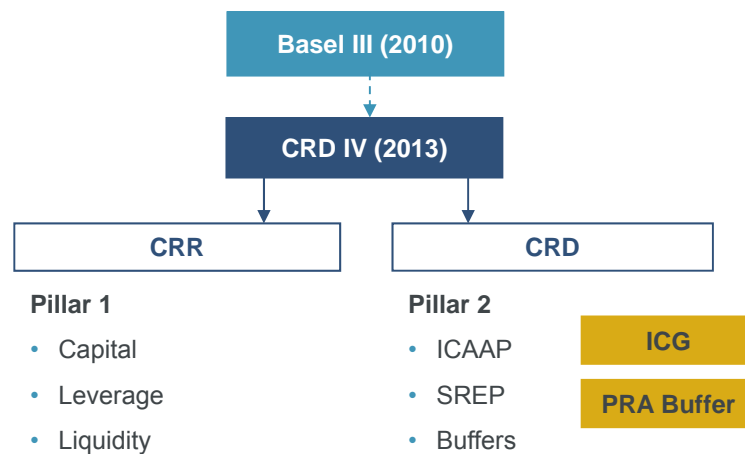


Source: Directive 2009-138-EC

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7

Banks | Basel III Implementation in Europe



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8

Banks | Regulatory “Pillars”

PILLAR 1 Minimum Capital and Liquidity Requirements	PILLAR 2 Supervisory Review Process	PILLAR 3 Market Discipline
Risk-weighted assets: <ul style="list-style-type: none"> • Credit • Market • Operational 	Supervision and risks not covered by Pillar 1: <ul style="list-style-type: none"> • Internal capital adequacy assessment process (ICAAP) • Stress tests 	<ul style="list-style-type: none"> • Transparency and comparability • Enhanced disclosures

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9

Banks | Pillar 2

Pillar 2A	Individual capital guidance and risks not covered (at all, or fully) in Pillar 1. For example: <ul style="list-style-type: none"> • Credit concentration risk • Interest rate risk in the banking book (IRRBB) • Pension scheme risk • Under-estimation risk (e.g. operational)
Pillar 2B	Stress tests review a bank’s ability to withstand a supervisor-defined stress event

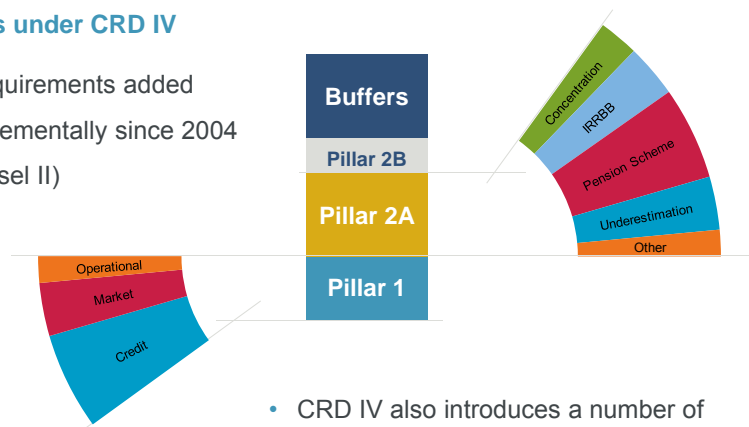
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10

Banks | Capital Requirements

Banks under CRD IV

- Requirements added incrementally since 2004 (Basel II)



- CRD IV also introduces a number of additional **capital buffers**

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11

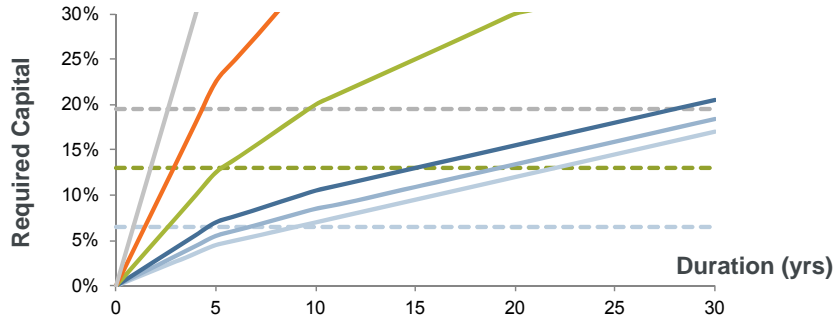
Capital Requirements | Comparison

	Solvency II	Capital Requirements Regulation
Overview	<ul style="list-style-type: none"> SCR aims to cover all material risks Risk-weighting based on expected change in risk factor 	<ul style="list-style-type: none"> Static risk weights for key risks Must withstand regulator-defined stress tests Additional non-risk-based requirements and buffers
Diversification	<ul style="list-style-type: none"> Correlation between risk factors 	<ul style="list-style-type: none"> Summation of capital charges across risk modules
Calibration	<ul style="list-style-type: none"> 99.5thile 1-year VaR Balance sheet 	<ul style="list-style-type: none"> Inconsistent across risk modules Assets-only

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12

Case Study | Corporate Bonds



13% RWAs - - - AAA, AA & A - - - BBB & BB - - - B & CCC

SCR (Non-MA) - - - AAA - - - AA - - - A
 - - - BBB - - - BB - - - B & CCC

Source: Solvency II Standard Formula

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13

Available Capital



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Regulation | Capital Adequacy

$$\text{Capital} = \text{Assets} - \text{Liabilities}$$



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15

Solvency | Available Capital

Banks	Insurers
IFRS equity	IFRS equity
- intangibles	- intangibles
- expected losses	+/- valuation differences (incl. risk margin)
Common equity tier 1 (CET1)	+ future profits
+ other regulatory capital	+ other regulatory capital
Total Capital	Available Own Funds
- eligibility restrictions	- eligibility restrictions
Total Eligible Capital	Eligible Own Funds

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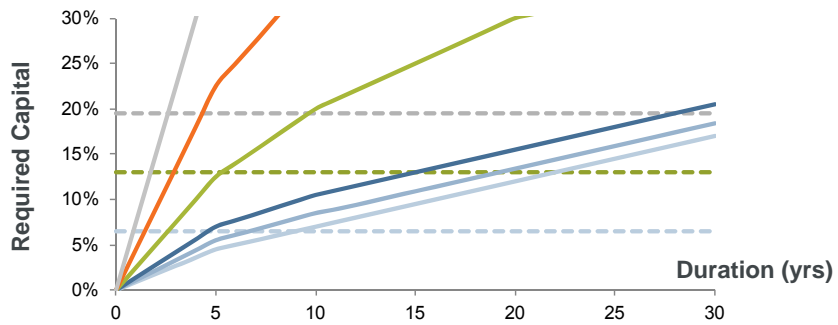
16

Case Study: Corporate Bond Investment



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Case Study | Corporate Bonds (Non-MA)



13% RWAs - - - AAA, AA & A - - - BBB & BB - - - B & CCC

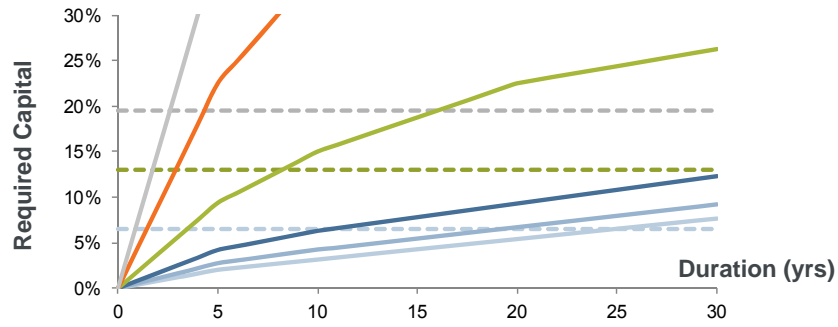
SCR (Non-MA) - - - AAA - - - AA - - - A
 - - - BBB - - - BB - - - B & CCC

Source: Solvency II Standard Formula

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18

Case Study | Corporate Bonds (MA)



13% RWAs - - - AAA, AA & A - - - BBB & BB - - - B & CCC

SCR (MA) - - - AAA - - - AA - - - A - - - B & CCC
 - - - BBB - - - BB

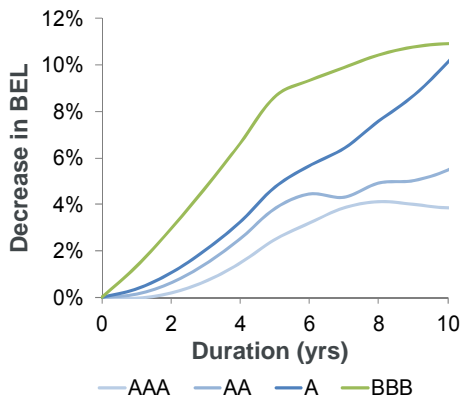
Source: Solvency II Standard Formula

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19

Case Study | Corporate Bonds (MA)

Net Impact = SCR - Decrease in BEL



A-rated (Non-Financials)

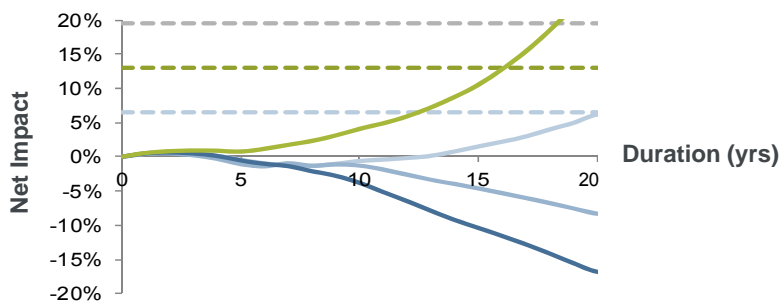
Dur (yrs)	SCR	Decrease in BEL	Net Impact
1	0.8%	0.4%	0.4%
2	1.7%	1.1%	0.6%
3	2.5%	2.0%	0.5%
4	3.4%	3.2%	0.2%
5	4.2%	4.7%	(0.5)%
7	5.0%	6.4%	(1.4)%
10	6.3%	10.1%	(3.8)%

Source: EIOPA, RBS, iBoxx spreads as at 30-Sep-2016

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20

Case Study | Corporate Bonds (MA)



13% RWAs - - - AAA, AA & A - - - BBB & BB - - - B & CCC

Net Impact (MA) - - - AAA - - - AA - - - A - - - BBB

Source: Solvency II Standard Formula, iBoxx, RBS

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21

The Future



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Other Regulatory Considerations | Banks

In addition to solvency capital, banks also have formal requirements for:

- **Leverage**
- **Liquidity**
- **Stable Funding**

Banks | Net Stable Funding Ratio

LCR focuses on short term, **NSFR on longer term stability**

- Compares term funding with term assets on a weighted basis

$$\text{NSFR} = \frac{\text{Available stable funding}}{\text{Required stable funding}} \geq 100\%$$

- Driver of banks **increasing term funding** or **reducing term assets**

Net Stable Funding Ratio | Examples

Asset	Maturity	RSF Factor
Residential mortgages	> 1 year	65%
Corporate loans	> 1 year	85%
AAA-AA Corporate bonds	All (unencumbered)	15%
A-BBB Corporate bonds	All (unencumbered)	50%

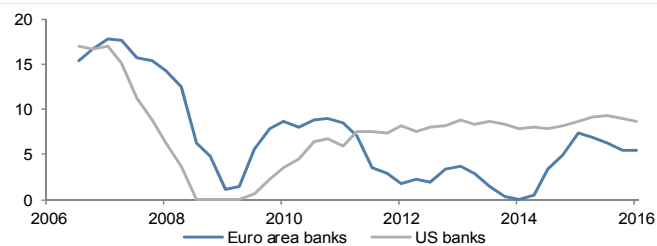
Liability	Maturity	ASF Factor
Retail deposits	< 1 year	90-95%
Regulatory capital	All, excl. <1Y Tier 2	100%
Funding / Other capital	< 1 year	0-50%
Funding / Other capital	> 1 year	100%

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25

Banks | Europe vs. US

Return on equity of European banks vs US banks

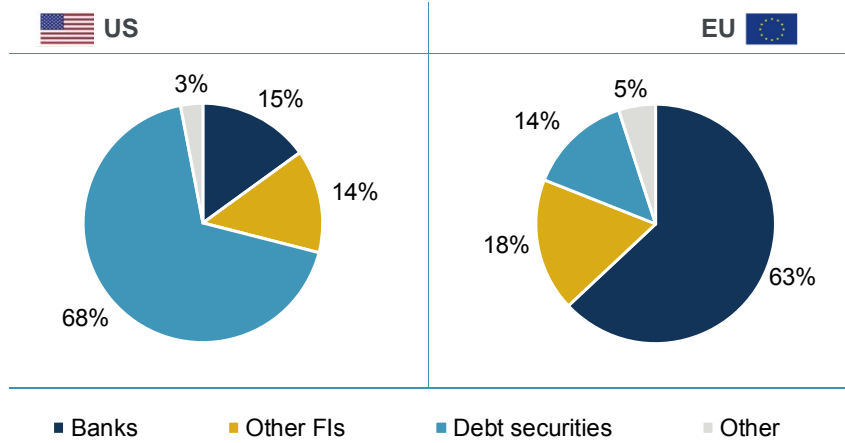


Source: Bloomberg.
 Weighted average values for the Dow Jones EURO STOXX bank index and KBW bank index members.
 RoE taken to be zero wherever negative

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26

Europe vs. US | Loans Assets by Holder

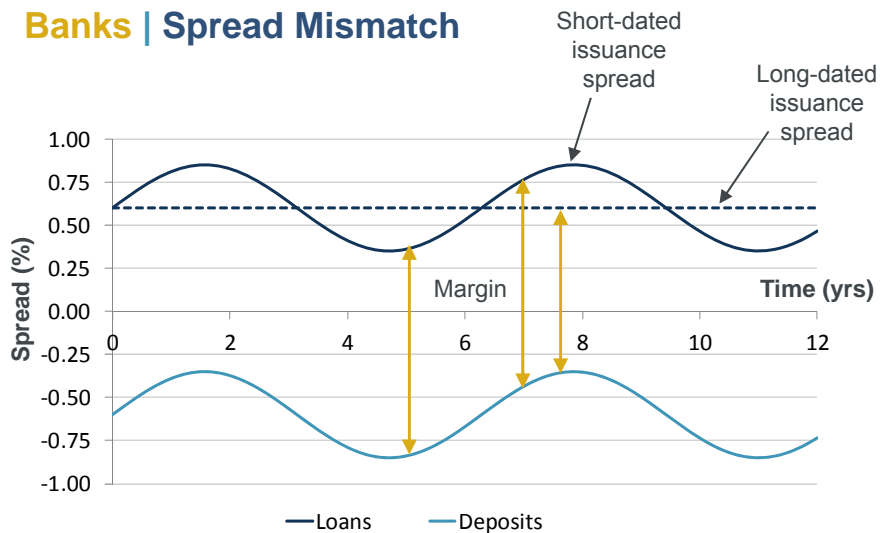


Source: BNP Paribas

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27

Banks | Spread Mismatch



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28

Summary



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Summary

- **Difficult** to compare regulatory regimes
- Initial hypothesis **does not** appear to hold
- **Insurers** are incentivised to match asset and liability duration
- **Bank** regulations seek to promote stability in the financial system

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30

Questions

Comments

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Appendix



Banks | Evolution of Capital Adequacy

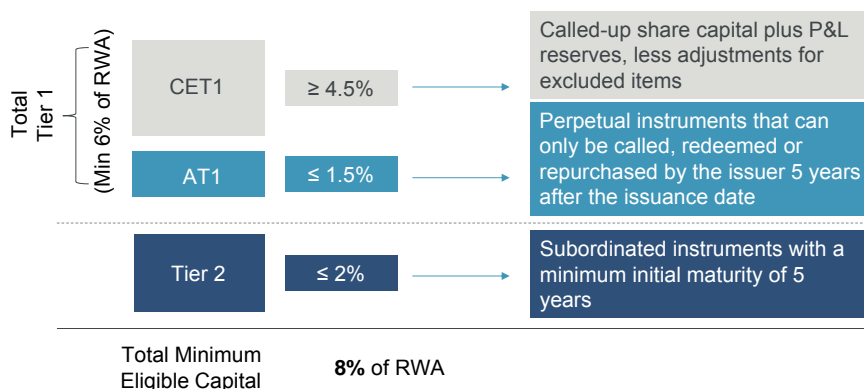
- 1979 Banking Act - **Licensing**
- 1987 Banking Act - **Large exposure limits**
- Basel Accord (1988) - Credit risk “**risk-weighting**” (8% of RWAs)
- Basel II (2004). Broadened capital adequacy to include three “Pillars”
- Basel III – Implemented via CRR/CRD IV
- FRTB / “Basel IV”

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33

Capital Adequacy | Basel III

- Requirements expressed as a **percentage of RWAs**
- Requirements for **quality** of capital - CET1 is the most important

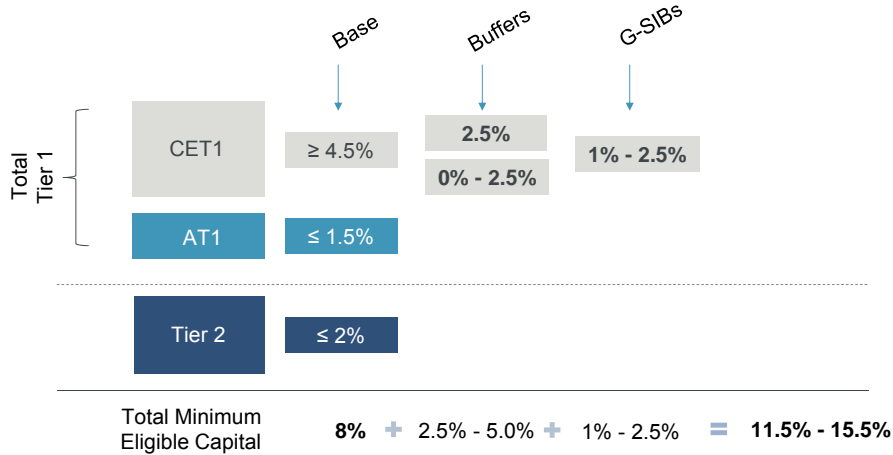


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34

Capital Adequacy | Basel III

- Minimum capital requirements are bolstered by **buffers**:

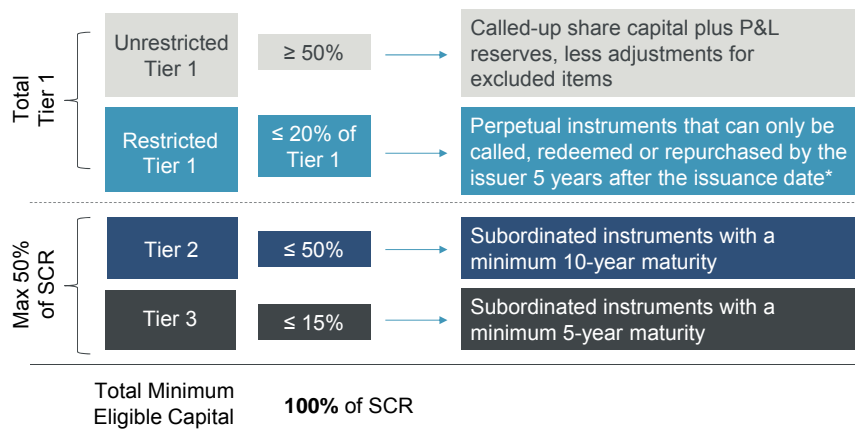


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35

Capital Adequacy | Solvency II

- Requirements expressed as a **percentage of SCR**



*other conditions also apply based on SCR/MCR trigger events

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36