2. Main Trends in International Banking Regulation

2.1. Basel II

2.1.1. Introduction

Origins of Basel II

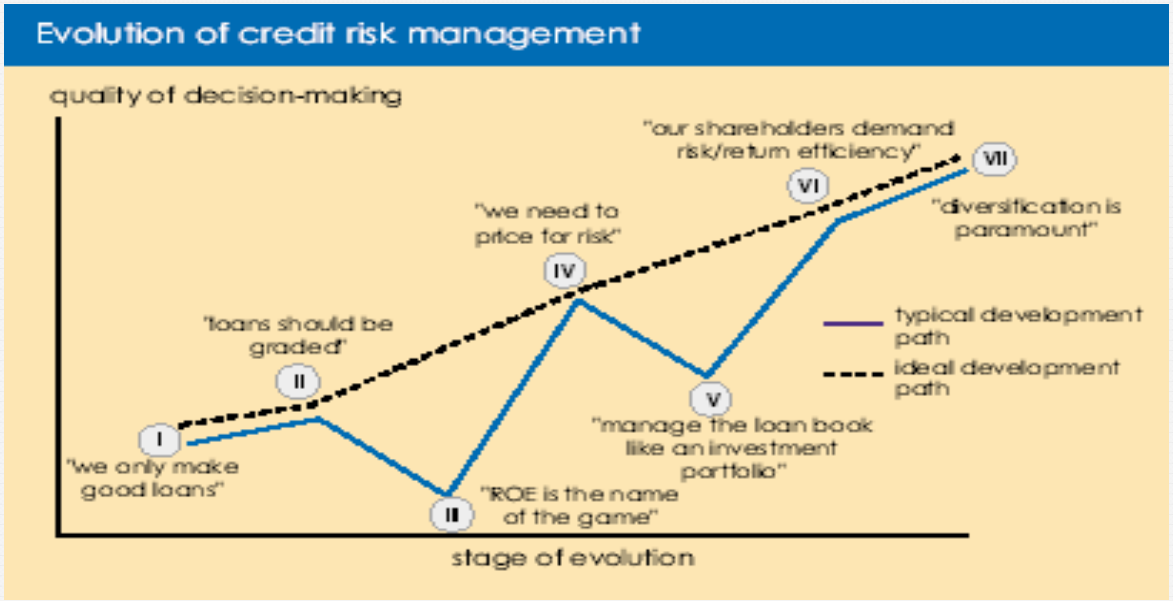
- Basel I
  - Elaborated in 1988 to implement uniform rules in the calculation of own funds of FIs based in the countries belonging to the BCBS (initially the G10, currently Germany, Belgium, Canada, Spain, USA, France, Netherlands, Italy, Japan, Luxemburg, UK, Sweden and Switzerland, with the EU Commission and the ECB as observers), having been implemented in over 100 countries (including the EU, with directives published since 1989.
  - These rules imposed a minimum own funds' requirement of 8% of the assets, weighted by their risk level, according to the exposure class:
    - Cash and sovereign debt of OECD countries - 0%
    - Credit to banks and local public entities - 20%, with residual maturity <=1 year
    - Residential mortgage loans - 50%, if LTV<=75%
    - Other assets - 100 %
  - The agreement was revised in 1996, to incorporate market risk (trading and currency portfolios), allowing FIs to use internal models (VaR).

Origins of Basel II

- Development of finance theory towards the application to credit risk of methodologies tested in asset management and option pricing.
- Shortcomings of traditional credit risk models.
- Increase of:
  - loan portfolios, demanding more rigorous analysis of risk to minimize losses, pricing and asset securitization;
  - credit derivatives market, allowing companies, investors and FI to manage and invest in credit risk.
  - private debt market, requiring better estimates of credit risk components, namely for pricing purposes.
  - number and size of defaults worldwide (e.g. Barings, LTCM, Russia).

Goals

1. Improvement of capital adequacy rules of banking institutions, in order to bridge the gap between regulatory and economic capital, namely by allowing banks to use internal models.
2. Motivate the adoption of the most modern credit risk analysis methodologies:



Source: E-Risk (1999), "The Seven Stages of Risk Management", www.erisk.com

Main changes

- 2 approaches in the calculation of capital requirements for credit risk:

(i) Standardized – corresponds roughly to Basel I, added by the differentiation of capital requirements as a function of the external ratings of counterparties:

- non-rated companies kept a risk weight of 100%;

- preferential treatment of mortgage loans was also kept (now with a risk weight of 35%, vis-à-vis 50% before);

- the differentiation between OECD member countries and others was eliminated.

(ii) IRB – involves the validation of internal credit risk models for the several portfolios, with these models supplying adequate estimates to PD and LGD (for the corporate segment, there are two IRB sub-approaches – basic and advanced, with the former requiring only the PD estimation).

- Better recognition of collaterals in calculating capital requirements.
- Capital requirements for operational risk.

Main changes

- 3 pillars:

(i) Pillar 1 – minimum capital requirements for credit, market and operational risks;

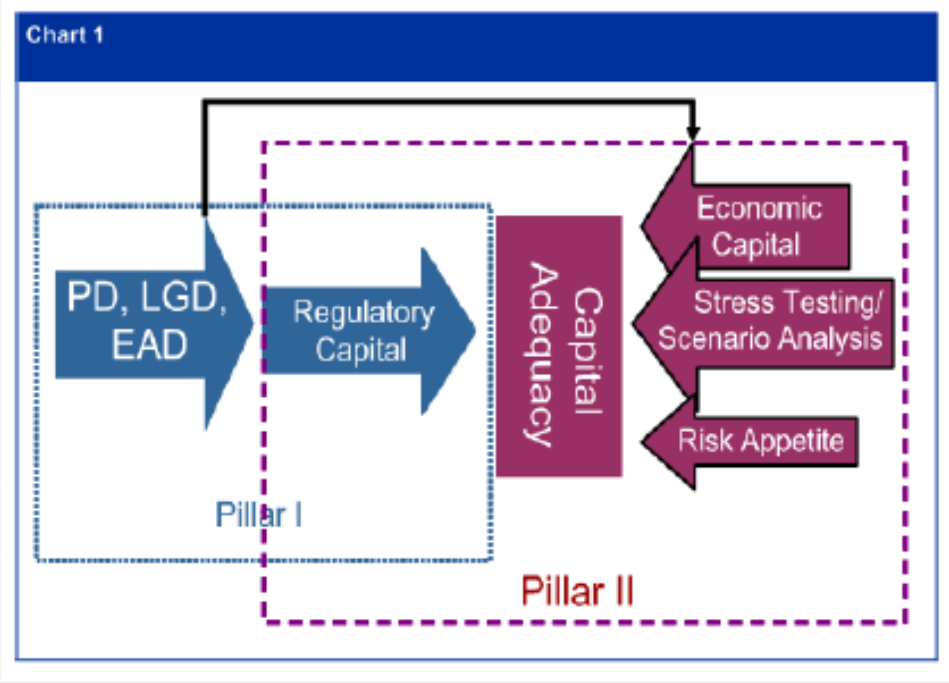
(ii) Pillar 2 – supervision process of capital requirements: in addition to pillar 1 requirements, an assessment of capital sufficiency considering all risks faced is performed;

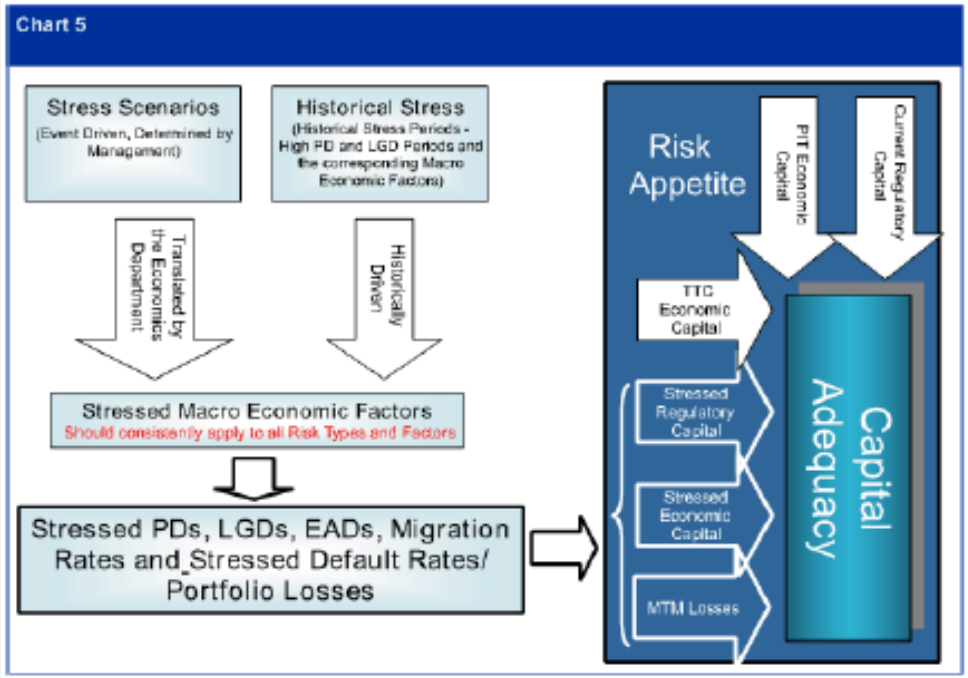
(iii) Pillar 3 – market discipline – larger detail in information released publicly (including risk models), namely through a market discipline annual document.

- Basel II regulation was published in Portugal in April 2007, through Decree-Laws No. 103 and 104/2007 (3rd April), Notices No. 4 and 10/2007 and Instructions No. 2 to 18 and 23/2007.

3 Pillars

- The calculation of capital requirements became more comprehensive and subjective, namely due to pillar 2, which comprises *stress tests*.





Source: Standard and Poors (2008), "Implications For Capital Management Under Pillar II".

2.1.2. Pillar I

Standardized approach

- Ratings below B- lead to capital requirements higher than 100%.

	Sovereigns	Banks	Non Financial Companies
AAA to AA	0%	20%	20%
A+ to A-	20%	50%	50%
BBB+ to BBB-	50%	100%/50%	100%
BB+ to B-	100%	100%	100%
<B-	150%	150%	150%
Non-rated	100%	100%/50%	100%

Note:
Risk weights to regional and local governments and banks may be calculated according two alternative methodologies:
- Risk weights immediately above the one applicable to the respective central government (100% if non-rated or central banks from countries rated between BB+ and B-);
- Specific Risk weights as a function of the rating (20%, 50%, 100% and 150%, with exposures to non-rated counterparties assuming a risk weight of 50%).
BCBS is currently undertaking a review of the regulatory standards for the prudential treatment of banks' exposures to sovereigns.

Standardized approach

- **Other risk weights:**
  - UE, EIB, BIS, IMF and multilateral development banks – 0%
  - Retail (individuals and small businesses) – 75%
  - Residential mortgages – 35% (for LTVs<=75%; 100% for the amount above)
  - Commercial Real Estate – 100% (50%, if LTV<=50% in developed markets)
- **Past due Loans:**
  - Non-residential – exposure not covered by specific provisions > 80% EAD – 150% (100%, if coverage <= 80% e 50% if <= 50%)
  - residential – 100% (exposure not covered by specific provisions ; 50% if specific provisions >=50% of EAD).
- **Revolving Loans** (e.g. credit cards, current accounts or overdrafts) - the following credit conversion factors (CCF) are applied, to obtain a loan equivalent exposure (LEQ):
  - Maturity <= 1 year – 20%
  - Maturity > 1 year – 50%
  - Non-mandatory – 0%

IRB Approach

- Fundamental equation in credit risk: $EL = PD \times LGD \times EAD$
- Basel II allows banks to use internal estimates of PD, LGD e EAD when calculating the amount of capital to allocate to their exposures.
- However, this calculation results from using pre-established formulas in the Agreement, aiming at ensuring regulatory and economic capital are consistent, reflecting namely the diversification effect of credit portfolios, through lower capital requirements to SME and retail exposures.
- LGDs in IRB Foundation:

  - Loans with real estate collaterals - 45%
  - Loans with receivables as collaterals - 40%
  - Subordinated assets – 75%
  - Other assets - 45%

PDs

- PDs are usually estimated by econometric models, based on the FI's credit experience or external databases representative of that experience.
- For non-financial companies 3 techniques are used:
  - *middle market* (non-listed medium to large size companies) – models relate past loan behavior to financial ratios.
  - listed companies – structural models based on stock prices, also using data from financial statements (for a shadow PD or to get data on the liabilities)
  - small business – similar to middle market, but including variables close to those considered in credit risk models for individuals.
- Given the difficulty in assessing *start-ups*, holdings, real estate brokers and non-profit organizations by quantitative models, credit risk assessment of these entities are usually done manually, by specialized analysts.

PDs

- In the corporate segment, credit analysts are allowed to override internal ratings following the qualitative assessment of management, business perspectives or quantitative information still to be reflected on financial statements.
- This information may result from the customer relationship with the bank (e.g. sudden increase in the utilization of credit lines), or from external sources (e.g. commercial information, central credit risk database).
- Overrides are much more limited for individual loans, as relevant information is scarcer than for companies.
- BCBS published on 24 Mar.16 a consultation document on the revision of the internal modelling rules for credit risk,* proposing to (i) remove the option to use IRB for exposure classes for which modelling is regarded as insufficiently reliable; (ii) set floors for model parameters and (iii) better specifying parameter estimation practices.

* BCBS (2016), "Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches, issued for comment by 24 June 2016", 24 March.

LGD/EAD

- Different LGDs are usually associated with different collateral types or debt seniority.
- However, LGD may also be considered as correlated to PD.
- Therefore, the PD estimation must be independent from LGD, but the reverse doesn’t occur.
- EAD is the expected exposure at a default time.

Exposure classes for IRB

- Corporate – includes specialized credit:
  - (i) project finance - cash-flows generated by a single project;
  - (ii) object finance - cash-flows generated by a single asset;
  - (iii) commodities finance - cash-flows generated by the sale of goods whose acquisition is financed;
  - (iv) income-producing real estate
  - (v) high-volatility commercial real estate
- Sovereign
- Banks
- Retail
  - Residential Mortgage Loans
  - Revolving Loans – credit cards and overdrafts.
  - Other:
    - (i) Small business with exposure <= 1M€;
    - (ii) Consumer loans.

Corporate, Sovereign and Banks

$$K = LGD \times \left(\frac{N\left[(1-R)^{-0.5} \times G(PD) + \left(\frac{R}{1-R} \right)^{0.5} \times G(0.999) \right] \times \left[1 - 1.5 \times b(PD) \right]^{-1} \times}{\left[1 + (M - 2.5) \times b(PD) - PD \right]} \right)$$

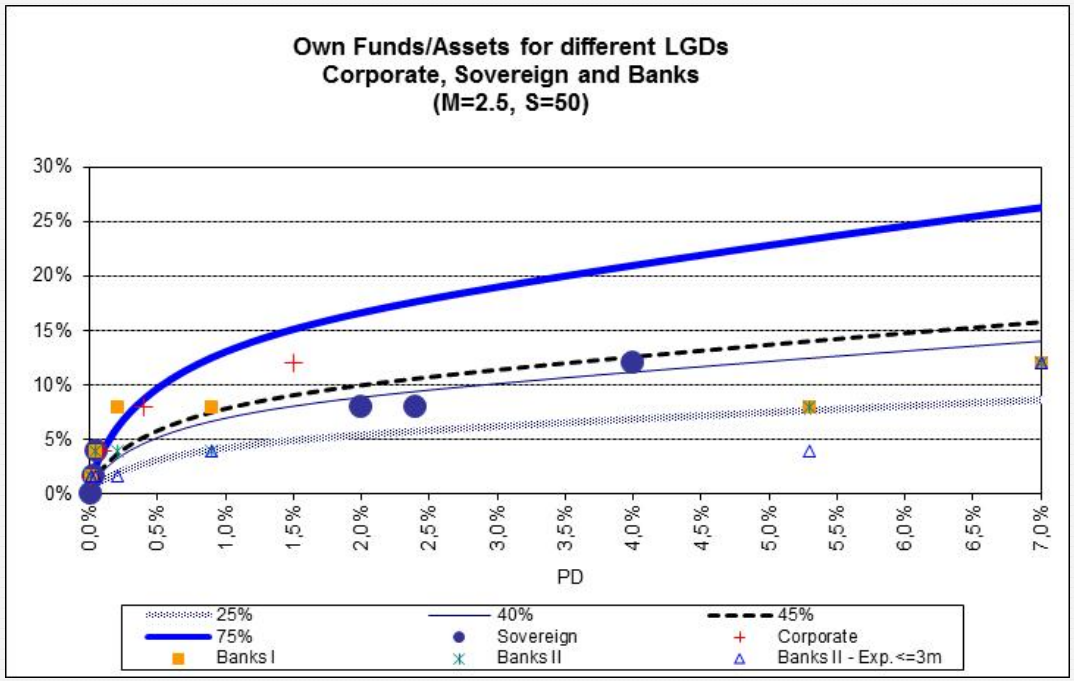
$$R = 0.12 \times \left[1 - \exp(-50 \times PD) \right] / (1 - \exp(-50)) + 0.24 \times \left[1 - (1 - \exp(-50 \times PD) / (1 - \exp(-50))) \right] - \max\left\{ 0, 0.04 \times \left[1 - \frac{S-5}{45} \right] \right\}$$

$$b = \left[0.11852 - 0.05478 \cdot \ln(PD) \right]^2$$

being N[x] the standardized normal distribution value in x, $G(z)$ the inverse of N[x], R *the* correlation coefficient between exposures and S the annual *turnover of the company* (size adjustment).

Corporate, Sovereign and Banks

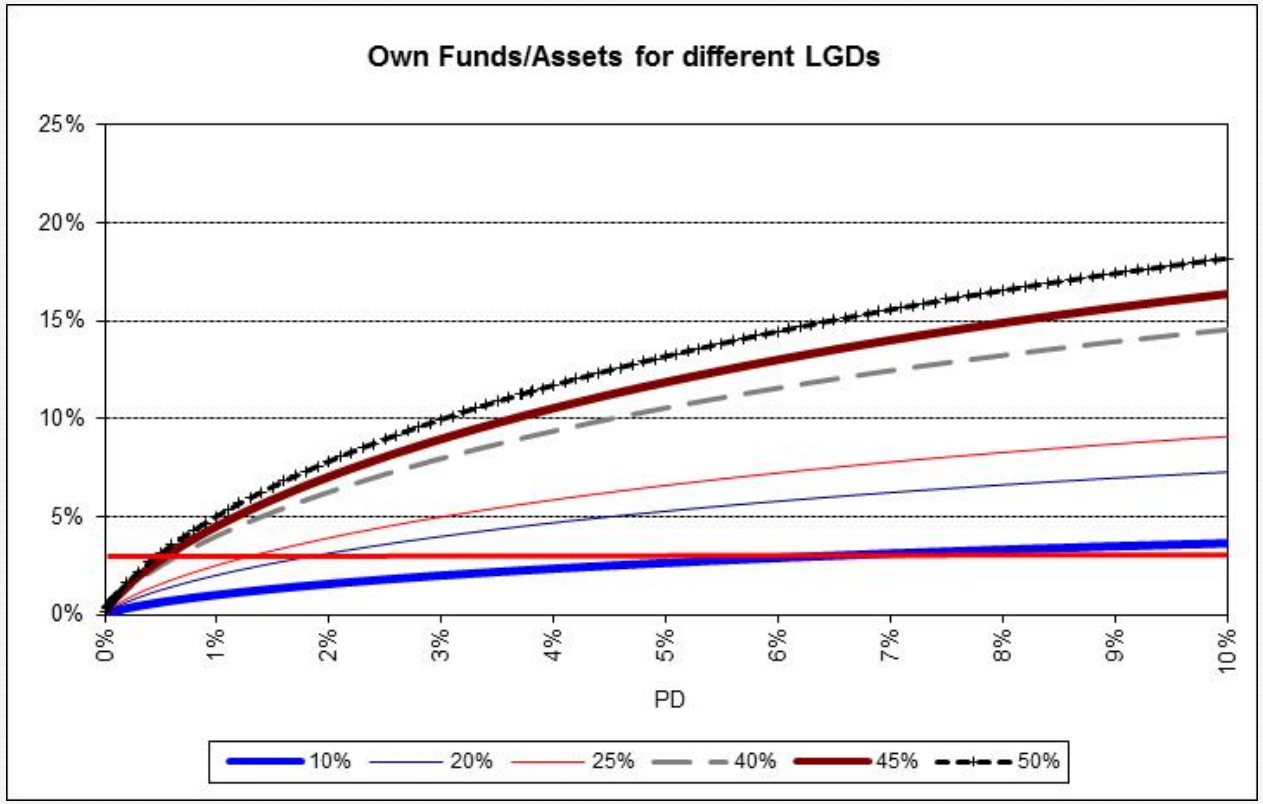
- Capital requirements for sovereigns in standard approach are similar to the IRB with LGD=40%.
- For less risky banks, capital requirements are between IRB levels with LGD = 25% and 45%.
- For corporate loans, this equalization occurs for LGD=75%.



Residential Mortgage Loans

$$K = LGD \times \left(N\left[(1-R)^{-0.5} \times G(PD) + \left(\frac{R}{1-R} \right)^{0.5} \times G\left(0.999\right) \right] - PD \right)$$

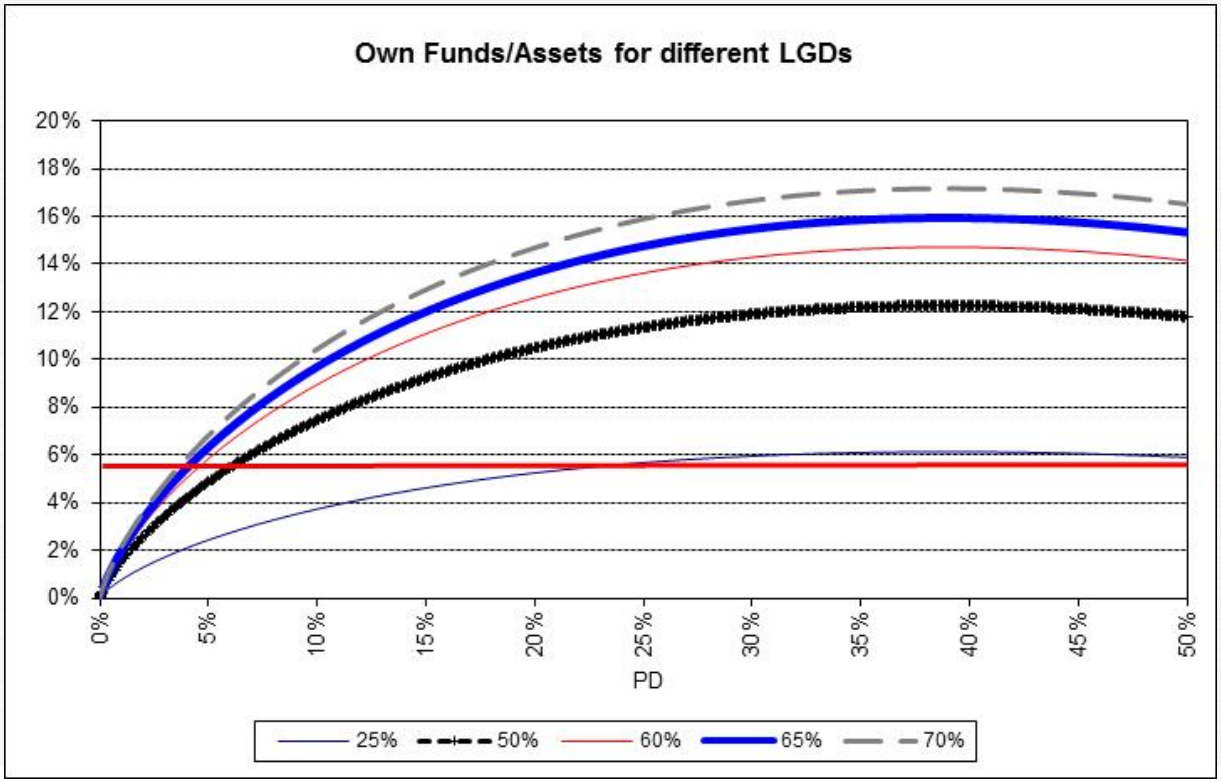
$$R = 0.15$$



Retail revolving

$$K = LGD \times \left(N\left[(1-R)^{-0.5} \times G(PD) + \left(\frac{R}{1-R} \right)^{0.5} \times G(0.999) \right] - PD \right)$$

$$R = 0.02 \times \left[1 - \exp(-50 \times PD)\right] / \left(1 - \exp(-50)\right) + 0.11 \times \left[1 - \left(1 - \exp(-50 \times PD)\right) / \left(1 - \exp(-50)\right)\right]$$



IRB challenges

- Data structuring by financial institutions
- Adequate credit risk modeling - “simply buying a model does not make for a good credit system”.
- Adequate culture to new credit risk management techniques and decision processes.
- Development of adequate validation mechanisms by banks and supervisors.

Capital Requirements for Market Risk

- Since the 1996 amendment to the Basel Accord, regulatory capital for market risk in trading portfolios may also be calculated by internal methods, i.e VaR.
- In this case, VaR is usually a multiple of, at least, 3 of the 10-day 99% VaR, calculated as a function of the historical performance of the model used.
- VaR must also be subject to backtesting, in order to ensure that observed losses do not exceed the losses corresponding to the VaR in a % higher than the degree of confidence of VaR.
- In domestic regulation, the calculation of capital requirements for market risk was settled by the Notice No. 8/2007.

Capital Requirements for Market Risk

- CRR => VaR calculation is subject to the following requirements:
  - Daily calculation
  - 99%, Maximum of 10-day period
  - Minimum sample period of 1 year, except when significant price volatility justifies a shorter period
  - Minimum monthly data update
  - Minimum weekly frequency for stressed VaR
  - VaR is added by 3 and an additional factor between 0 and 1, depending on the number of loss excesses observed in the previous 250 business days.

Number of overshootings	addend
Fewer than 5	0,00
5	0,40
6	0,50
7	0,65
8	0,75
9	0,85
10 or more	1,00

Source: European Parliament (2013), CRR.

Capital Requirements for Market Risk

- Qualitative requirements:
  - Models integrated in the daily risk management of the bank and underlying internal reports to top management;
  - Risk control unit independent from trading and reporting directly to top management, liable for the development, implementation and validation (initial and on-going) of internal models, producing and analyzing daily reports on model results and presenting proposals on trading limits;
  - Board and top management actively involved in risk control processes and daily reports;
  - Adequate human resources in trading, risk control, auditing and back-office;
  - Internal models with good track record;
  - Stress tests - Rigorous and frequent program, including reverse stress tests, to be assessed by top management;
  - Internal independent auditing process;
  - Minimum yearly internal assessment of the global risk management system.

2.1.3. Pillars II and III

New pillars

- In addition to pillar I capital requirements, Basel II includes pillar II and III with the following goals:
  - Pillar II – more robust assessment processes of capital adequacy, aiming at enhancing the link between an institution's risk profile, its risk management and risk mitigation systems, and its capital planning.
  - Pillar III – higher level of disclosure of relevant risk information.
- **Pillars II and III** => more demanding calculations and indicators:
  - banks have to develop an ICAAP (Internal Capital Adequacy Assessment Process), according to Instruction 15/2007, with a biannual frequency (1st report occurred in Jun.09), though with annual updates regarding the main findings and insufficiencies.
  - this exercise must include stress tests, as well as the assessment of risks without capital specifically allocated, e.g. interest rate and concentration risks.

ICAAP

- Goals:

(a) Adequate organizational and technological structure, as well as governance and risk control practices, considering internal capital planning and risks;

(b) Robust management and monitoring processes for the internal capital and risks, according to the strategies implement and the activity plan defined;

(c) Risks properly identified and assessed;

(d) Correct internal risk profile definition, as well as sensitivity to recession risks (stress tests);

(e) Identification of existing controls and correct assessment of the risk mitigation effects;

(f) Adequate business continuity plans.

Stress Tests

- Risks to be covered in stress tests include (Instruction 4/2011):

(i) credit

(ii) operational;

(iii) market;

(iv) counterparty;

(v) concentration;

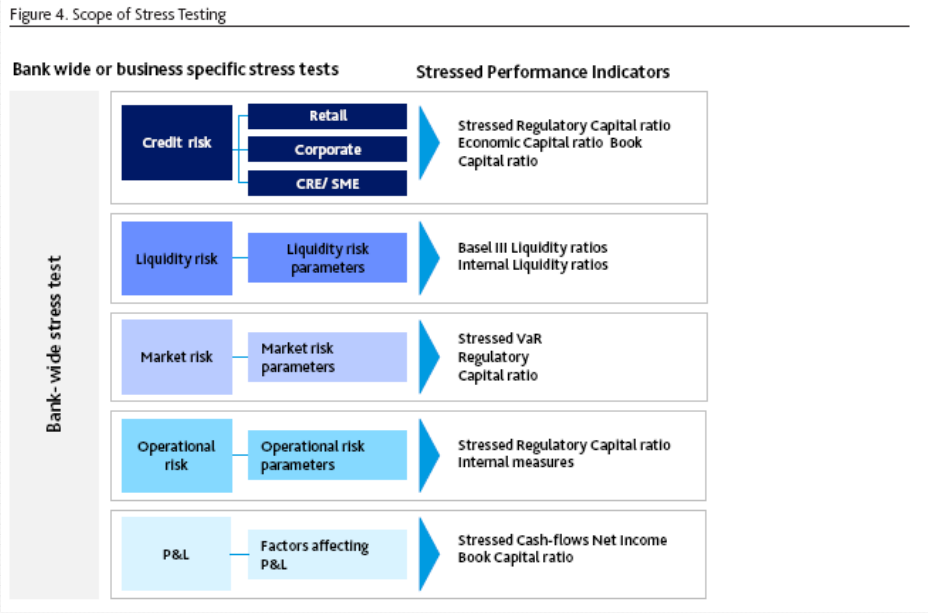
(vi) interest rate (asset portfolios);

(vii) liquidity

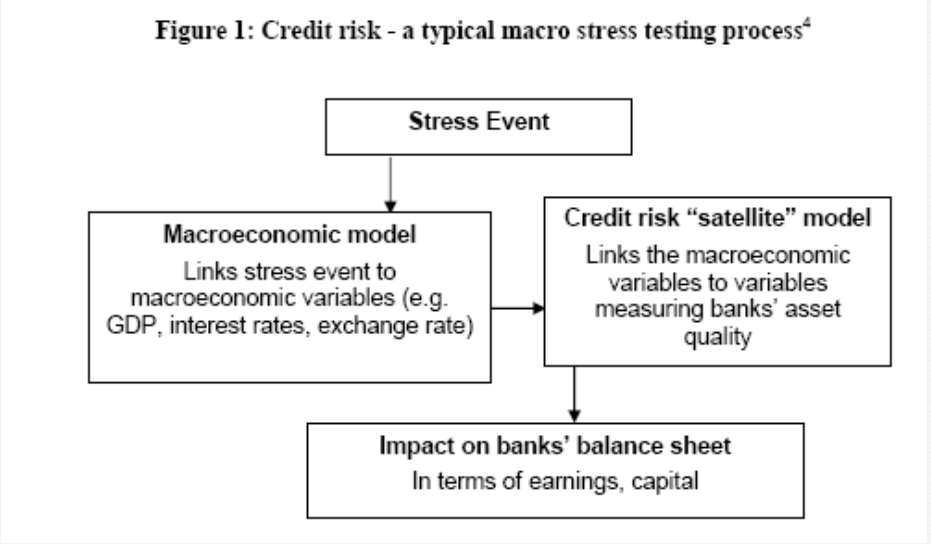
- Minimum frequency – 6 months for sensitivity analysis and annual for scenario tests (occasional tests may also be required).

Stress Tests

- Typical stress test structure focus on credit and market risk, though more comprehensive exercises may also cover liquidity, including, macroeconomic forecasts, links between these forecasts and PDs/LGDs, Balance sheet forecasts and NII simulation.



Source: Moody's (2011), "Moody's Analytics 2011 Banking Industry Survey on Stress Testing".



Source: Foglia, A (2008), "Stress testing credit risk: a survey of authorities' approaches:",Banca d'Italia Occasional Paper.

Pillar III

- In Notice No.10/2007, BdP defined the principles of information disclosure to the market, within pillar III framework.
- This information must be published in the annual document "Market Discipline", until 30 days after the legal date established for the approval of financial statements.
- If relevant changes occur, banks must disclose them until the end of the following month, in the document "Market Discipline – Additional Information".
- These reports are published since 2009 and include information on the strategies, processes, strategies and risk management structure and policies.

2.2. Regulation in the post-subprime

BIS

- Main Goals:

(i) reducing the probability of bank failures

(ii) ensuring that no bank is too big to fail

- Goals – improve micro-prudential framework + create a macroprudential, by:
  - Increasing quality and quantity of banks' capital
  - Improving risk measurement and management
  - Increasing discretionary power to supervisors, to define individual capital requirements
  - Decreasing procyclicality of capital requirements
  - Increasing transparency

Source: GARP (2010), "Basel III - Remaining Mandates", Webcast.

BIS

- Broad focus of BIS actions:

(1) Banks – taxation of the systemic risk pollution:

- Capital - Improve capital adequacy rules, e.g. by establishing a maximum leverage ratio, reducing the cyclicality of capital requirements and reducing incentives for TBTF banks.
- Liquidity - settle international rules on liquidity risk management and stress testing
- Governance:
  - Implement governance principles of Basel Committee
  - Implement rules on business models and remuneration
  - Increase banks' disclosure level (e.g. SIVs and ABS)

(2) Supervisors - Change supervision model

(3) Rating agencies - Regulate rating agencies' activity

BIS

- After the G20 meeting in Nov.10, several additional changes were decided, with more flexible capital definition and liquidity requirements, as well as larger transition periods, leading to the final document "Basel III: A global regulatory framework for more resilient banks and banking systems, Dec.2010 (rev June 2011)".

Annex 2: 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%	9.125%	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	

Source: BIS (2010), "Press Release - Group of Governors and Heads of Supervision announces higher global minimum capital standards", 12 Sep.

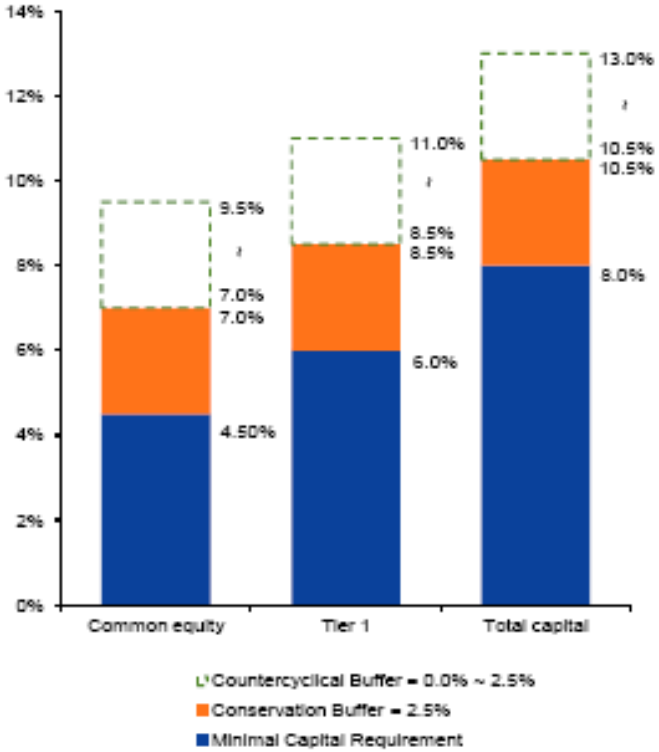
BIS

- Minimum CT1 ratio is increased to a level between 7% and 9.5% (10.5% to 13% for total capital).

Calibration of the Capital Framework Capital requirements and buffers (all numbers in percent)			
	Common Equity (after deductions)	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		

* Common equity or other fully loss absorbing capital

Source: BIS (2010), "Press Release - Group of Governors and Heads of Supervision announces higher global minimum capital standards", 12 Sep.



Source: Deutsche Bank (2010), "Basel Agreement on Capital Requirements".

BIS

- Assuming full implementation of the CRD IV–CRR, CET1 ratios stand between 11.4% and 13.6% for the main groups of banks assessed (8,4% and 7,9% in 2013 EBA Monitoring Exercise).
- European banks largely fulfil future regulatory capital requirements, as only a very small number of banks suffer from potential capital shortfalls.

	Number of banks	CET1		Tier 1		Leverage Ratio		Total capital	
		Current	2024	Current	2024	Current	2024	Current	2024
Group 1	**36**	**12.7**	**11.6**	**13.7**	**12.2**	**4.7**	**4.2**	**16.2**	**14.8**
- G-SIBs	9	12.1	11.4	13.3	12.2	4.4	4.1	15.7	14.6
Group 2	**110**	**13.6**	**12.5**	**13.8**	**12.9**	**5.3**	**5.0**	**15.5**	**14.5**
- Large	22	13.5	12.3	13.6	12.7	5.5	5.2	15.4	14.4
- Medium-sized	20	13.6	12.7	14.0	13.0	5.3	5.0	15.5	14.1
- Small	68	14.0	13.6	14.4	13.7	4.3	4.1	16.2	15.1

Source: EBA (2016), "CRD IV – CRR/BASEL III MONITORING EXERCISE», RESULTS BASED ON DATA AS OF 30 JUNE 2015, 2 MAR.

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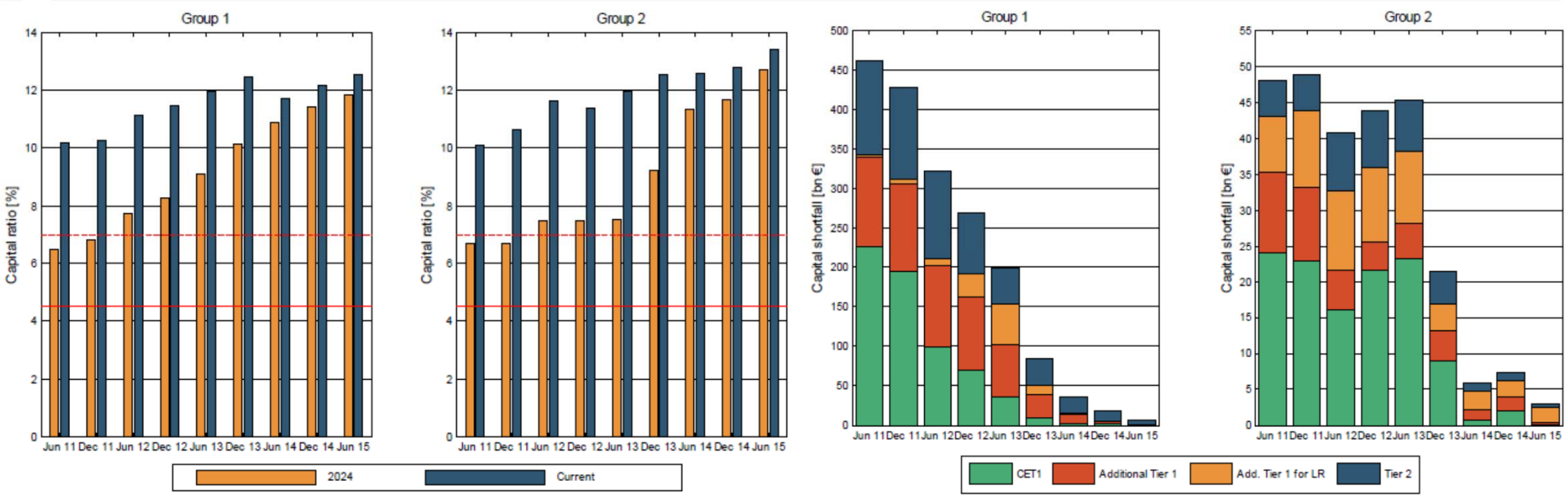


Source: EBA (2016), "CRD IV – CRR/BASEL III MONITORING EXERCISE», RESULTS BASED ON DATA AS OF 30 JUNE 2015, 2 MAR.

BIS

New Basel III requirements:

(1) Leverage Ratio

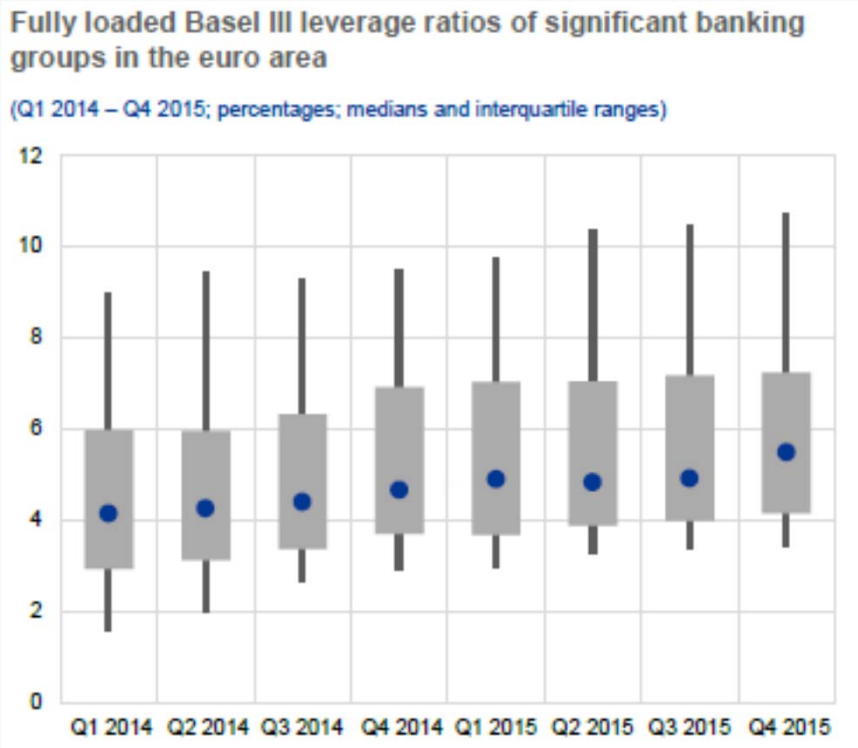
(2) Provisions and Cyclicality

(3) Systemically Important Financial Institutions (SIFIs)

(4) Liquidity

Leverage ratio

- Minimum of 3% for non-weighted capital ratio
- Public disclosure started in 1 January 2015
- Parallel run in 2013-2016, final adjustments to the definition and calibration of the leverage ratio in 2017, in order to migrate to a Pillar 1 treatment on 1 Jan.18.
- The Group of Governors and Heads of Supervision (GHOS) agreed on 10 Jan.2016 that additional requirements for Global Systemically Important Banks (G-SIBs) should be discussed.



Source: Banco de Portugal (2016), "Portuguese Banking System: Recent Developments - 1Q16".

Provisions and Cyclicality

- BCBS promoted countercyclical provisions - “Guidance for national authorities operating the countercyclical capital buffer”, Dec.2010:
  - when credit growth is judged to be associated with a build-up of systemic risk, and drawn down during stressed periods; to be built up when credit growth is judged to be associated with a build-up of systemic risk, and drawn down during stressed periods;
  - every Member State designated an authority to settle quarterly this buffer since 2016, considering the credit growth and changes to the ratio of credit/GDP and other variables and qualitative information that make sense for purposes of assessing the sustainability of credit growth and the level of system-wide risk, e.g.;
    - various asset prices;
    - funding spreads and CDS spreads;
    - credit condition surveys;
    - real GDP growth;

Provisions and Cyclicality

- according to BIS preparatory works,* credit related variables perform very well and credit-to-GDP ratio tends to rise smoothly above trend before the most serious episodes, with several advantages over credit growth or other variables:

(i) as a ratio to GDP, the indicator is normalised by the size of the economy;

(ii) being a ratio of levels, it is smoother than a variable calculated as differences in levels (e.g. as credit growth);

(iii) deviations of property and equity prices from trend can help to identify the build-up phase, but tend to narrow way ahead of the emergence of financial strains, suggesting that authorities should start releasing the buffer too early.

(iv) the performance of bank profits as a signal for the build-up in good times appears to be uneven, as it works very well for US and UK in the current crisis and for Spain in the early 1990s, performing poorly otherwise.

(v) credit spreads performed well in the current crisis, as they fell below their long-term average ahead of it and rose very quickly when strains emerged. However, their performance over multiple cycles is less satisfactory, as indicated by data for the US..

* Drehmann, Borio, Gambacorta, Jimenez and Trucharte (2010) "Countercyclical capital buffers: Exploring options", BIS Working Paper 317.

Provisions and Cyclicality

- the gap between the credit/GDP ratio (Basel gap) and its trend was taken as the key indicator.
- as the long-term trend of the credit/GDP ratio is a purely statistical measure that does not capture turning points well, authorities should form their own judgments about the sustainable level of credit in the economy and use this trend simply as a starting point in their analysis, to determine whether a countercyclical buffer requirement should be imposed and should increase or decrease over time (between 0% and 2.5% of risk weighted assets).
- alternative tools – such as loan-to-value limits, income gearing limits or sectoral capital buffers – may be deployed in situations where excess credit growth is concentrated in specific sectors but aggregate credit growth is judged not to be excessive.
- any increases in the countercyclical buffer must be preannounced by up to 12 months to give banks time to meet additional capital requirements, while reductions would take effect immediately to help to reduce the risk of the supply of credit being constrained by regulatory capital requirements.

SIFIs

(3) Systemically Important Financial Institutions (SIFIs)

- In Apr.09, a new set of rules and supervision procedures for the SIFIs was agreed in the G20 => BCBS doc "Global systemically important banks: assessment methodology and the additional loss absorbency requirement - Rules text", BCBS No.207, Nov.11 (later updated by "Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement", BCBS No.25, Jul.13):
  - (i) Ex-ante measures – strengthening SIFIs' capital, in order to reduce the probability and impact of a SIFI's default, as well as the systemic relevance of the institutions (changing their business model, with business segmentation);
  - (ii) Ex-post measures in order to ensure that a SIFI's default can be resolved adequately, restricting the impact on the financial system.
- Additional capital requirements to be met with tier I and II (excluding *common equity*), depending on further analysis to develop.

SIFIs

- "Turn large banks into public utilities by forcing them to hold so much capital they virtually can't fail, with regulation akin to that of a nuclear power plant", Neel Kashkari, President of the Minneapolis Federal Reserve (in Patrick Jenkins (2016), "Banks: Too dull to fail?", Financial Times, Sept. 6)

Table 2. Measures to Reduce the Systemic Risk Contribution of SIFIs

Measures to reduce the probability and impact of failure of SIFIs	• Capital and/or liquidity surcharges based on measure of systemic importance • More intense supervision of SIFIs • Risk-based levies on non-core funding (based on systemic risk contribution)
Measures to improve the capacity to resolve SIFIs	• Living wills (resolution plans to map out how to safely wind-down institutions in case of failure) • Financial stability contribution linked to a credible and effective resolution scheme • Special resolution schemes that give power to the supervisors to break up banks • Contingent capital and bail-in proposals—as means of providing further going-concern loss absorbency and reducing government bailouts • Cross-border resolution frameworks and burden-sharing arrangements • Subsidiarization/ring-fencing domestic financial institutions from cross-border risks (especially if the previous option proves unviable)
Measures to strengthen the core financial market infrastructure to reduce contagion	• Requiring OTC derivatives to be traded through central counterparties
Structural measures	• Narrow banking that would restrict deposit taking institutions to invest in a limited set of safe assets • Other limits or restrictions on the size and/or scope of banks (e.g., in the United States, the Volcker rule, restrictions on derivative activities of banks).

Source: Ötker-Robe et al (2010), "Impact of Regulatory Reforms on Large and Complex Financial Institutions", IMF, SPN/10/16.

SIFIs

- 2010 – Financial Stability Board (FSB)* sets agenda for addressing the risks arising from global systemically important financial institutions (G-SIFIs)
- 2011 –FSB announced additional capital requirements for SIFIs ("Policy Measures to Address Systemically Important Financial Institutions", 4 Nov.):

(i) Additional capital requirements (over Basel III) for G-SIFIs - 1%-2.5% of RWA, with an empty bucket of 3.5%, to discourage further systemicness to be met with common equity;

(ii) More intensive and effective supervision of all G-SIFIs, including stronger supervisory mandates, resources and powers, and higher supervisory expectations for internal control functions, data aggregation capabilities and risk governance;

(iii) Mandatory recovery and resolution plans.

* The FSB was established in Apr.2009 as the successor to the Financial Stability Forum (FSF), at the Pittsburgh Summit of G20, to assume a key role in promoting the reform of international financial regulation. The FSF was founded in 1999 by the G7 Finance Ministers and Central Bank Governors, for enhancing cooperation among the various national and international supervisory bodies and international financial institutions so as to promote stability in the international financial system.

SIFIs

- FSB developed (in consultation with the BCBS):

(i) 2013 - report on *Progress and Next Steps Towards Ending "Too-Big-To-Fail" (TBTF;* September) => there must be sufficient loss-absorbing and recapitalisation capacity available in resolution to implement an orderly resolution that minimises impacts on financial stability, ensures the continuity of critical functions, and avoids exposing public funds to loss; and

(ii) 2015 - term sheet implementing these principles as an internationally agreed standard on the adequacy of total loss absorbing capacity for G-SIBs – "Principles on Loss-absorbing and Recapitalisation Capacity of G-SIBs in Resolution Total Loss-absorbing Capacity (TLAC) Term Sheet", 9 Nov.:

- Authorities should determine a firm-specific TLAC for each G-SIB ;
- Minimum TLAC of 16% of RWA, from 1 Jan.19 and 18% from 1 Jan.22, for G-SIBs identified by the FSB in Nov.14, with phasing-in since Jan.16 (this requirement does not include any Basel III buffers, which must be met in addition to the TLAC RWA Minimum).

SIFIs

- The additional capital requirements were initially applied to those banks identified in Nov. 14 as G-SIFIs, phased in starting in Jan.16 with full implementation by Jan.19.

	Timetable for implementation	
2013	Mar:	Collection of end-2012 data
	Nov:	Publish updated draft list of G-SIBs
		Publish cutoff scores, bucket sizes and denominators
2014	Jan:	Implementation of national reporting and disclosure requirements
	Mar:	Collection of end-2013 data
	Nov:	Publish updated list of G-SIBs to be subject to HLA requirement from 1 Jan 2016, and updated denominators
2015	Mar:	Collection of end-2014 data
	Nov:	Publish updated list of G-SIBs to be subject to HLA requirement from 1 Jan 2017, and updated denominators
2016	Jan:	HLA requirement applied to banks designated as G-SIBs published in Nov 2014
	Mar:	Collection of end-2015 data
	Nov:	Publish updated list of G-SIBs to be subject to HLA requirement from 1 Jan 2018, and updated denominators
2017	Jan:	HLA requirement applied to banks designated as G-SIBs published in Nov 2015
	Mar:	Collection of 2016 data
	Nov:	Complete first methodology review and announce changes
		Publish updated list of G-SIBs to be subject to HLA requirement from 1 Jan 2019, and updated denominators

BCBS (2013), "Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement", Jul.

SIFIs

- In Nov.11, the FSB and BCBS have identified an initial group of G-SIFIs, namely 29 G-SIBs.
- These G-SIFIs had to meet the resolution planning requirements by end-2012. National authorities may decide to extend these resolution planning requirements to other institutions in their jurisdictions.
- In Oct.2012, BCBS released "A framework for dealing with domestic systemically important banks", stating that national authorities should begin to apply requirements to D-SIBs in line with the phase-in arrangements for the G-SIB framework (Jan.2016).

Bucket[10]	G-SIBs in alphabetical order within each bucket
5 (3.5%)	(Empty)
4 (2.5%)	JP Morgan Chase
3 (2.0%)	Bank of America Citigroup Deutsche Bank HSBC
2 (1.5%)	Bank of China Barclays BNP Paribas China Construction Bank Goldman Sachs Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG Wells Fargo
1 (1.0%)	Agricultural Bank of China Bank of New York Mellon Credit Suisse Groupe Crédit Agricole ING Bank Mizuho FG Morgan Stanley Nordea Royal Bank of Canada Royal Bank of Scotland Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG UBS Unicredit Group

Source: FSB (2017), "Policy Measures to Address Systemically Important Financial Institutions", 21 Nov.

SIFIs

- The group of G-SIFIs is updated annually and published by the FSB each November.
- FIs no longer designated as a G-SIFI will continue to be subject to the requirement for recovery and resolution plans to the extent that the firm is assessed by national authorities to be systemically significant or critical in the event of failure.
- BCBS methodology - provides score for each entity, based on indicators reflecting the size of banks, their interconnectedness, the lack of readily available substitutes or FI infrastructure for the services they provide, their global activity and their complexity.
- Equal weight of 20% to each of the 5 categories of systemic importance.

Bucket[10]	G-SIBs in alphabetical order within each bucket
5 (3.5%)	(Empty)
4 (2.5%)	Citigroup JP Morgan Chase
3 (2.0%)	Bank of America BNP Paribas Deutsche Bank HSBC
2 (1.5%)	Barclays Credit Suisse Goldman Sachs Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG Wells Fargo
1 (1.0%)	Agricultural Bank of China Bank of China Bank of New York Mellon China Construction Bank Groupe BPCE Groupe Crédit Agricole ING Bank Mizuho FG Morgan Stanley Nordea Royal Bank of Scotland Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG UBS Unicredit Group

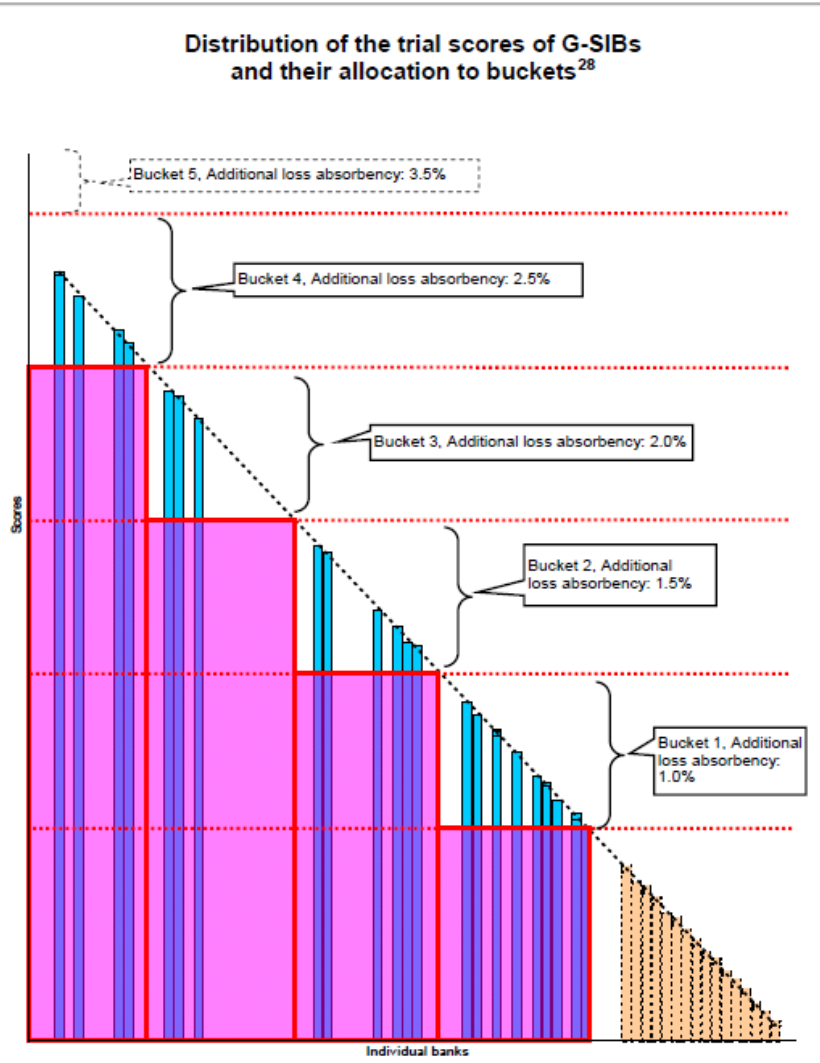
Source: Financial Stability Board (2016), "2016 update of group of global systemically important banks ", 21 Nov.

SIFIs

Indicator-based measurement approach — Table 1

Category (and weighting)	Individual indicator	Indicator weighting
Cross-jurisdictional activity (20%)	Cross-jurisdictional claims	10%
	Cross-jurisdictional liabilities	10%
Size (20%)	Total exposures as defined for use in the Basel III leverage ratio	20%
Interconnectedness (20%)	Intra-financial system assets	6.67%
	Intra-financial system liabilities	6.67%
	Securities outstanding	6.67%
Substitutability/financial institution infrastructure (20%)	Assets under custody	6.67%
	Payments activity	6.67%
	Underwritten transactions in debt and equity markets	6.67%
Complexity (20%)	Notional amount of over-the-counter (OTC) derivatives	6.67%
	Level 3 assets	6.67%
	Trading and available-for-sale securities	6.67%

BCBS (2013), "Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement", Jul.



Liquidity

(4) Liquidity

- Minimum ratios imposed, through BCBS (2008), "Principles for Sound Liquidity Risk Management and Supervision", Sep. (later improved by BCBS (2013), "Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools", W.P. 238, January):
- Increase relevance of liquidity management, including contingency plans
- Include liquidity costs in pricing and decision processes
- Ensure broad coverage of stress tests:
  - (i) asset value depreciation;
  - (ii) full utilization of credit lines to customers;
  - (iii) deposits' run (e.g. withdrawal of all Institutional depositors and 10-30% of other);
  - (iv) additional collaterals and margin calls;
  - (v) non-availability of money market and central bank liquidity;
  - (vi) impact of downgrade (v.g. (iii));
  - (vii) currency crisis;
  - (viii) ALM.

Liquidity

- 2 separate but complementary objectives:
  - (i) to promote short-term resilience of a bank's liquidity risk profile by ensuring that it has sufficient high quality liquid assets (HQLA) to survive a significant stress scenario lasting for 1 month => Liquidity Coverage Ratio (LCR), phased-in from 1.Jan.15.

$$\frac{\text{Stock of high quality liquid assets}}{\text{Net cash outflows over a 30-day time period}} \geq 100\%$$

	1 January 2015	1 January 2016	1 January 2017	1 January 2018	1 January 2019
Minimum LCR	60%	70%	80%	90%	100%

  - (ii) to promote resilience over a longer time horizon, by providing a sustainable maturity structure of assets and liabilities, creating additional incentives for banks to fund their activities with more stable sources of funding on an ongoing basis => Net Stable Funding Ratio (NSFR), with a time horizon of 1 year, to be implemented in 1.Jan.18.

$$\frac{\text{Available amount of stable funding}}{\text{Required amount of stable funding}} > 100\%$$

Liquidity

- Total net cash outflows = total expected cash outflows - total expected cash inflows in the specified stress scenario for the subsequent 30 calendar days.
- Total expected cash outflows = outstanding balances of various categories or types of liabilities and off-balance sheet commitments x rates at which they are expected to run off or be drawn down.
- Total expected cash inflows = outstanding balances of various categories of contractual receivables x rates at which they are expected to flow in under the scenario, up to an aggregate cap of 75% of total expected cash outflows.
- Minimum run-off factors according to liability types:

(i) Retail deposits - deposits by individuals, divided into "stable" and "less stable":

- Stable - amount of the deposits fully insured by a deposit insurance scheme and where depositors have other established relationships with the bank that make withdrawal highly unlikely, or the deposits are in transactional accounts (e.g. accounts where salaries are automatically deposited): 5%.
- Less stable deposits: 10%.

Liquidity

(ii) Unsecured wholesale funding run-off - liabilities and general obligations that are raised from non-natural persons and are not collaterals of the borrowing institution.

- funding by small business customers: 5% (10% for less stable)
- deposits generated by clearing, custody and cash management activities: 25%
- deposits of cooperative banks in central institutions within networks: 25%
- funding provided by non-financial corporates and sovereigns, central banks, multilateral development banks, and PSEs: 40% (20% for the deposit amounts fully covered by a deposit insurance scheme).
- funding provided by other legal entity customers: 100%

Liquidity

- During a period of financial stress, banks may use their stock of HQLA, with the LCR allowed to fall below 100%.
- Supervisors will subsequently assess this situation and adjust their response flexibly according to the circumstances, e.g. macrofinancial and financial conditions and prospects.
- Liabilities – weights for outflows depending on their stability.
- HQLA (except Level 2B assets) should ideally be eligible at central banks for intraday liquidity needs and overnight liquidity facilities.
- HQLA should also be well diversified within the asset classes themselves (except for sovereign debt of the bank's home jurisdiction or from the jurisdiction in which the bank operates; central bank reserves; central bank debt securities and cash), by implementing policies and limits in place in order to avoid concentration with respect to asset types, issue and issuer types, and currency.

Liquidity

- Fundamental characteristics of HQLA:

(i) Low risk - less risky assets tend to have higher liquidity. High credit standing of the issuer and a low degree of subordination increase an asset's liquidity. Low duration, low legal risk, low inflation risk and denomination in a convertible currency with low currency risk enhance an asset's liquidity.

(ii) Ease and certainty of valuation – higher liquidity if market participants are more likely to agree on its valuation, e.g. assets with more standardised, homogenous, independent from strong assumptions and simple and publicly available structures and pricing formulas. This rules out the inclusion of most structured or exotic products.

(iii) Low correlation with risky assets - not subject to wrong-way (highly correlated) risk, e.g. assets issued by FIs are more likely to be illiquid in times of liquidity stress in the banking sector.

(iv) Listed on a developed and recognised exchange - increases asset's transparency.

Liquidity

- Level 1 assets – no limits and haircuts to % in HQLA pool (but national supervisors may require haircuts based on their duration, credit and liquidity risk), limited to:

(a) coins and banknotes;

(b) central bank reserves (including required reserves), to the extent that the central bank policies allow them to be drawn down in times of stress;

(c) marketable securities representing claims on or guaranteed by sovereigns, central banks, PSEs, BIS, IMF, ECB and EC, or multilateral development banks and satisfying all of the following conditions:

- assigned a 0% risk-weight under the Basel II Standardised Approach for credit risk;
- traded in large, deep and active repo or cash markets characterised by low concentration;
- have a proven record as a reliable source of liquidity in the markets (repo or sale) even during stressed market conditions;
- not an obligation of a financial institution or any of its affiliated entities.

Liquidity

(d) where the sovereign has a non-0% risk weight:

- sovereign or central bank debt securities issued in domestic currencies by the sovereign or central bank in the country in which the liquidity risk is being taken or in the bank's home country;

- domestic sovereign or central bank debt securities issued in foreign currencies are eligible up to the amount of the bank's stressed net cash outflows in that specific foreign currency stemming from the bank's operations in the jurisdiction where the bank's liquidity risk is being taken.

Liquidity

- Level 2 assets (2A and 2B) - can be included in HQLA, if they comprise no more than 40% of the overall stock after applying haircuts.
- A 15% haircut is applied to the current market value of each Level 2A asset in HQLA. Level 2A assets are limited to the following:

(a) Marketable securities representing claims on or guaranteed by sovereigns, central banks, PSEs or multilateral development banks satisfying all the following conditions:

- assigned a 20% risk weight under the Basel II Standardised Approach for credit risk;
- traded in large, deep and active markets characterised by low level of concentration;
- have track record as a reliable source of liquidity in the markets even during stressed conditions;
- not an obligation of a financial institution or any of its affiliated entities.

Liquidity

(b) Corporate debt securities (including commercial paper) and covered bonds that satisfy all of the following conditions:

- not issued by a financial institution or any of its affiliated entities;
- in the case of covered bonds: not issued by the bank itself or any of its affiliated entities;
- either (i) have a long-term credit rating from a recognised external credit assessment institution (ECAI) of at least AA or, in the absence of a long term rating, a short-term rating equivalent; or (ii) do not have a credit assessment by a recognised ECAI but are internally rated as having a probability of default (PD) corresponding to a credit rating of at least AA-;
- traded in large, deep and active markets characterised by a low level of concentration; and
- have track record as a reliable source of liquidity in the markets even during stressed conditions.

Liquidity

- Level 2B assets are limited to the following:

(a) Residential mortgage backed securities (RMBS) that satisfy all of the following conditions, subject to a 25% haircut:

- not issued by (and underlying assets not originated by) the bank or its affiliated;
- long-term credit rating from a recognised ECAI of AA or higher, or in the absence of a long term rating, a short-term rating equivalent;
- traded in large, deep and active markets characterised by low concentration;
- have track record as a reliable source of liquidity in the markets even during stressed conditions;
- underlying asset pool restricted to residential mortgages (cannot contain structured products)
- the underlying mortgages are "full recourse'' loans (i.e. in the case of foreclosure the mortgage owner remains liable for any shortfall in sales proceeds from the property) and have a maximum loan-to-value ratio (LTV) of 80% on average at issuance; and
- the securitisations are subject to "risk retention" regulations which require issuers to retain an interest in the assets they securitise.

Liquidity

(b) Corporate debt securities (including commercial paper) that satisfy all of the following conditions may be included in Level 2B, subject to a 50% haircut:

- not issued by a financial institution or any of its affiliated entities;
- either (i) have a long-term credit rating from a recognised ECAI between A+ and BBB- or in the absence of a long term rating, a short-term rating equivalent; or (ii) do not have a credit assessment by a recognised ECAI and are internally rated as having a PD corresponding to a credit rating of between A+ and BBB-;
- traded in large, deep and active characterised by a low level of concentration; and
- a track record as a reliable source of liquidity in the markets even during stressed conditions.

Liquidity

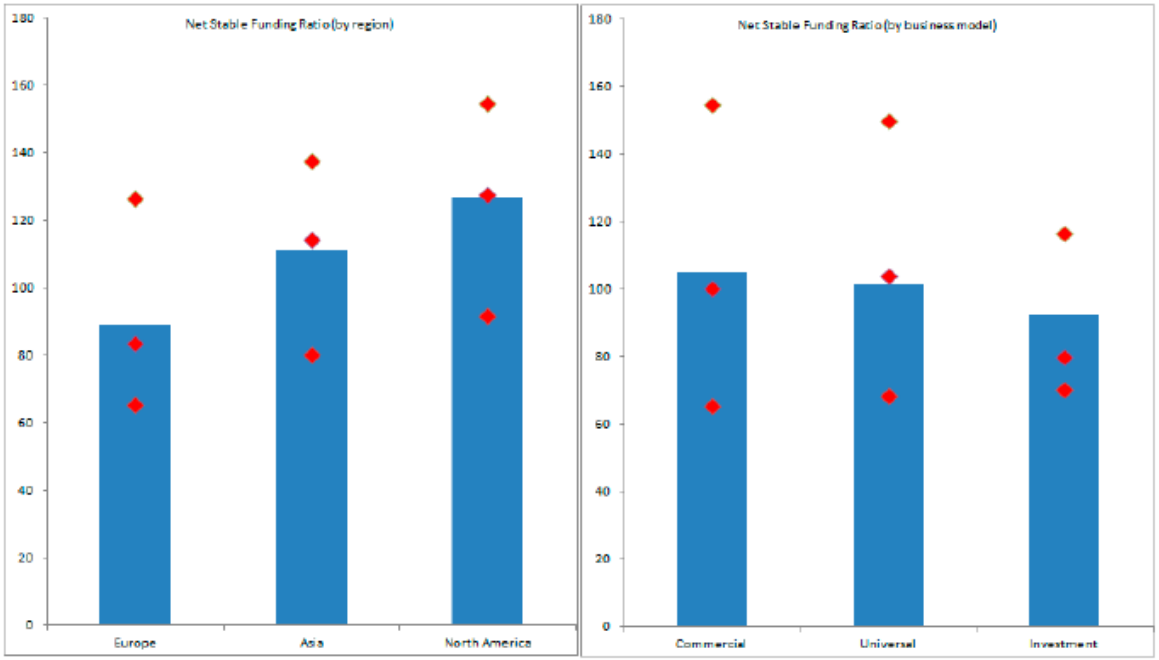
(c) Common equity shares that satisfy all of the following conditions may be included in Level 2B, subject to a 50% haircut:

- not issued by a financial institution or any of its affiliated entities;
- exchange traded and centrally cleared;
- a constituent of the major stock index in the home jurisdiction or where the liquidity risk is taken, as decided by the supervisor in the jurisdiction where the index is located;
- denominated in the domestic currency of a bank's home jurisdiction or in the currency of the jurisdiction where a bank's liquidity risk is taken;
- traded in large, deep and active markets characterised by a low level of concentration;
- have a track record as a reliable source of liquidity in the markets even during stressed conditions.

Liquidity

- Higher impact of new liquidity rules in Europe and investment banking.
- Regarding LCR, a shortfall of 225B€ of liquid assets was identified (in the Basel III monitoring exercise published by EBA on the 26th Sep.2013), but for Group 1 banks the average LCR was already above 100%.

Figure 7. Estimates of NSFR across Geographies and Business Models[1]

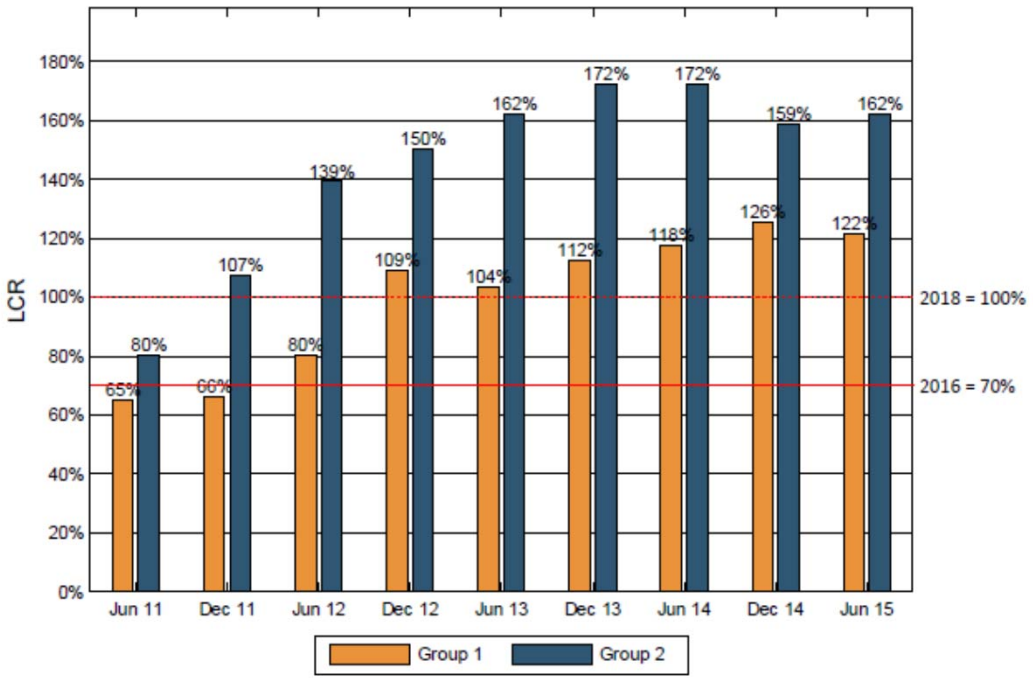


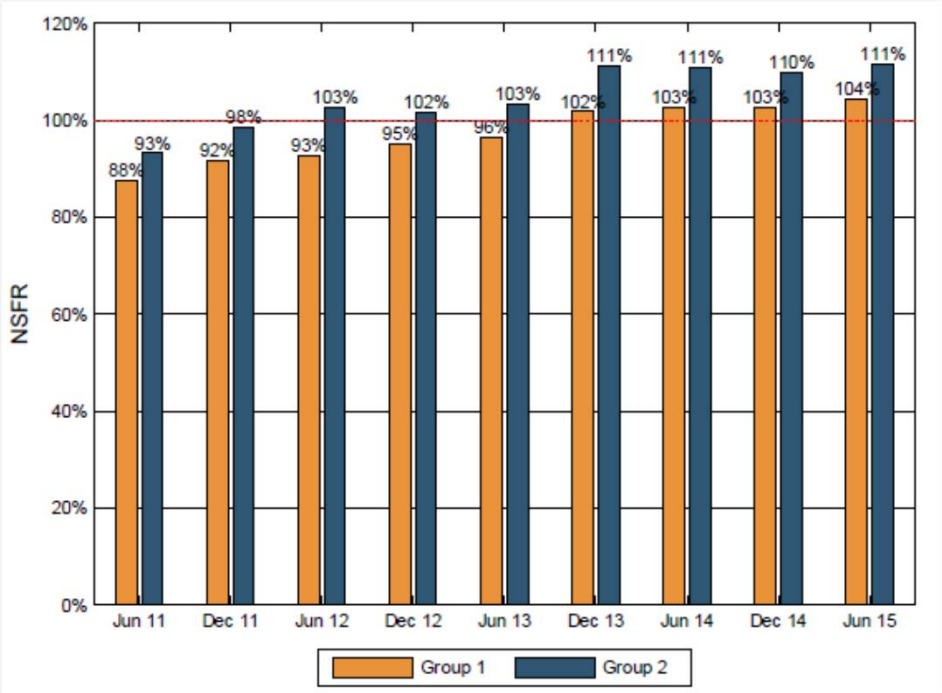
[1] The diamonds represent the minimum, median, and maximum values, respectively, for each bar.
Source: Bankscope, and staff estimates based on data for sample LCFIs.

Source: Ötker-Robe et al (2010), "Impact of Regulatory Reforms on Large and Complex
Financial Institutions", IMF, SPN/10/16.

Liquidity

- Liquidity ratios have been increasing since 2011.

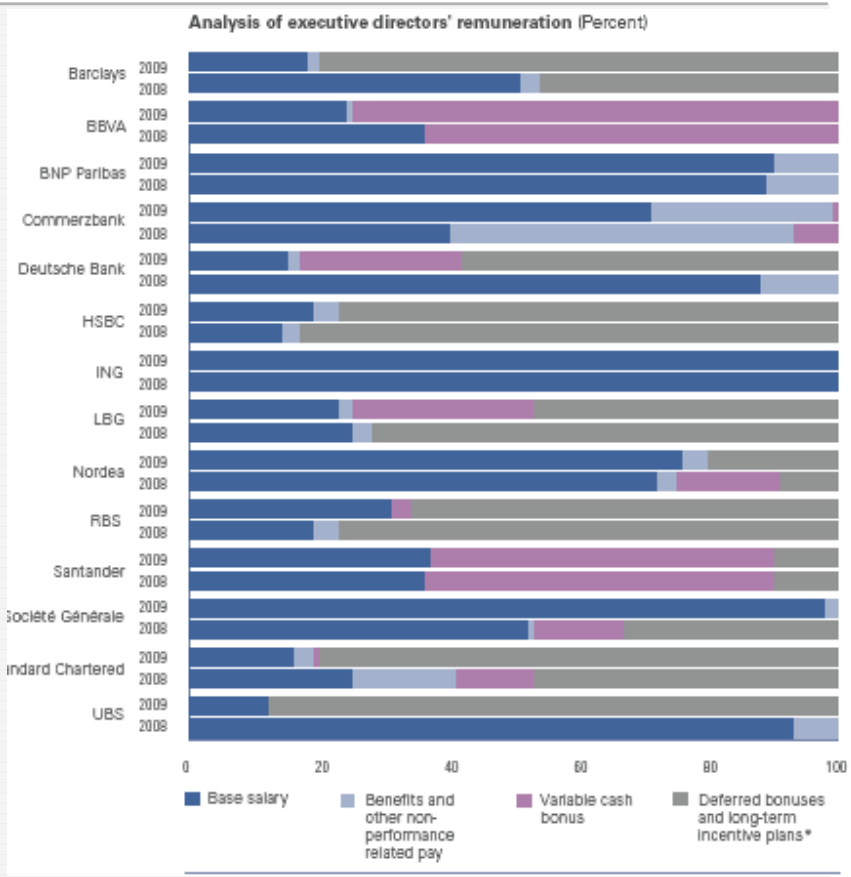




Source: EBA (2016), "CRD IV – CRR/BASEL III MONITORING EXERCISE», RESULTS BASED ON DATA AS OF 30 JUNE 2015, 2 MAR.

Remuneration

- Improvement of remuneration practices – BIS (2010), "Principles for enhancing corporate governance", Oct.; Committee of European Banking Supervisors (CEBS, the forerunner of EBA)) (2010), "Consultation paper on the Guidebook on Internal Governance (CP 44)", Notice 10/2011 and Circular Letter 2/2010 of BdP.
- Focus on:
  - Integration of risk in performance measurement;
  - Deferment of variable remuneration, becoming more dependent on long term performance.
- In July 2013, the EBA has published the report on high earners in the EU banking system.



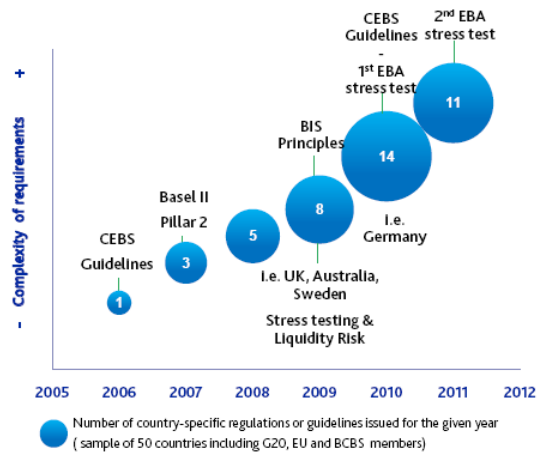
Source: KPMG (2010), "Focus on transparency-Financial reporting of European banks in uncertain times ".

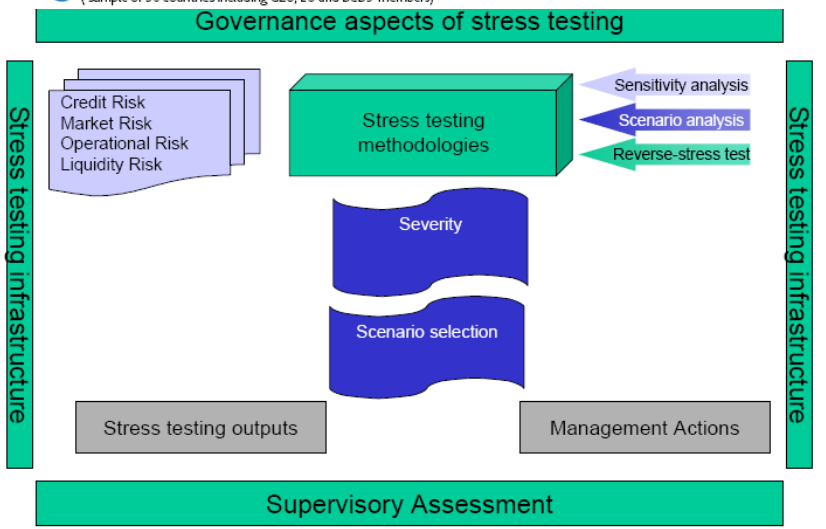
Stress Testing

- Higher relevance of stress testing exercises in banking management and capital planning since the end of the last decade, having several documents been released then:
  - BCBS (2009), "Principles for Sound Stress Testing Practices and Supervision", Jan.09.
  - IIF (2008), "Final Report of the IIF Committee on Market Best Practices: Principles of Conduct and Best Practice Recommendations".
  - CEBS (2010), "CEBS Guidelines on Stress Testing".

Sources: Moody's (2011), "Moody's Analytics 2011 Banking Industry Survey on Stress Testing"; CEBS (2010), "CEBS Guidelines on Stress Testing (GL31)", 26 August.

Figure 3. Growth of global and local stress testing regulations



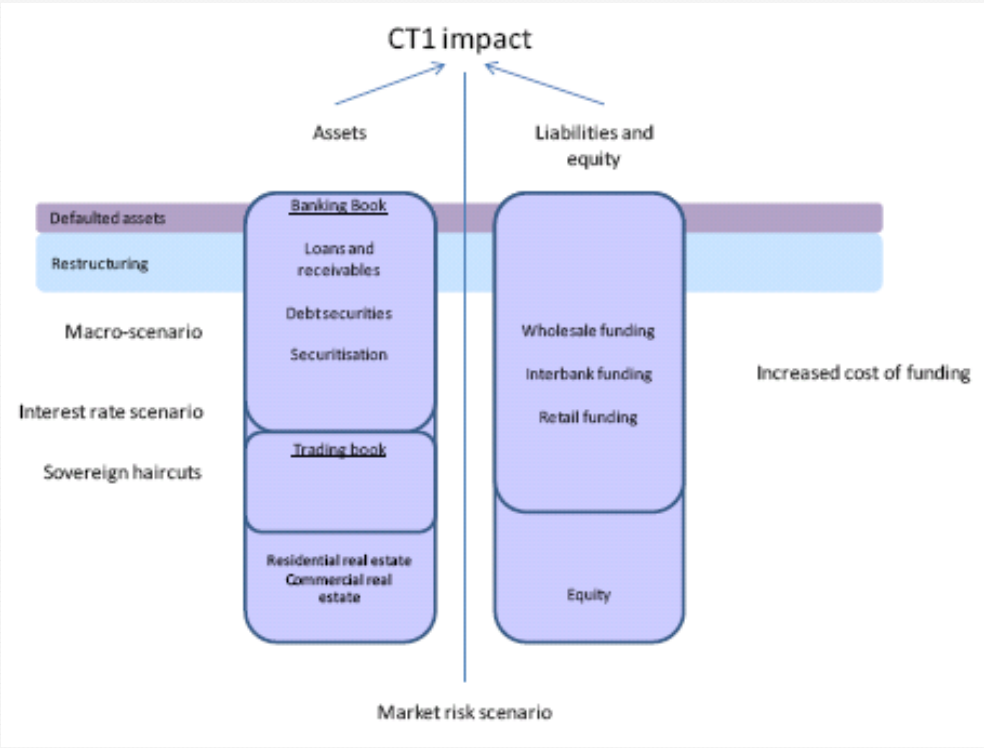


Stress Testing

- Key requirements:
  - Board involvement
  - Complexity degree depending on banks' size and capital requirements' approaches (more demanding for IRB banks)
  - Adequate severity and diversity of scenarios, including previous crises (e.g. Nasdaq, subprime), regularly updated
  - Comprehensive coverage (including structured products)
  - Reverse stress tests – identification of the scenarios that may originate severe problems (Instruction 4/2011)
  - 10d, 99% stressed VaR to be monthly updated, reporting average, maximum and minimum figures, based on samples including at least 1 year of data (BCBS (2009), "Revisions to the Basel II market risk framework", Jan.09).

Stress Testing

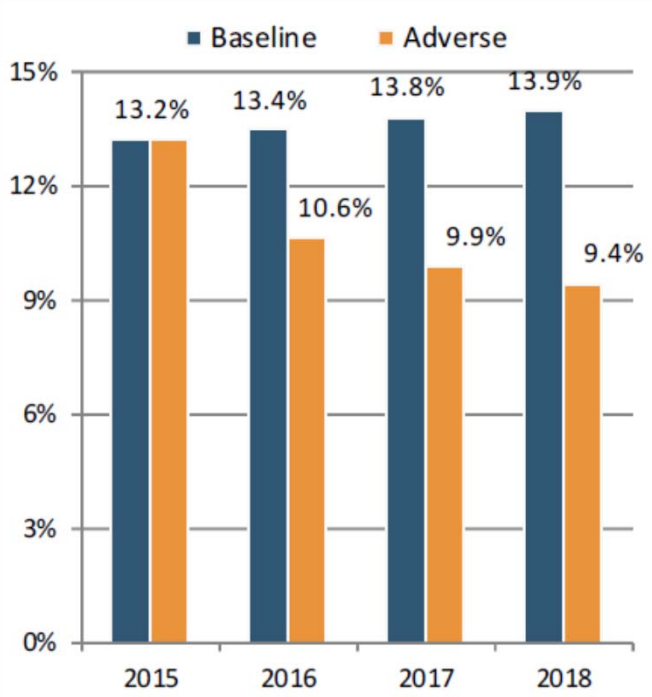
- 1st EBA/CEBS stress test
  - requested by the Eur. Council in Jul.10, for the main FIs in each member country.
  - additional to those performed by national authorities, covering 91 banks (65% of the asset volume of the banking system).
  - forecasting horizon - end-2011, focusing mostly on credit and market risks (impairments and NII).
  - conclusions:
    (i) 7 banks (5 from Spain, 1 from Greece and 1 from Germany) below the minimum level of 6% for the CT1 ratio.
    (ii) CT1 ratio fell to 9,2% in the stress scenario (11.2% in the baseline).
    (iii) Capital shortfalls around 3.5B€



Source: EBA (2011), "2011 EU-Wide Stress Test - Objectives, outcome and recommendations", 16 July.

Stress Testing

- 2016 EBA stress test
  - Assesses 51 banks from 15 EU and EEA countries – 37 from SSM countries and 14 from Denmark, Hungary, Norway, Poland, Sweden and the UK.
  - Adverse scenario - EU real GDP growth rates over the 3 years of the exercise of -1.2%, -1.3% and 0.7% respectively – a deviation of 7.1% from its baseline level in 2018.
  - Weighted average CET1 ratio falls by -380bps, to 9.4% at the end of 2018, mostly driven by a capital depletion of €269bn, due to credit risk losses.
  - Authorities must discuss the impact of the stress test with banks and understand how credible actions may offset its impact, namely taking into account their capital plan.



Source: EBA (2016), "2016 EU-Wide Stress Test", 29 July.

European Regulatory Initiatives

- The New CRD IV was published on the 27th Jun.2013 (Regulation No. 575/2013, 26 Jun. – CRR, Capital Requirements Regulation and Directive No. 2013/36/EU) with the following impacts:

(1) Increased quality and quantity of the minimum capital:

- Common Equity Tier 1 - 4,5%;
- T1 (CET1+Additional Tier1) - 6%;
- Solvency Ratio (T1+T2) – 8%.

European Regulatory Initiatives

(2) Additional pillar I buffers (in line with BIS, both increasing by 0,625% in 2016-2019):

(i) Conservation buffer – 2,5% (defined in Portugal by Notice 1/2015)

(ii) Countercyclical buffer – 0% to 2,5% (multiples of 25 bp)

- Following BCBS recommendations, the ESRB gave guidance to national authorities on setting countercyclical buffer rates (Recommendation ESRB/2014/1), e.g. the measurement and calculation of the deviation from long term trends of ratios of credit/GDP, variables that indicate the build-up of systemic risk due to excessive credit growth in a financial system (e.g. the relevant credit/GDP ratio and its deviation from the long-term trend) and variables that indicate that the buffer should be maintained, reduced or released.
- In Portugal, according to DL No. 157/2014, BdP establishes this buffer since the end of 2015 for the following quarter, keeping it at 0% since then, according to the methodology presented in BdP (2015), "Countercyclical Capital Buffer in Portugal: How will it work?", 29 Dec..

European Regulatory Initiatives

- As additional information to the Basel gap, BdP is considering the following indicators:

(a) Overvaluation of property prices - year-on-year growth rate of the real house price index and its four-quarter moving average

(b) Credit developments

(c) External imbalances – current account deficit

(d) Strength of bank balance sheets - loan-to-deposit ratio and its 4-quarter moving average

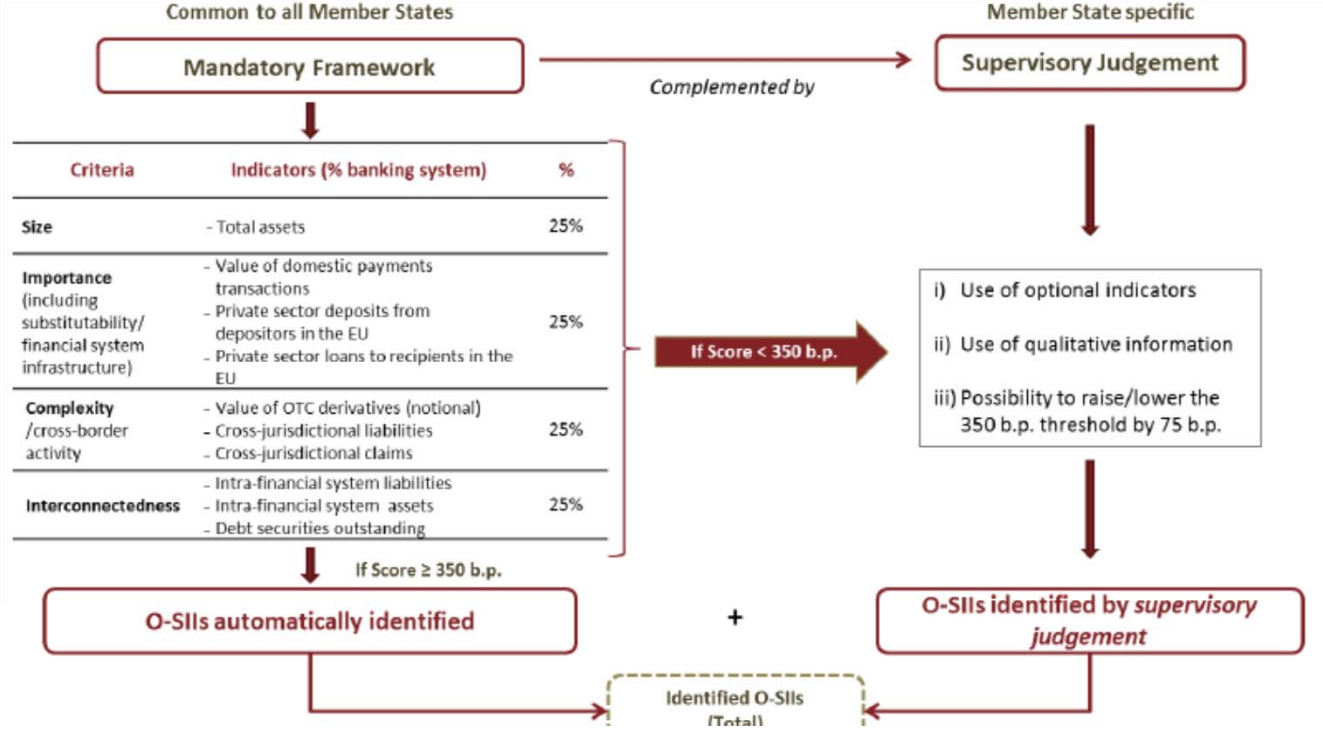
(e) Private sector debt burden - year-on-year growth rate of the debt-service-to-income ratio of the private non-financial sector and its 4-quarter moving average.

(f) Potential mispricing of risk - spread applied by banks to new loans granted to non-financial corporations

European Regulatory Initiatives

(iii) systemic risk:

- Other SIFIs: Min 1%
- Derogation: +25% of this buffer each year between 2016 and 2019
- O-SIIs criteria defined by EBA in 2014 ("Guidelines on the criteria to determine the conditions of application of Article 131(3) of Directive 2013/36/EU (CRD) in relation to the assessment of other systemically important institutions (O-SIIs)").



Source: BdP (2016), "Identification of O-SIIs nd Calibration of O-SIIs Capital Biffers", July.

European Regulatory Initiatives

- Member States have meanwhile defined their O-SIIs and the additional capital buffer required.
- In Portugal, according to the Notice No. 4/2015 of the BdP, the supervisor announces every year until 1 Dec. the O-SIIs and their capital surcharge (up to 2% of CET1).
- The results are based on the following classifications:

Clusters	Scores	O-SII buffer
5	≥ 2800	2.00 %
4	2100-2799	1.00 %
3	1400-2099	0.75 %
2	700-1399	0.50 %
1	350-699	0.25 %

Source: BdP (2016), "Identification of O-SIIs nd Calibration of O-SIIs Capital Biffers", July.

European Regulatory Initiatives

- In Dec. 2015, the following surcharges were announced by the BdP (kept since then, excluding Novo Banco, whose buffer was reduced in Jul2016 to 0,25%):

O-SII BUFFER APPLIED TO EACH BANKING GROUP AS OF 1 JANUARY 2018

Banking group	O-SII capital buffer (1 January 2018)	O-SII capital buffer (1 January 2019)
Caixa Geral de Depósitos	0,500 %	1,000 %
Banco Comercial Português	0,375 %	0,750 %
Novo Banco	0,375 %	0,750 %
Banco BPI	0,250 %	0,500 %
Santander Totta, SGPS	0,250 %	0,500 %
Caixa Económica Montepio Geral	0,125 %	0,250 %

Source: BdP (2015), "Other systemically important institutions capital buffer", www.bportugal.pt

European Regulatory Initiatives

(3) Leverage ratio:

- Commission Delegated Regulation (EU) 2015/62 of 10 October 2014 amending Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to the leverage ratio - will be initially a pillar 2 measure, with reporting/observation period starting in Jan.14 and public disclosure in Jan.15;
- EBA/CP/2014/44 - Draft Implementing Technical Standards amending Commission Implementing Regulation (EU) No 680/2014 (ITS on supervisory reporting) with regard to the Leverage Ratio (LR) following the EC's Delegated Act on the LR published in 16 December 2014.
- EBA Final draft Implementing Technical Standards amending Commission Implementing Regulation (EU) No 680/2014 (ITS on supervisory reporting) with regard to the Leverage Ratio (LR) following the EC's Delegated Act on the LR, 15 Jun.2015 – to be implemented in 1 Jan.18.

European Regulatory Initiatives

- Bank Resolution and Recovery Directive (BRRD) – Directive 2014/59/EU, 15 May and Regulation EU No. 806/2014, 15 July (entry into force on the 1st Jan.2016):
  (1) prevention and preparation perspective - institutions are required to draw up recovery plans setting out arrangements and measures to enable institutions to take early action to restore long term viability. The resolution plan, approved by the resolution authorities in cooperation with supervisors, will set out options for resolving the institution only if it is failing or likely to fail, and there is no other solution that would restore the institution within an appropriate timeframe.
  (2) extends the powers of supervisors to intervene at an early stage, adding to Art. 136 of CRD the powers to require the institution to implement arrangements and measures set out in the recovery plan; draw up an action program and a timetable for its implementation. In addition, a Single Resolution Board, along with a Single Resolution Fund (SRF), will be created, to decide on if, when and how a bank would be resolved, as well as to appoint a special manager to a failing institution for a limited period (with all the powers of the management of the institution).
  (3) harmonises the triggers for the application of resolution tools, ensuring that authorities are able to take an action without being required to establish that an institution is insolvent.

European Regulatory Initiatives

- The main resolution measures will include:

(1) sale of (part of) a business;

(2) establishment of a bridge institution (the temporary transfer of good bank assets to a publicly controlled entity);

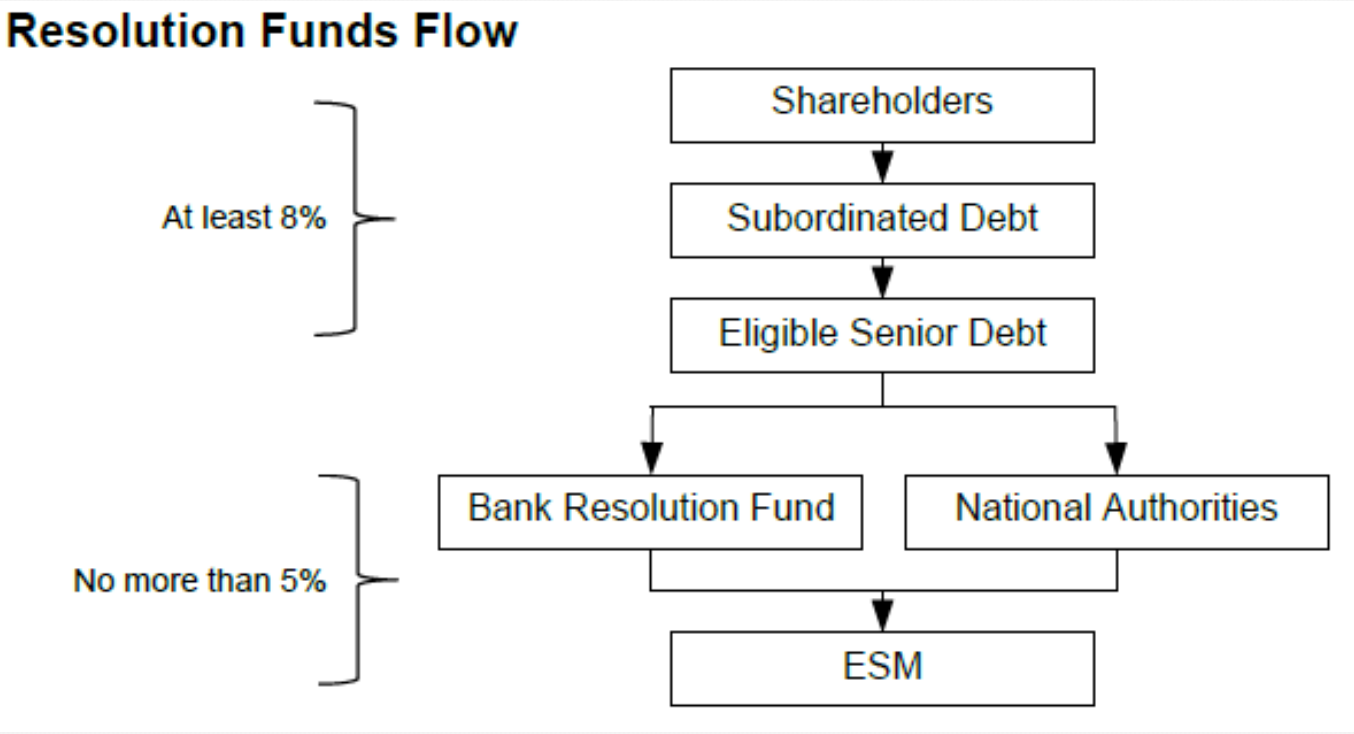
(3) asset separation (the transfer of impaired assets to an asset management vehicle);

(4) bail-in measures (the imposition of losses, with an order of seniority, on shareholders and unsecured creditors) - eligible deposits from natural persons and micro, small and medium-sized enterprises, as well as liabilities to the EIB, will have preference over the claims of ordinary unsecured, non-preferred creditors and depositors from large corporations.

- In Portugal, Decree-Law 31-A/2012, 10 Feb. established the resolution law, with the Notice 18/2012, 18 Dec. defining the information required from FIs for the setting-up of the Resolution Plans by the BdP.

European Regulatory Initiatives

- Direct recapitalization can eventually be provided by the SRF, once a number of conditions are met, though the ESM has set aside only a modest 60 B€ for this purpose.



Source: Fitch (2013), "Impact of European Banking Union on Banks", Sept.

European Regulatory Initiatives

(4) MREL - minimum requirements for own funds and eligible liabilities for bail-ins:

- Corresponds to TLAC established by the FSB for the G-SIBs (enter into force in 2019), even though TLAC is a Pillar 1 capital requirement, while MREL is established by the resolution authority for each individual bank, based on the resolution plan.
- To be established by the resolution authority for each individual institution (entry into force in 2020, with phasing-in since 2016), based on a set of common criteria defined in the BRRD, namely the need to ensure that:

(a) the institution can be resolved by the application of the resolution tools;

(b) in case of bail-in, losses can be absorbed and the CET1 ratio could be restored to a level necessary to enable it to continue to comply with the minimum levels;

(c) it attends to the size, the business model, the funding model and the risk profile of the institution;

(d) the Deposit Guarantee Scheme can contribute to the financing of resolution;

(e) the adverse effects of the failure of the institution on financial stability are mitigated or avoided.

European Regulatory Initiatives

- MREL – regulatory instruments:

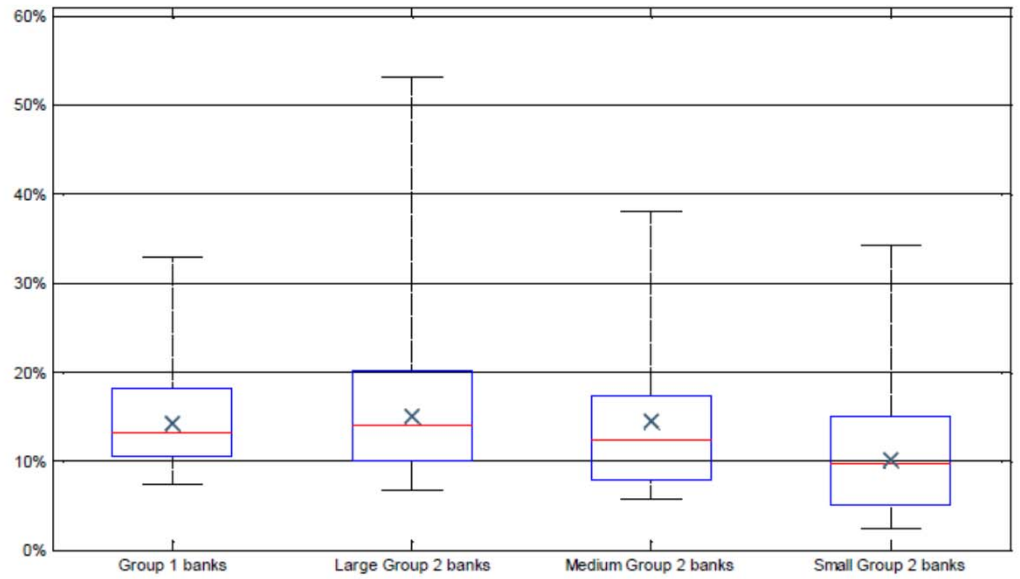
- EBA:
  - EBA/RTS/2015/05 (3 Jul.) - *regulatory technical standards* about the MREL calculation for each institution, under Directive 2014/59/EU, to further specify the common criteria set out in the BRRD to define MREL.
  - as well as Draft Implementing Technical Standards on procedures and templates for the identification and transmission of information by resolution authorities to the EBA on MREL (EBA/ITS/2017/06, 5 Sept.).

- EC
  - Commission Delegated Regulation (EU) 2016/1450, 23 May, to supplement Directive 2014/59/EU regarding the RTS on the criteria to set the MREL.

European Regulatory Initiatives

- According to the Final Report on MREL by EBA (Op-2016-21, 14 December 2016), criteria, the average MREL ratio of a sample of 133 EU banks (as of end-Dec.2015) stands at around 15% of Total Liabilities and Own Funds (TLOF), …

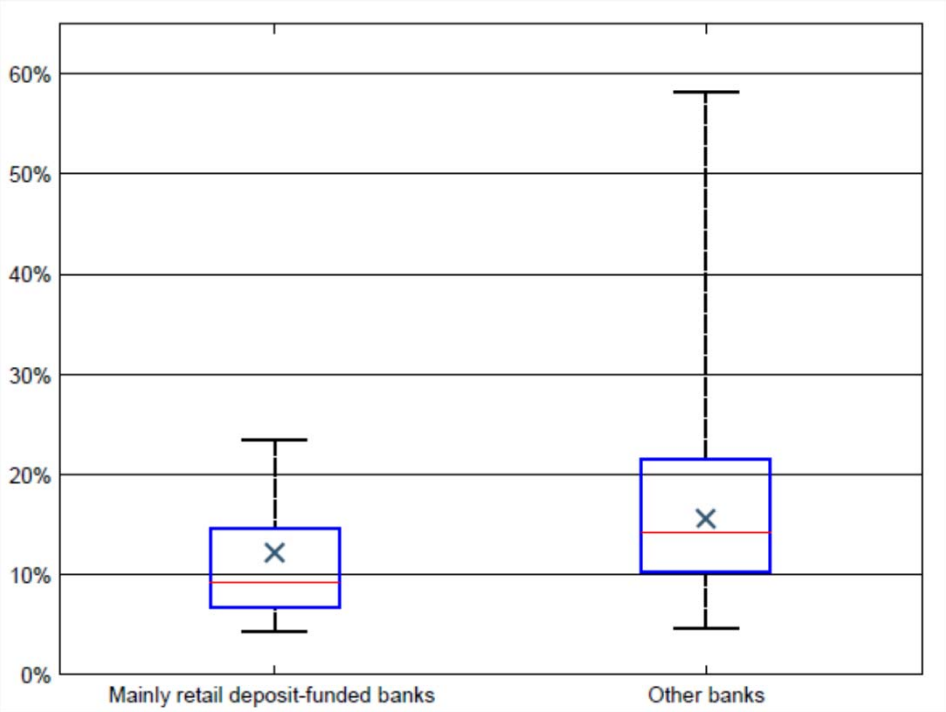
Figure 6: Distribution of MREL ratio[45] by size and cross-border activity (% of TLOF)



Source: EBA (2016) (Op-2016-21, 14 Dec.)
Note: Group 1 comprises the largest and most internationally diversified banks.

European Regulatory Initiatives

- … with retail banks exhibiting lower MREL, due to the weight of retail deposits.

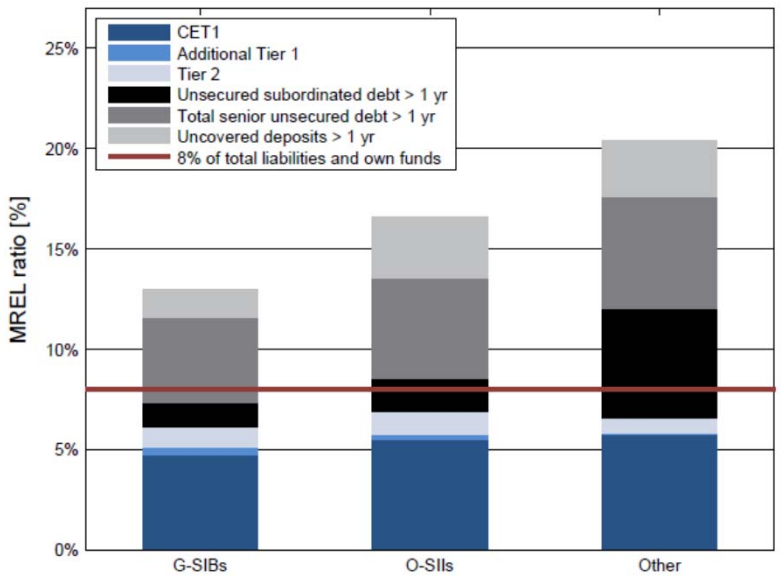


Source: EBA (2016) (Op-2016-21, 14 Dec.)
Note: Group 1 comprises the largest and most internationally diversified banks.

European Regulatory Initiatives

- Capital instruments represents around 43% of the total MREL, with smaller banks exhibiting higher weight of subordinated debt.
- According to the EBA, the MREL shortfall in Europe may be between 67B€ and 221B€ (124 B€ and 298B€ excluding deposits), depending on the requirements to be set by resolution authorities.
- According to CreditSights, MREL shortfall in Europe is over 13B€ if senior debt and term deposits over 1 year are included, increasing to 674B€ if only subordinated debt and capital are considered.

Figure 8: Composition[48] of MREL by banks' systemic importance (% of TLOF)



Source: EBA (2016) (Op-2016-21, 14 Dec.)

European Regulatory Initiatives

- Four Commission Delegated Regulations (EU) No. 446/2012 to 449/2012, 21.03.12, were published on 30 May 2012, establishing regulatory technical standards for credit rating agencies:

(i) the information to be provided by a credit rating agency in its application for registration to the European Securities and Markets Authority (ESMA);

(ii) the presentation of the information to be disclosed by credit rating agencies in a central repository (CEREP) so investors can compare the performance of different CRAs in different rating segments;

(iii) how ESMA will assess rating methodologies; and

(iv) the information CRAs have to submit to ESMA and at what time intervals in order to supervise compliance.

European Preparatory Reports

- Larosière Report (Feb.2009): sponsored by the EC and published in Feb.09, by the High-Level Group on Financial Supervision in EU, aiming at advising the Commission on the future of financial regulation and supervision.
- Liikanen Report (Oct.2012): High-level Expert Group on reforming the structure of the EU banking sector, established by Commissioner M. Barnier in Feb.12 to assess whether additional reforms of the structure of individual banks would further reduce the probability and impact of failure, ensure the continuation of vital economic functions and better protect vulnerable retail clients.
  - Main proposal: legal separation of particularly risky financial activities from deposit-taking banks within a banking group => Proprietary trading and other significant trading activities should be assigned to a separate legal entity if the activities to be separated amount to a significant share of a bank's business, but keeping universal banking model, as the separated activities would be carried out in the same group.

Liikanen Report

- Other proposals:

- more robust risk weights in the determination of minimum capital standards and more consistent treatment of risk in internal models, namely on the trading book and real estate lending;
- include maximum loan-to-value (and/or loan-to-income) ratios in micro- and macro-prudential supervision's instruments;
- augment existing corporate governance reforms by specific measures to:

(1) strengthen boards and management;

(2) promote the risk management function;

(3) rein in compensation for bank management and staff;

(4) improve risk disclosure

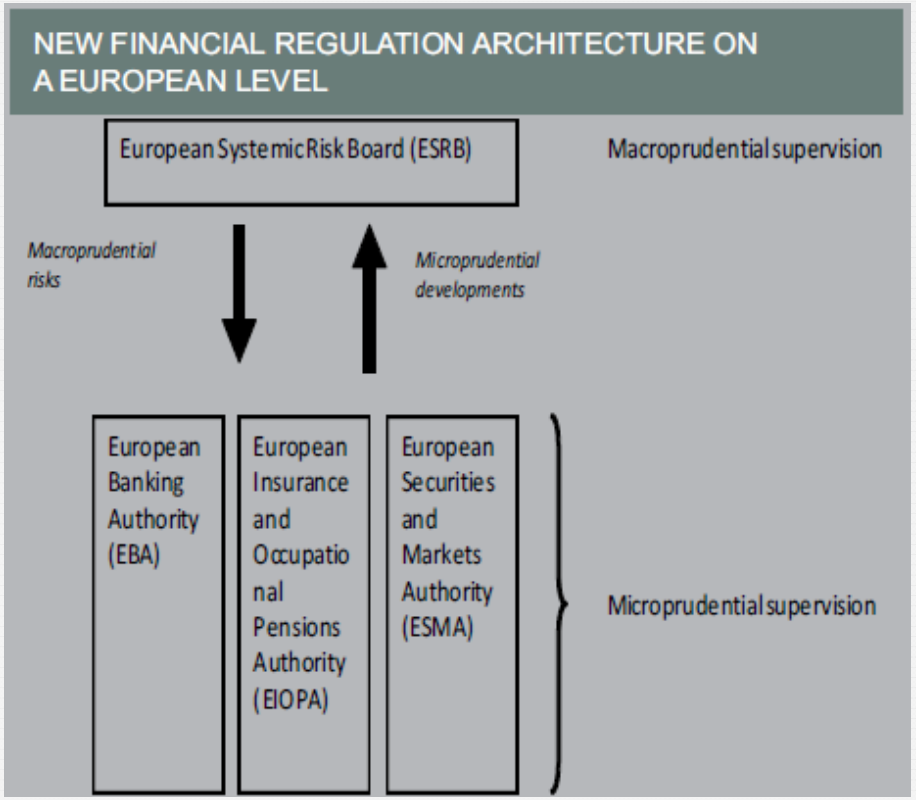
(5) strengthen sanctioning powers.

European Supervision Model

- European system of financial supervision:

(i) 3 microprudential European Supervisory Authorities (ESAs) - focused on the banking and insurance sectors, as well as on the capital markets, coordinating the action of national authorities and imposing common rules, strengthening the role previously given to the European Committees.

(ii) 1 macroprudential authority – ESRB



Source: Banco de Portugal (2010), "Financial Stability Report", May.

European Supervision Model

- Main tasks of the ESRB :

(i) collecting and analysing relevant information to identify systemic risks

(ii) issuing warnings where systemic risks are deemed to be significant

(iii) issuing recommendations for action in response to the risks identified

(iv) monitoring the follow-up of warnings and recommendations

(v) cooperating and coordinating with ESAs and international fora

- Composition of the ESRB :

(i) the President of the ECB is also the Chair of the ESRB.

(ii) the ESRB brings together representatives of the national central banks of EU countries and the Chairs of the 3 ESAs.

European Banking Union

- In the European Council of Jun.12, the creation of a Banking Union for the Euro Area was decided, covering all Euro Area banks and complemented by an European Resolution Fund and a Common Deposit Guarantee System, in order to break the link between sovereign and banking system's risks.
- In Sep.12, the EC proposed a single supervision mechanism (SSM), being the ECB the supervisor, starting on the 4 Nov.2014. According to Reg. 1024/2013, 15.Oct, envisaging:

(i) Separation between ECB's monetary policy and supervision roles

(ii) Ensure equal representativeness of member countries in the supervision mechanism (being in or out of the Euro Area)

(iii) Integrated decision making process, delegating supervision tasks to national authorities (defined in Reg. 468/2014, 16 Apr.)

(iv) Adoption of a common set of prudential rules.

European Banking Union

- The ECB has been entrusted with the following tasks:
  - authorize CIs and withdraw existing authorizations
  - assess qualified participations
  - ensure compliance with prudential rules in EU
  - assess adequacy of procedures, strategies and CI's own funds and perform stress tests
  - impose additional specific capital requirements
  - carry out supervisory tasks within recovery plans and early intervention measures in situations of non-compliance of prudential requirements (or risks of)
  - direct supervision of the significant banks (totaling currently 120 banking groups, i.e. around 85% of eurozone banks' assets)
  - indirect supervision of the remaining banks.

European Banking Union

- Significance criteria:

Size	the total value of its assets > €30 billion
Economic importance	for the specific country or the EU economy as a whole
Cross-border activities	the total value of its assets > €5 billion and the ratio of its cross-border assets/liabilities in more than one other participating Member State to its total assets/liabilities is > 20%
Direct public financial assistance	it has requested or received funding from the European Stability Mechanism or the European Financial Stability Facility

A supervised bank can also be considered significant if it is one of the three most significant banks established in a particular country.

Source: ECB website.

European Banking Union

- The ECB must also set a list of priority less significant institutions, taking into account the risk situation and potential impact on the domestic financial system.
- In 2015, this list contained 108 banks and was updated in 2016 to 93 institutions.
- Reasons for a less significant institution (LSI) to be deemed “high priority”:

(i) being close to be classified as significant institutions due to their size;

(ii) a minimum of three high-priority LSIs per country applies;

(iii) riskiness and impact on the national economy, depending on a risk assessment by the national authority, taking into account several elements of the institution, e.g.:

  (a) business model

  (b) internal governance and risk management

  (c) risks to capital

  (d) risks to liquidity and funding.

European Banking Union

- In order to achieve a SSM, the ECB performed in the 1Q14 an asset quality review (AQR) and balance sheet assessment of the 130 participating banks, aiming at minimizing legacy problems (announced on 23rd Oct.2013).
- The examined banks accounted for assets of €22 T (82% of total banking assets in the euro area).
- This exercise started in Nov.13, added by stress tests, with 3 main goals: transparency (quality of information), repair (corrective actions, 6-9 months provided) and confidence building (sound fundamentals).

Estimated Timeline For Banking Union

Date	Event	Comments
Q413	SSM directive finalised	The European Parliament needs agreement from the ECB board to separate its supervisory and monetary policy roles before voting this through. The plenary session is scheduled for 10 September 2013.
1 Jan 14	CRR and CRD IV implementation	EU wide. Once the SSM is implemented, EBA will coordinate between ECB and non-eurozone national supervisors.
Q413	BRRD finalised	We expect discussion between the European Parliament, the EC and the Council of Ministers to be finalised during Q413. The plenary session is scheduled for 19 November 2013.
Q413/Q114	ECB asset quality review and balance sheet assessment	The proposed SSM directive requests a comprehensive balance-sheet assessment of all banks the ECB will supervise.
Q2/Q314	EBA stress tests	Stress tests have been postponed until 2014 to tie in with ECB asset-quality review and balance-sheet assessment.
By 1 Jan 15	BRRD adopted into national legislation in all EU countries	The proposed BRRD requires the bail-in tool (including senior creditors) to be in place by 1 January 2018.
Unknown - 2015?	Single Resolution Authority	The EC has proposed that a single resolution board is established for all eurozone banks. There may be some legal hurdles to achieving this, so coordination of national resolution authorities either at eurozone or EU level could be an interim measure. We expect whatever mechanism is decided upon to be implemented shortly after SSM.
Unknown - 2015/2016	Central eurozone deposit and resolution funds	A single central deposit fund is off the agenda for the medium term, but the EC has proposed a single bank resolution fund. The first route will be through increased coordination of national deposit and resolution funds in eurozone countries. Resolution funds will be state backed initially, with contributions from banks replacing state financial commitments over time.
2018/2019	Full Basel III, Resolution and Banking Union Implementation	

Source: Fitch (2013), "Impact of European Banking Union on Banks", Sept.

European Banking Union

- The stress test was performed by the participating banks, the ECB and NCAs in cooperation with the EBA, that also designed the stress test methodology, while the adverse scenario was developed by the ESRB in cooperation with the NCAs, the EBA and the ECB.
- Banks were required to maintain a minimum CET1 ratio of 8% under the baseline scenario (as for the AQR) and a minimum CET1 ratio of 5.5% under the adverse scenario.
- The results announced on the 26th Oct.2014 were as follows:
  - Capital shortfall of €25B detected at 25 participant banks
  - Banks' asset values need to be adjusted by €48B, €37B of which did not generate capital shortfall
  - Additional €136B found in non-performing exposures (to a total of €879B)
  - Adverse stress scenario would deplete banks' capital by €263B, reducing median CET1 ratio by 4 percentage points from 12.4% to 8.3%.

European Banking Union

Table 1 Participating banks with a shortfall

Bank Name	CET1 ratio starting point	CET1 ratio post AQR	CET1 ratio baseline scenario	CET1 ratio adverse scenario	Capital shortfall (€ billion)	Net eligible capital raised (€ billion)	Capital shortfall post net capital raised (€ billion)
Eurobank[1]	10.6%	7.8%	2.0%	-6.4%	4.63	2.86	1.76
Monte dei Paschi di Siena	10.2%	7.0%	6.0%	-0.1%	4.25	2.14	2.11
National Bank of Greece[1]	10.7%	7.5%	5.7%	-0.4%	3.43	2.50	0.93
Banca Carige	5.2%	3.9%	2.3%	-2.4%	1.83	1.02	0.81
Cooperative Central Bank	-3.7%	-3.7%	-3.2%	-8.0%	1.17	1.50	0.00
Banco Comercial Português	12.2%	10.3%	8.8%	3.0%	1.14	-0.01	1.15
Bank of Cyprus	10.4%	7.3%	7.7%	1.5%	0.92	1.00	0.00
Oesterreichischer Volksbanken-Verbund	11.5%	10.3%	7.2%	2.1%	0.86	0.00	0.86
permanent tsb	13.1%	12.8%	8.8%	1.0%	0.85	0.00	0.85
Veneto Banca	7.3%	5.7%	5.8%	2.7%	0.71	0.74	0.00
Banco Popolare	10.1%	7.9%	6.7%	4.7%	0.69	1.76	0.00
Banca Popolare di Milano	7.3%	6.9%	6.5%	4.0%	0.68	0.52	0.17
Banca Popolare di Vicenza	9.4%	7.6%	7.5%	3.2%	0.68	0.46	0.22
Piraeus Bank	13.7%	10.0%	9.0%	4.4%	0.66	1.00	0.00
Credito Valtellinese	8.8%	7.5%	6.9%	3.5%	0.38	0.42	0.00
Dexia[2]	16.4%	15.8%	10.8%	5.0%	0.34	0.00	0.34
Banca Popolare di Sondrio	8.2%	7.4%	7.2%	4.2%	0.32	0.34	0.00
Hellenic Bank	7.6%	5.2%	6.2%	-0.5%	0.28	0.10	0.18
Münchener Hypothekenbank	6.9%	6.9%	5.8%	2.9%	0.23	0.41	0.00
AXA Bank Europe	15.2%	14.7%	12.7%	3.4%	0.20	0.20	0.00
C.R.H. - Caisse de Refinancement de l'Habitat	5.7%	5.7%	5.7%	5.5%	0.13	0.25	0.00
Banca Popolare dell'Emilia Romagna	9.2%	8.4%	8.3%	5.2%	0.13	0.76	0.00
Nova Ljubljanska banka[3]	16.1%	14.6%	12.8%	5.0%	0.03	0.00	0.03
Liberbank	8.7%	7.8%	8.5%	5.6%	0.03	0.64	0.00
Nova Kreditna Banka Maribor[3]	19.6%	15.7%	12.8%	4.4%	0.03	0.00	0.03
Total	10.0%	8.4%	7.2%	2.1%	24.62	18.59	9.47

Figure 1 Gross AQR adjustment by country of participating bank

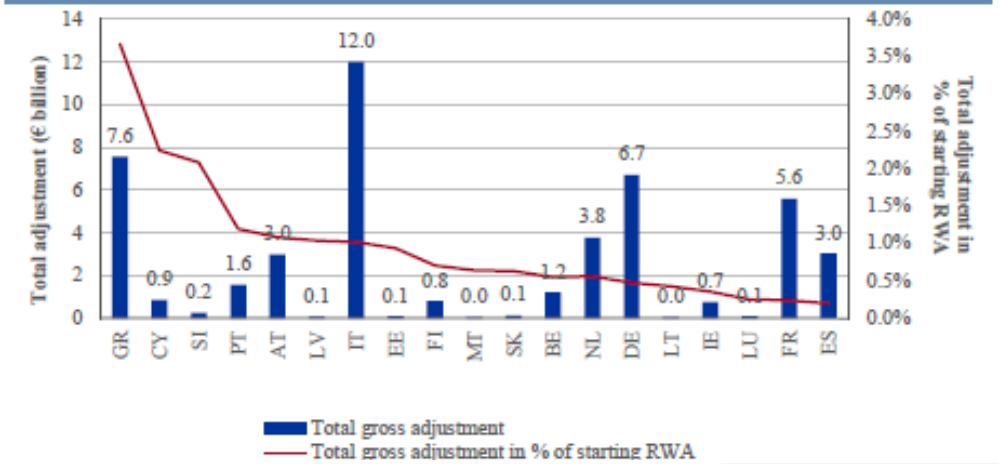
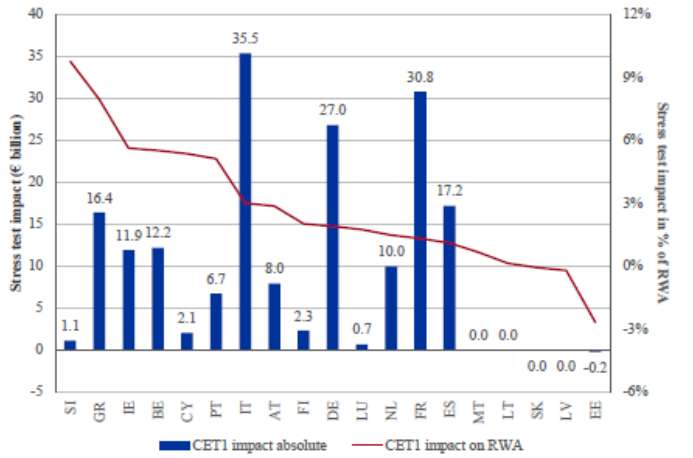


Figure 52 Impact of the stress test on the aggregate CET1 capital by country under the adverse scenario in € billion and in percentage of RWA



Source: ECB (2014), "Aggregate Report on the Comprehensive Assessment", Oct.

SREP

- In the Euro Area, Pillar II is divided into 2 major components:

(i) Institutions - expected to establish sound, effective and complete strategies and processes to assess and maintain, on an ongoing basis, the amounts, types and distribution of internal capital commensurate to their risk profiles (ICAAP), as well as robust governance and internal control arrangements

(ii) Supervisory authorities - SREP.

- SREP – set of procedures annually adopted by the supervisors of the SSM to ensure that institutions have adequate arrangements, strategies, processes and mechanisms, as well as capital and liquidity to ensure a sound management, internal control system and coverage of their risks, to which they are or might be exposed, including those revealed by stress testing and risks institution may pose to the financial system.

SREP

- EBA/GL/2014/13, “Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP)”, 19 December 2014.
- SREP is applied proportionally, to significant and less significant institutions, with a frequency and intensity as a function of the potential impact of each financial institution on the financial system and the respective risk profile.
- The main outcome of the SREP is the determination of a minimum capital level, above pillar I requirements.

SREP

- SREP may also imply Institution-specific quantitative liquidity requirements, e,g. LCR higher than the regulatory minimum, as well as qualitative supervisory measures, e.g.:
  - the restriction or limitation of business
  - the requirement to reduce risks
  - the restriction or prior approval to distribute dividends
  - the imposition of additional or more frequent reporting obligations

- SREP provides a score with 4 positive classifications (1-4) and 1 negative ('F'), suggesting the supervisory perspective that the bank is facing bankruptcy risk.

SREP

- Classifications must be based on the dimension, structure, internal organization and nature and complexity of the activities, reflecting the systemic risk of the FI:
  - Classification 1 – G-SIIs, O-SIIs and, if appropriate, other FI determined by the supervisors;
  - Classification 2 – Medium/large FI not included in 1, operating domestically or with relevant international activity, in several business lines, including credit and financial products in the corporate and retail segment + FI specialized FI with significant market shares in their business lines, payment systems and markets.
  - Classification 3 – Other small/medium FI, with domestic activity or significant international operations, with presence in a limited number of business lines, offering predominantly credit products in the retail and corporate markets.
  - Classification 4 – Other.

SREP

- Supervisory authorities must monitor regularly financial and non financial relevant indicators, to identify changes in the financial conditions and in the risk profile of FI, including:

a) All the capital ratios (Regulation (EU) Nº. 575/2013) and the corresponding national laws, e.g. CT1, LCR and NSFR;

b) Minimum requirements for own funds and Minimum Requirement for Own Funds and Eligible Liabilities for bail-in (MREL);

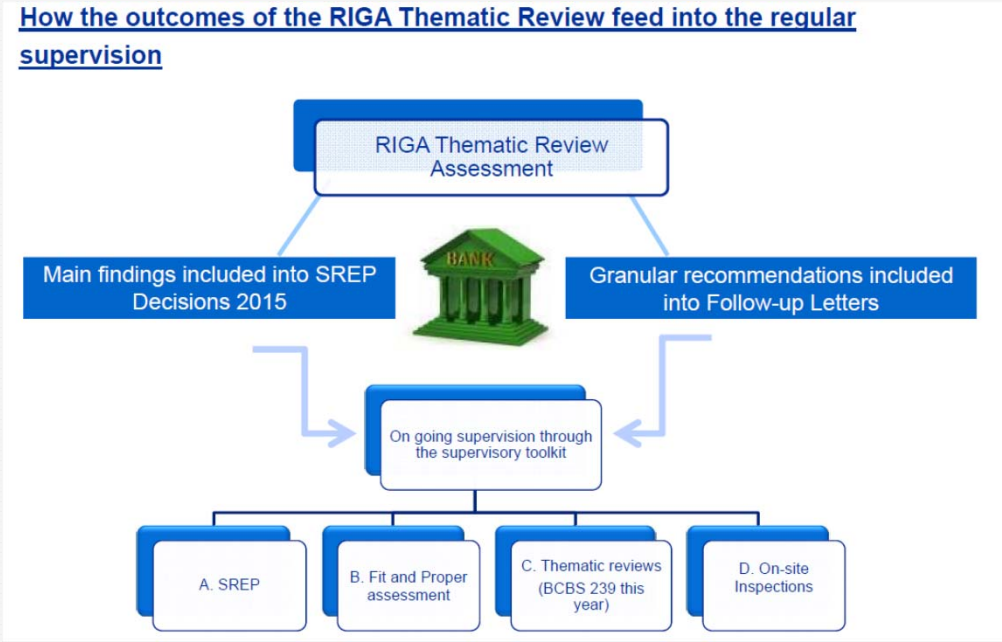
c) Relevant market indicators (e.g. stock prices, CDS spreads, bond spreads);

d) Recovery indicators presented in the recovery plans of the FI; and

e) Macroeconomic indicators on the regions, sectors and markets where the FI operates.

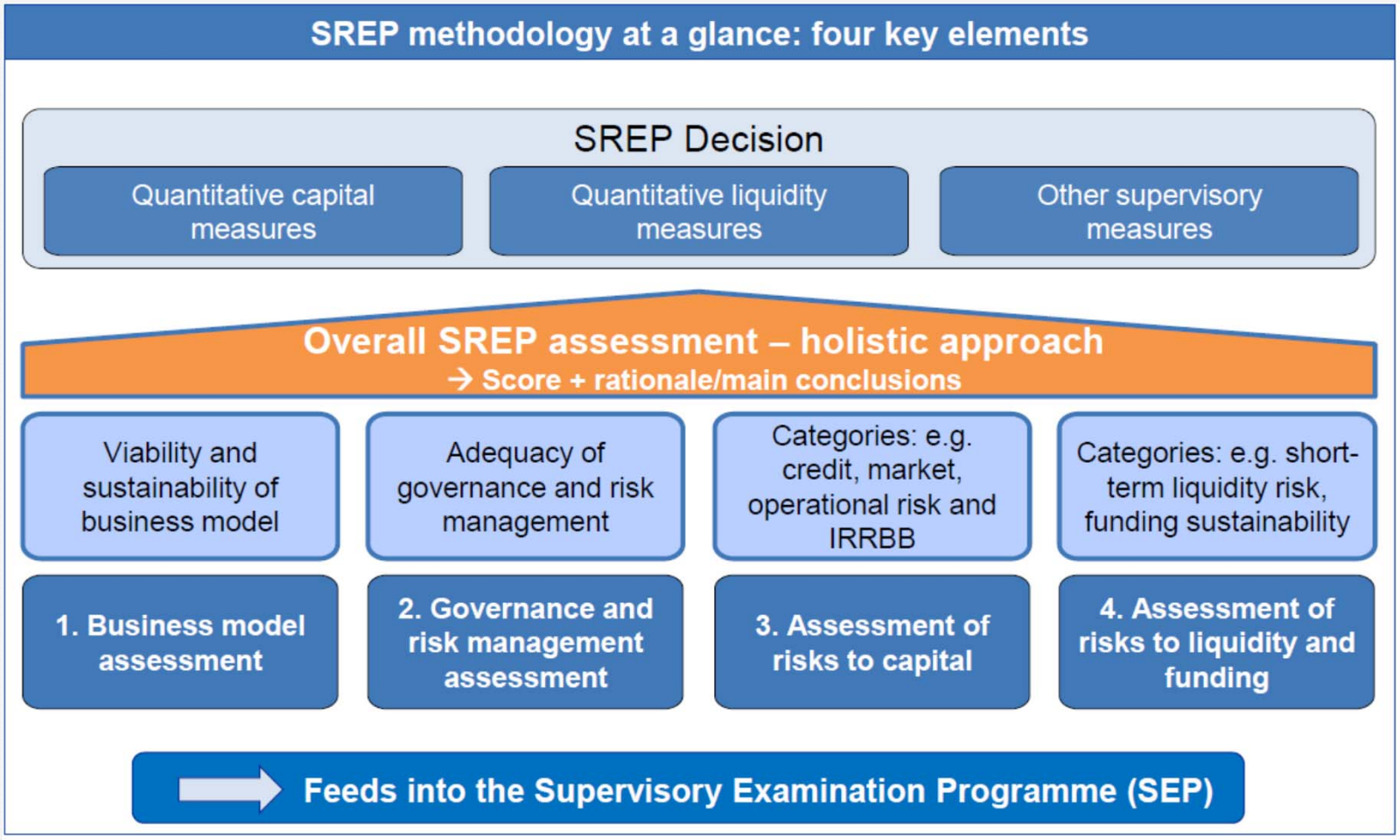
SREP

- SREP integrates the RIGA (Risk Governance and Appetite) assessment performed by the BCE:



Source: ECB (2016), "European Central Bank SSM Conference on Governance and Risk Appetite", 23 June.

SREP



ECB (2016), "SSM SREP Methodology Booklet - 2016 edition - Level playing field - High standards of supervision - Sound risk assessment"

SREP

- Provides synthetic overview of an institution's risk profile:
  - based on the assessment of all four elements (not the simple sum)
  - as a starting point, the 4 SREP elements are considered equally important

- Takes into account:
  - the institution's capital/liquidity planning to ensure a sound trajectory towards the full implementation of CRD IV/CRR
  - peer comparisons
  - the macro environment under which the institution operates

ECB (2016), "SSM SREP Methodology Booklet - 2016 edition - Level playing field - High standards of supervision - Sound risk assessment"

SREP

1. Business model assessment

- Score based on indicators – e.g. ROA, cost-to-income ratio, …
- Assessment focus:
  - Identification of the areas of focus / main activities
  - Assessment of the business environment
  - Analysis of the forward-looking strategy and financial plans
  - Assessment of the business model
  - Viability (within one year)
  - Sustainability (within three years)
  - Sustainability over the cycle (more than three years)
  - Assessment of the key vulnerabilities

SREP

1. Business model assessment

1. Quantitative assessment (current and potential situation)

a) P&L – including the detail of revenue sources, costs, impairments and main performance indicators (e.g. NII, cost-to-income), analyzing ROE vs cost of capital;

b) Balance sheet – including the adequacy of the funding structure to the business model and main indicators (e.g. ROE, CT1, funding gap);

c) P&L and balance sheet concentrations related to clients, sectors and geographies;

d) Risk appetite: limits implemented by risk type (e.g. credit, liquidity risks).

SREP

1. Business model assessment

2. Qualitative assessment - Authorities must determine the main exogenous and endogenous factors (e.g. IT) influencing the success of the business model;

3. Franchise – robustness of the relationships with clients, suppliers and partners:

a) Reputational support
b) Effectiveness of the commercial network
c) Customers' loyalty
d) Effectiveness of the partnerships

SREP

1. Business model assessment

4. Competitive advantages:

a) IT
b) commercial network
c) Business size
d) Product offer

SREP

2. Internal governance and risk management

- Internal governance framework (including key control functions such as risk management, internal auditing and compliance)
- Risk management framework and risk culture – e.g. are there mechanisms in place to ensure that senior management can act in a timely manner to effectively manage and mitigate material adverse risk exposures, e.g. those that are close to or exceed the approved risk appetite statement or risk limits? Compliance with CRD provisions?
- Risk infrastructure, internal data and reporting
- Remuneration policies and practices

SREP

2. Internal governance and risk management

- Changes in the governance and internal control may be required, including:

(i) Organizational structural, including report lines;

(ii) Risk policies;

(iii) Organization and composition of the management body.

SREP

3. Risks to Capital

- 3 blocks:

1. Supervisory perspective
   - Scores on risk categories: credit risk, market risk, operational risk, IRRBB
2. Bank's perspective
   - ICAAP
3. Forward looking perspective
   - bank internal stress tests
   - supervisory stress tests

SREP

4. Risks to Liquidity

- 3 blocks:

1. Supervisory perspective
   - scores on short-term liquidity and funding sustainability risks
2. Bank's perspective
   - ILAAP
3. Forward looking perspective
   - bank internal stress tests
   - supervisory stress tests