

3. Main Issues on International Banking Regulation

3.1. Basel II

3.1.1. Introduction

Basel Committee on Banking Supervision

- **Foundation:** Policymakers recognized the challenges posed by international banking and the governments of the G-10 countries in 1974 created the **Basel Committee on Banking Supervision (BCBS)**, as an international organization with the mission to design international banking regulations, namely on capital requirements.
- **GHOS:** Group of Governors and Heads of Supervision, the oversight body of the Basel Committee on Banking Supervision.
- **Members:** G-10 countries (Belgium, Canada, France, Italy, Japan, Germany, Sweden, the Netherlands, the UK and the US) and Luxembourg and Spain, having been added later a large set of countries - Argentina, Australia, Brazil, China, Hong Kong SAR, India, Indonesia, South Korea, Mexico, Russia, Saudi Arabia, Singapore, South Africa, and Turkey, with the EU Commission and the ECB as observers.
- **Headquarters:** hosted at the Bank for International Settlement (BIS), based in Basel.
- **Role:** doesn't have any supranational supervisory authority, as it formulates broad supervisory standards and guidelines and recommends best practices, expecting individual authorities to implement them.

Basel I

- **Motivation:** banks' activities were becoming more international and complex, while there were significant differences between the capital levels in different countries, as individual bank regulators tended to regulate bank capital by setting minimum levels for the ratio of capital to total assets, but the definitions of capital and the ratios accepted varied from country to country, while some countries enforced their regulations more diligently than other countries.
- **Action** – Basel I was published by BCBS in July 1988 (“International Convergence of Capital Measurement and Capital Standards”), to provide uniform rules in the calculation of capital requirements of FIs based in the member countries of BCBS, having been implemented in over 100 countries (including the EU, with directives published since 1989) by 1992, being the first step towards international standards for bank regulation.

Basel I

- **Cooke Ratio:** ratio between capital (aka own funds) and risk-weighted on-balance-sheet assets + off-balance-sheet exposures (e.g. direct credit substitutes, such as letters of credit and guarantees, or derivatives), with a minimum level of 8%, with the risk weights assigned based on broad classes of counterparty credit risk.
- **Weights for Balance Sheet items:**
 - 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 $\leq 75\%$
 - Other assets - 100 %
- **Capital:** broader than equity, with 2 components:
 - Tier 1 - core capital, which includes mostly common stockholders' equity, with a minimum level of 50% of total capital.
 - Tier 2 - supplementary capital, which includes hybrid capital instruments, e.g. subordinated bonds with an original minimum maturity of 5 years.

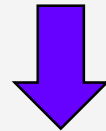
Basel I amendment

- **G-30 Policy Recommendations:** In 1993, a working group of market participants, academics, accountants, and lawyers involved in derivatives published a report that contained 20 risk management recommendations for dealers and end-users of derivatives and four recommendations for legislators, regulators, and supervisors.
- **1996 Amendment:** In 1995, BCBS issued a consultative proposal to amend the 1988 Accord. It was implemented in 1998 and added to capital requirements market risk associated with trading and currency activities (that became more important, after the fall of the Bretton-Woods fixed-rates regime), allowing FIs to use internal models (VaR).
- **VaR measure:** 10-day VaR, with a 99% confidence level $\Leftrightarrow$ the loss that has a 1% chance of being exceeded over a 10-day period.
- **Capital requirement for market risk:** $\max(\text{VaR}_{t-1}, m_c \times \text{VaR}_{\text{avg}}) + \text{SRC}$

where m_c is a factor related to potential flaws in the Bank's VaR methodology (with a minimum=3), SRC is a *specific risk charge*, VaR_{t-1} is the previous day's VaR and VaR_{avg} is the average VaR during the last 60 days. SRC covers risks related to specific companies, e.g. those concerned with movements in a company's stock price or credit spread.

Basel I shortcomings

- (i) the risk-weighted ratios in the rules didn't differentiate adequately between the risk of banks' assets. For instance, they assume that a corporate loan is 5 times riskier than a loan to an OECD bank, regardless of their respective creditworthiness.
- (ii) it was assumed that all corporate borrowers pose an equal credit risk, regardless their credit rating.
- (iii) maturity factors were not properly considered, as revolving credit agreements with a maturity <1y didn't require any regulatory capital, while a short-term facility with a maturity = 366 days faced the same capital charge as any long-term facility.
- (iv) credit risk mitigation techniques were irrelevant;
- (v) complex issues such as portfolio effects were not addressed, even though credit risk in any large portfolio tends to be partially offset by diversification across issuers, industries, and geographical locations.



Basel II

Basel II - Origins

- Proposed by BCBS in 1999, revised in 2001 and 2003, having been published in Jun.2004, after several quantitative impact studies (QISs), with the purpose to be imposed to internationally active banks.
- Updated in Nov.2005 and implemented in 2007 after a further QIS.
- Background:
 - 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 and Basel I requirements.
 - 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).

Basel II - 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

Basel II - 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:**
 - uses estimates from internal credit risk models to PDs and LGDs, to feed regulatory formulas;
 - for the corporate segment, internal models can only estimate PDs, as there are two IRB sub-approaches – foundation and advanced -, with the former requiring only the PD estimation).

Basel II - Main changes

- Better recognition of collaterals in calculating capital requirements

- Capital requirements for operational risk

- Minimum capital requirement:

$$\frac{\text{Total Capital}}{\text{Credit Risk} + \text{Market Risk} + \text{Operational Risk}} = \text{Capital Ratio (Minimum 8\%)}$$

- 3 Pillars – capital requirements can be increased due to other risks and by supervisory decision, being banks required to publicly release additional information.

3 Pillars

- (i) **Pillar 1** – minimum capital requirements for credit, market and operational risks;
- (ii) **Pillar 2:**
 - (i) **ICAAP** - Internal Capital Adequacy Assessment Process: internal assessment of the bank's overall risk profile and the potential additional capital needs, including risks not covered by Pillar 1, e.g. concentration, reputation and model risk, being documented and updated annually or more frequently, if changes in the business, strategy;
 - (ii) **SREP** – Supervisory Review Examination Process: a supervisory assessment of banks' capital adequacy in addition to pillar 1 requirements, covering all risks, in order to enhance the link between an institution's risk profile, its risk management and risk mitigation systems, and its capital planning.
- (iii) **Pillar 3** – market discipline – larger detail in information released publicly (including risk models), namely through a market discipline annual document.

3.1.2. Pillar I

Standardized approach

- Some changes in the risk weights were decided in Basel III (BCBS (2017), “Basel III: Finalising post-crisis reforms”, Dec., implemented in 1.1.2023):

Sovereign exposures:

Risk weight table for sovereigns and central banks Table 1

External rating	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to B–	Below B–	Unrated
Risk weight	0%	20%	50%	100%	150%	100%

Exposures to other public sector entities:

Option 1: Based on external rating of sovereign Table 3

External rating of the sovereign	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to B–	Below B–	Unrated
Risk weight under Option 1	20%	50%	100%	100%	150%	100%

Option 2: Based on external rating of PSE Table 4

External rating of the PSE	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to B–	Below B–	Unrated
Risk weight under Option 2	20%	50%	50%	100%	150%	50%

Corporate exposures:

External rating of counterparty	AAA to AA–	A+ to A–	BBB+ to BBB–	BB+ to BB–	Below BB–	Unrated
“Base” risk weight	20%	50%	75%	100%	150%	100%

Corporate SME: (annual consolidated sales $\leq$ 50M€ for the most recent year) – risk weight = 85%

100% previously

Standardized approach

□ Interbank exposures - 2 approaches:

- (i) External Credit Risk Assessment Approach (ECRA): when the use of external ratings for regulatory purposes is allowed.

External rating of counterparty	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to B-	Below B-
"Base" risk weight	20%	30%	50%	100%	150%
Risk weight for short-term exposures	20%	20%	20%	50%	150%

50% previously

- (ii) Standardized Credit Risk Assessment Approach (SCRA): when the use of external ratings for regulatory purposes is not allowed or for exposures to unrated banks.

Risk weight table for bank exposures			
Standardised Credit Risk Assessment Approach			
Credit risk assessment of counterparty	Grade A	Grade B	Grade C
"Base" risk weight	40% ¹⁸	75%	150%
Risk weight for short-term exposures	20%	50%	150%

Table 7

Standardized approach

- **Specialised lending** - if some or all of the following characteristics are found:
 - The exposure is not related to real estate;
 - The borrower is an entity (often a special purpose vehicle (SPV)) created specifically to finance and/or operate physical assets;
 - The borrower has few or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, besides the income it receives from the asset(s) financed;
 - The obligation gives the lender a substantial degree of control over the asset(s) and its income.
- **Subcategories of Specialised lending:**
 - (i) **Project finance** – loans are paid by the revenues of a single project, usually large, complex and expensive installations such as power plants, chemical processing plants, mines, transportation infrastructure, environment, media, and telecoms.
 - (ii) **Object finance** - funding of the acquisition of equipment (eg ships or aircrafts), being the repayment of the loan dependent on the cash flows generated by the assets financed;
 - (iii) **Commodities finance** - short-term lending to the purchase of commodities (eg crude oil, metals or crops), with the loan being repaid by the proceeds of the sale of the commodity and the borrower.

Standardized approach

□ Risk Weights - Specialised lending:

- Object and commodities finance - 100%;
- Project finance - 130% during the pre-operational phase, 100% during the operational phase, and 80% during the operational phase of projects deemed to be high quality, i.e. able to meet their financial commitments in a timely manner.

□ Risk weights - Commercial Real Estate, if repayment doesn't depend on cash-flows generated by the property:

	LTV ≤ 60%	LTV > 60%
Risk weight	Min (60%, RW of counterparty)	RW of counterparty

□ Risk weights - Commercial Real Estate, if repayment depends on cash-flows generated by the property:

	LTV ≤ 60%	60% < LTV ≤ 80%	LTV > 80%
Risk weight	70%	90%	110%

Standardized approach

- **Risk Weights - Retail exposures: 75%**
- **Retail exposures definition:**
 - (i) revolving credits and lines of credit (including credit cards, charge cards and overdrafts), personal term loans and leases (eg instalment loans, auto loans and leases, student and educational loans, personal finance) and small business facilities and commitments.
 - (ii) exposure $\leq$ 1M€
 - (iii) granularity requirement - aggregated exposure to a counterparty cannot exceed 0.2% of the overall regulatory retail portfolio (unless national supervisors have determined another method to ensure satisfactory diversification of the regulatory retail portfolio).

Standardized approach

- **Risk weights - residential mortgage loans, if repayment doesn't depend on cash-flows generated by the property** (riskier assets $\Leftrightarrow$ higher LTVs $\Rightarrow$ higher risk weights):

	LTV $\leq$ 50%	50% < LTV $\leq$ 60%	60% < LTV $\leq$ 80%	80% < LTV $\leq$ 90%	90% < LTV $\leq$ 100%	LTV > 100%
Risk weight	20%	25%	30%	40%	50%	70%

Note: (after Basel III, which brought a set of several risk weights, instead of the former differentiation between LTV > or < 75%, with risk weights of 75% and 35%, respectively).

- **Risk weights - residential mortgage loans if repayment depends on cash-flows generated by the property:**

	LTV $\leq$ 50%	50% < LTV $\leq$ 60%	60% < LTV $\leq$ 80%	80% < LTV $\leq$ 90%	90% < LTV $\leq$ 100%	LTV > 100%
Risk weight	30%	35%	45%	60%	75%	105%

Source: BCBS (2017), "Basel III: Finalising post-crisis reforms", Dec.

IRB Exposure Classes

- **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) commodity 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**

IRB Exposure Classes

□ Retail:

(i) Residential Mortgage Loans

(ii) Revolving Loans:

- credit lines
- credit cards
- overdrafts

(iii) Other:

- Small business with exposure $\leq 1\text{M€}$
- Consumer loans.

IRB Formulas

- All IRB formulas are based on the Gaussian copula model of time to default, providing the **Worst Case Default Rate (WCDR)**:

$$\text{WCDR} = N\left[\left(N^{-1}(\text{PD}) + \sqrt{p}N^{-1}(0.999)\right) / \sqrt{1-p}\right]$$

- This is a model where the joint distribution of 2 loans is a bivariate normal and the defaults are triggered by a common factor (single-factor Vasicek formula).
- As the capital requirement corresponds to the Unexpected Loss, i.e. the difference between the loss under a very unlikely scenario and the expected loss, **IRB formulas result from multiplying WCDR by LGD and deducting this by the Expected Loss.**
- Additionally, maturity and debtor size adjustments are made for corporate exposures, while the correlation coefficient either depend on the PD and LGD, or is fixed, according to the level of the portfolio granularity (e.g. higher correlation for residential mortgage loans than for revolving exposures).

IRB Formulas - Corporate

Risk-weights:

$$\text{Correlation (R)} = 0.12 \cdot \frac{(1 - e^{-50 \cdot PD})}{(1 - e^{-50})} + 0.24 \cdot \left(1 - \frac{(1 - e^{-50 \cdot PD})}{(1 - e^{-50})} \right)$$

$$\text{Maturity adjustment (b)} = [0.11852 - 0.05478 \cdot \ln(PD)]^2$$

$$\text{WCDR} = N \left[\left(N^{-1}(PD) + \sqrt{p} N^{-1}(0.999) \right) / \sqrt{1-p} \right]$$

$$\text{Capital requirement}^{13,14}(K) = \left[LGD \cdot N \left[\frac{G(PD)}{\sqrt{1-R}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right] \cdot \frac{(1 + (M - 2.5) \cdot b)}{(1 - 1.5 \cdot b)}$$

$$\text{Risk-weighted assets (RWA)} = K \cdot 12.5 \cdot EAD$$

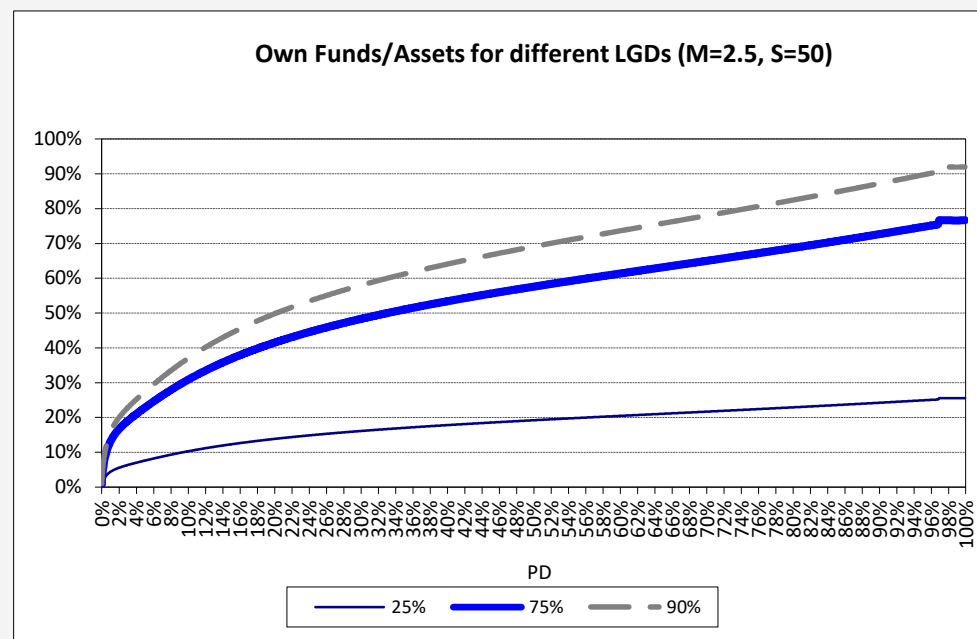
being $N[x]$ the standardized normal distribution value in x , $G(z)$ the inverse of $N[x]$, R the correlation coefficient between exposures and M the maturity (in years).

Size adjustment for corporates:

$$\text{Correlation (R)} = 0.12 \cdot \frac{(1 - e^{-50 \cdot PD})}{(1 - e^{-50})} + 0.24 \cdot \left(1 - \frac{(1 - e^{-50 \cdot PD})}{(1 - e^{-50})} \right) - 0.04 \cdot \left(1 - \frac{(S - 5)}{45} \right)$$

IRB Formulas - Corporate

- Capital requirements for corporate exposures under IRB are very sensitive to LGDs, being the LGD in IRB foundation pre-defined according to the type of exposure:
 - Loans with receivables or real estate as collaterals - 20%
 - Loans with other eligible physical collaterals – 25%
 - Non-collateralized loans to non-financial companies – 40%
 - Subordinated assets – 75%
 - Other assets - 45%



IRB Formulas - Corporate

- The LGD applicable to a collateralized transaction (LGD^*) is the exposure weighted average of the LGD applicable to the unsecured part of an exposure (LGD_U) and the LGD applicable to the collateralized part of an exposure (LGD_S):

$$LGD^* = LGD_U \cdot \frac{E_U}{E \cdot (1 + H_E)} + LGD_S \cdot \frac{E_S}{E \cdot (1 + H_E)}$$

E - current value of the exposure (in the case of securities lent, the exposure value has to be increased by applying the appropriate haircuts - H_E).

E_S – collateralized part of the exposure, i.e. the current value of the collateral received after the application of the haircut applicable for the type of collateral (H_c) and for any currency mismatches between the exposure and the collateral. E_S is capped at the value of $E \cdot (1 + H_E)$.

E_U – uncollateralized part of the exposure.

LGDs and haircuts for the different types of collaterals:

Type of collateral	LGD _S	Haircut
Eligible financial collateral	0%	As determined by the haircuts that apply in the comprehensive formula of the standardised approach for credit risk (paragraph 163 for jurisdictions that allow the use of ratings for regulatory purposes and paragraph 164 for jurisdictions that do not). The haircuts have to be adjusted for different holding periods and non-daily remargining or revaluation according to paragraphs 169 to 172 of the standardised approach.
Eligible receivables	20%	40%
Eligible residential real estate / commercial real estate	20%	40%
Other eligible physical collateral	25%	40%
Ineligible collateral	N/A	100%

IRB Formulas - Corporate

- In IRB Advanced, floors are imposed for LGDs:

LGD parameter floors		
	LGD	
	Unsecured	Secured
Corporate	25%	Varying by collateral type: • 0% financial • 10% receivables • 10% commercial or residential real estate • 15% other physical

- The LGD floor for a partially secured exposure is calculated as a weighted average of the unsecured LGD floor for the unsecured portion and the secured LGD floor for the secured portion:

$$Floor = LGD_{U\ floor} \cdot \frac{E_U}{E \cdot (1 + H_F)} + LGD_{S\ floor} \cdot \frac{E_S}{E \cdot (1 + H_F)}$$

IRB Formulas - Banks

- Risk weights similar to Corporate, but with a multiplier of 1.25 applied to the correlation:

$$\text{Correlation (R_FI)} = 1.25 \cdot \left[0.12 \cdot \frac{(1 - e^{-50 \cdot PD})}{(1 - e^{-50})} + 0.24 \cdot \left(1 - \frac{(1 - e^{-50 \cdot PD})}{(1 - e^{-50})} \right) \right]$$

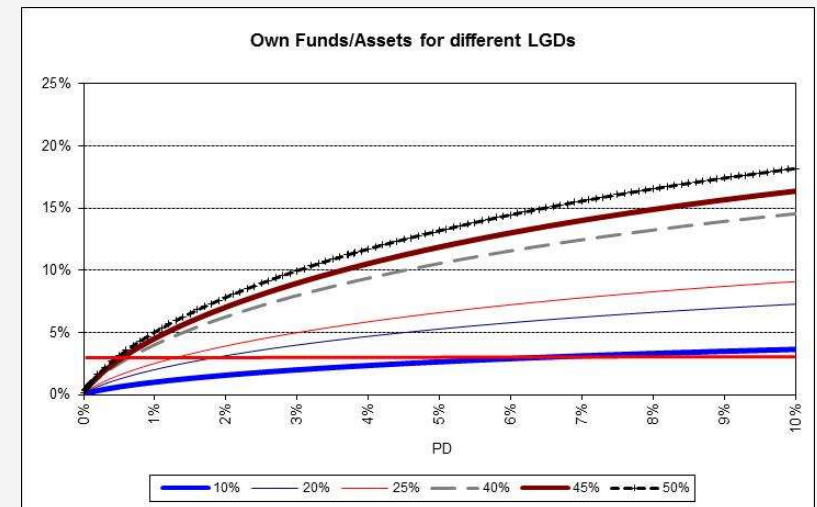
- For these exposures, as well as for corporates, PD is subject to a floor of 0.03%, LGD is set at 45% for senior claims and 75% for subordinated claims.

- **Risk-weights:**

Correlation (R) = 0.15

$$\text{Capital requirement (K)} = \left[LGD \cdot N \left[\frac{G(PD)}{\sqrt{1-R}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right]$$

Risk-weighted assets = $K \cdot 12.5 \cdot EAD$



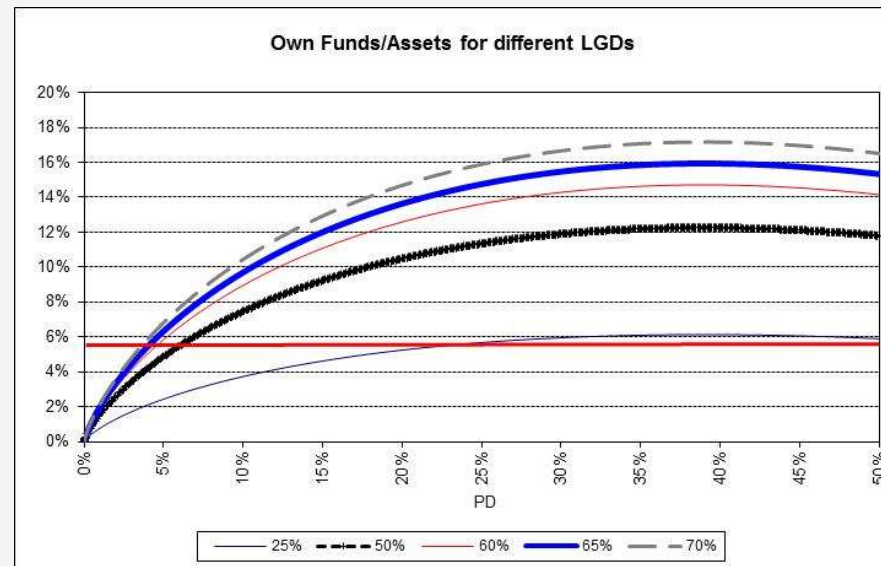
IRB Formulas - Retail Revolving

Risk-weights:

Correlation (R) = 0.04

$$\text{Capital requirement (K)} = \left[LGD \cdot N \left[\frac{G(PD)}{\sqrt{1-R}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right]$$

Risk-weighted assets = $K \cdot 12.5 \cdot EAD$



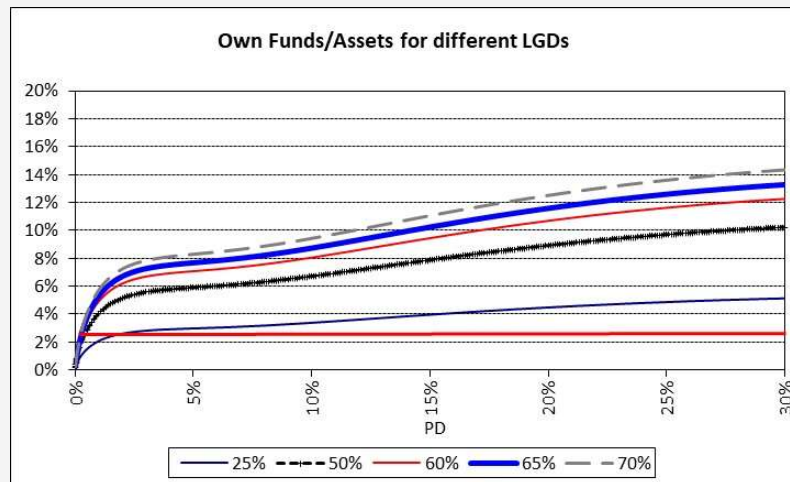
IRB Formulas - Other Retail

Risk-weights:

$$\text{Correlation (R)} = 0.03 \cdot \frac{(1 - e^{-35 \cdot PD})}{(1 - e^{-35})} + 0.16 \cdot \left(1 - \frac{(1 - e^{-35 \cdot PD})}{(1 - e^{-35})} \right)$$

$$\text{Capital requirement (K)} = \left[LGD \cdot N \left[\frac{G(PD)}{\sqrt{(1-R)}} + \sqrt{\frac{R}{1-R}} \cdot G(0.999) \right] - PD \cdot LGD \right]$$

$$\text{Risk-weighted assets} = K \cdot 12.5 \cdot EAD$$



IRB - Risk Weight Floors

- Besides Floors for LGDs, there are also floors imposed to credit risk weights in IRB, to avoid that capital requirements fall below a given % under the standardised approach.
- Total RWA cannot be $< 72,5\%$ of the RWA calculated according to the standardised approach, with a phasing-in period, between 2022 and 2027, starting with a floor of 50%.

Date	Output floor calibration
1 Jan 2022	50%
1 Jan 2023	55%
1 Jan 2024	60%
1 Jan 2025	65%
1 Jan 2026	70%
1 Jan 2027	72.5%

Source: BCBS (2017), “Basel III: Finalising post-crisis reforms”, Dec.

Credit Risk Mitigation

- Exposures may be collateralised by cash or securities, a guarantee provided by a third party or a credit derivative:

(1) Collateralized transactions:

- (i) **simple approach** - replaces the risk weight of the borrower by the risk weight of the collateral for the collateralised portion of the exposure (with a 20% floor), for a set of eligible collaterals (that have to be revalued at least every 6 months);
- (ii) **comprehensive approach** - more precise reduction of exposures by the collateral, considering a volatility-adjusted value of the collateral.

(2) On-balance sheet netting - capital requirements based on credit exposures, net of the collateral value.

(3) Guarantees and credit derivatives - replaces the risk weight of the debtor by the risk weight of the guarantor or the credit derivative counterparty.

Credit Risk Mitigation

□ Simple approach - Eligible collaterals:

- (i) Cash
- (ii) Gold
- (iii) Debt securities
 - Government Debt: rating $\geq$ BB-
 - Other entities: rating $\geq$ BBB-
 - Short-term debt: rating A-3/P-3
 - Non-rated debt: senior debt issued by a bank, listed on a recognized exchanged, with similar debt issued with an investment grade rating and liquidity considered by the supervisor as adequate.

□ Comprehensive approach – exposure amount after risk mitigation, taking into account currency risk and the market risk of the collateral:

$$E^* = \max\left\{0, E \cdot (1 + H_e) - C \cdot (1 - H_c - H_{fx})\right\}$$

E^* = the exposure value after risk mitigation

E = current value of the exposure

H_e = haircut appropriate to the exposure

C = the current value of the collateral received

H_c = haircut appropriate to the collateral

H_{fx} = haircut appropriate for currency mismatch between the collateral and exposure

Credit Risk Mitigation

□ Supervisory haircuts (H_c and H_e):

Issue rating for debt securities	Residual maturity	Sovereigns ⁷³	Other issuers ⁷⁴	Securitisation exposures ⁷⁵
AAA to AA-/A-1	≤ 1 year	0.5	1	2
	> 1 year, ≤ 3 years	2	3	8
	> 3 years, ≤ 5 years		4	
	> 5 years, ≤ 10 years	4	6	16
	> 10 years		12	
A+ to BBB-/A-2/A-3/P-3 and unrated bank securities per para. 148(c)(ii)	≤ 1 year	1	2	4
	> 1 year, ≤ 3 years	3	4	12
	> 3 years, ≤ 5 years		6	
	> 5 years, ≤ 10 years	6	12	24
	> 10 years		20	
BB+ to BB-	All	15	Not eligible	Not eligible
Main index equities (including convertible bonds) and gold		20		
Other equities and convertible bonds listed on a recognised exchange		30		
UCITS/mutual funds		Highest haircut applicable to any security in which the fund can invest, unless the bank can apply the look-through approach (LTA) for equity investments in funds, in which case the bank may use a weighted average of haircuts applicable to instruments held by the fund.		
Cash in the same currency ⁷⁶		0		

□ $H_{fx} = 8\%$

	Residual maturity	Issuer's risk weight (only for securities issued by sovereigns ⁷⁷)			Other investment-grade securities, consistent with paragraphs 148(d)(iii) ⁷⁸	
		0%	20% or 50%	100%	Non-securitisation exposures	Senior securitisation exposures with risk weight < 100%
Debt securities	≤ 1 year	0.5	1	15	2	4
	> 1 year, ≤ 3 years	2	3	15	4	12
	> 3 years, ≤ 5 years				6	
	> 5 years, ≤ 10 years	4	6	15	12	24
	> 10 years				20	
Main index equities (including convertible bonds) and gold		20				
Other equities and convertible bonds listed on a recognised exchange		30				
UCITS/mutual funds		Highest haircut applicable to any security in which the fund can invest, unless the bank can apply the look-through approach (LTA) for equity investments in funds, in which case the bank may use a weighted average of haircuts applicable to instruments held by the fund.				
Cash in the same currency ⁷⁹		0				
Other exposure types		30				

Credit Risk Mitigation

□ Example:

- Exposure = 800M€
- Corporate Debtor rating: B- => risk-weight =150%
- Collateral: 700 M€ of BBB corporate bonds issued in the same currency, with a maturity = 12 years
=> risk-weight =75%
- **RWA – simple approach:**
 - the risk-weight corresponding to the debtor will be replaced by the risk-weight of the collateral, in the collateralized amount
 - in the remaining amount, the risk-weight keeps unchanged (150%)
 - **$RWA = 75\% \times 700M + 150\% \times 100M = 675M€$**

Credit Risk Mitigation

- **RWA – comprehensive approach:**

$$E^* = \max\{0, E \cdot (1 + H_e) - C \cdot (1 - H_c - H_{fx})\}$$

RWA = 150% x [800M - 700M x (1-0,2)] = 360M€ (20% - debt securities with maturity > 10y)

- Non- collateralized: RWA = 150% x 800 M€ = 1200 M€

- Collateralized with 700 M€ of BBB bonds: RWA = 850 M€



- Collateralized with 700 M€ of cash: RWA = 0% x 700M + 150% x 100 = 150M€

- Collateralization allowed a reduction of the RWA between 350 M€ (with BBB bonds) and 1050M€ (with cash).

Capital Requirements for Market Risk

□ **Trading book - 2 approaches:**

(i) Standardized (SA) – 3 components:

- (1) Potential losses due to adverse market movements;
- (2) Possibility of counterparty default, aka jump-to-default (JTD) risk;
- (3) Add-on to cover residual risks not captured by the 2 previous components.

(ii) Simplified SA (SF) – SA using scaling factors

(iii) Internal Models Approach (IMA) – outputs from internal models may be used for some components, based on Expected Shortfall (ES), that provide better estimates for tail risks than VaR, requiring a previous approval by the supervisor.

□ **Banking book:** capital requirements are not included in Pillar 1, but banks are required to assess their exposure to it and justify that they hold enough capital under Pillar 2.

Capital Requirements for Market Risk

Quantitative Requirements to use VaR:

- Daily calculation
- 99%, 10-day period VaR
- Minimum sample of 1 year, except when higher price volatility justifies a shorter period
- Minimum monthly data update
- Minimum weekly frequency for stressed VaR
- VaR is scaled up by a multiplication factor = 3 + additional factor (addend) 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 bank's daily risk management and internal reports to top management;
- Risk control unit independent from trading and reporting directly to top management, liable for the development, implementation and validation 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, with reverse stress tests;
- Internal independent auditing process;
- Minimum yearly internal assessment of the global risk management system.

Capital Requirements for Operational Risk

- 3 approaches:

- (i) basic indicator (BIA)
- (ii) standardized (SA)
- (iii) advanced measurement (AMA)

Capital Requirements for Operational Risk

(i) basic indicator approach

- Operational risk capital = 15% of average annual gross income in the previous 3 years.

(ii) Standardized

- Bank's activities are divided into 8 business lines and the average gross income in the last 3 years for each business line is multiplied by a "beta factor" for that business line and the result summed to get the total capital.

TABLE 23.1 Beta Factors in Standardized Approach

Business Line	Beta Factor
Corporate finance	18%
Trading and sales	18%
Retail banking	12%
Commercial banking	15%
Payment and settlement	18%
Agency services	15%
Asset management	12%
Retail brokerage	12%

Source: Hull, John (2015), "Risk management and financial institutions", 4th Edition, Wiley Finance series.

Capital Requirements for Operational Risk

(iii) AMA

- Requires an internal database supported by a minimum of five years of history;
- It is based on a 1-year 99.9% VaR, calculated empirically from banks' historical records:

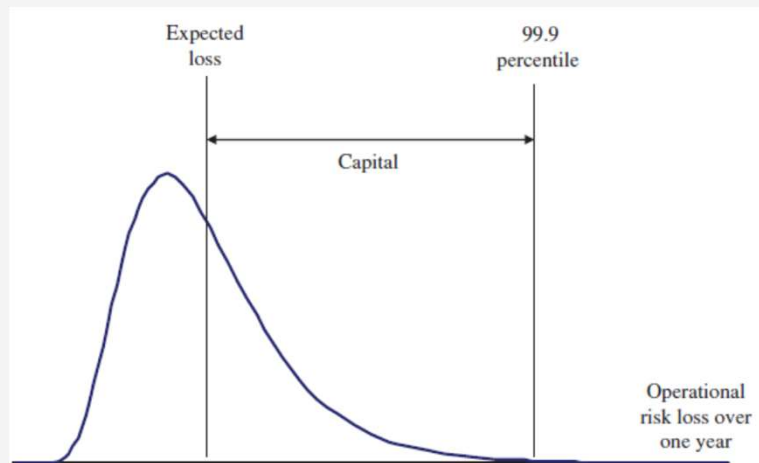


FIGURE 23.1 Calculation of Capital for Operational Risk

Source: Hull, John (2015), "Risk management and financial institutions", 4th Edition, Wiley finance series.

Operational Risk

- As internal models had proved ineffective in assessing capital requirements for operational risk, **the Basel II methods were replaced by a single standardized approach in 2022** (following BCBS (2019), with capital becoming a function of:
 - (i) A 3-year average of certain Business Indicators (BI);
 - (ii) A Marginal Coefficient, which will increase as the BI rises (0.12 - 0.18);
 - (iii) An Internal Loss Multiplier (based on 15 times a bank's average historical losses over the preceding 10 years).

3.1.3. Pillars II and III

Pillar II

- **Focus** – allowing supervisors and banks to assess the adequacy of capital ratios stemming from Pillar I, performing a more comprehensive assessment of risks, in order to ensure that a bank's capital position and strategy are consistent with its overall risk profile.
- **4 key principles of the supervisory review process.**
 1. Banks must have a process to assess their overall capital adequacy vis-à-vis their risk profile and a strategy for maintaining their capital levels.
 2. Supervisors must review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure compliance with regulatory capital ratios, taking appropriate supervisory action if necessary.
 3. Supervisors must require banks to hold capital in excess of the Pillar I minimum.
 4. Supervisors must seek to intervene at an early stage to prevent capital from falling below the minimum levels imposed to meet the risk characteristics of a given bank and require rapid remedial action if capital is not maintained or restored.

Pillar II

- **ICAAP** – enables the bank (and the regulator) to identify, measure and aggregate all material risk types and compute the economic capital necessary to cover these risks, being key to the preserve financial stability and subject to a high degree of supervisory scrutiny (which makes the process very bureaucratic and administrative).
- **Requirements:**
 - “Institutions shall have in place sound, effective and comprehensive strategies and processes to assess and maintain on an ongoing basis the amounts, types and distribution of internal capital that they consider adequate to cover the nature and level of the risks to which they are or might be exposed” - art.73 of Directive 2013/36/EU, 26.06 (CRD IV).
 - EBA/GL/2016/10-“Guidelines on ICAAP and ILAAP information collected for SREP purposes”.*
 - *ILAAP – Internal Liquidity Assessment Adequacy Process
 - Instruction No.3/2019 (revoked Instruction 15/2007) => annual report to be submitted by credit institutions to the supervisor until 31 Mar.

Pillar II

□ ICAAP Goals - to ensure:

- (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 are 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.

Pillar II

□ **Stress Tests – Goals:**

- Identification of possible events or future changes in economic conditions that could have unfavorable effects on a bank's capital and assessment of the bank's ability to withstand such changes, namely:
 - (i) economic or industry downturns;
 - (ii) market-risk events;
 - (iii) liquidity conditions.

Pillar II

□ **Stress Tests - Requirements:**

- (i) Scope - all types of material risk, both on- and off-balance-sheet:
- (ii) Frequency - appropriate to the scope and type of the stress test, the nature, scale, size and complexity of the institution (proportionality principle), portfolio characteristics as well as changes in the macroeconomic environment or the institution's business activities;
- (iii) Sensitivity and Scenario analyses;
- (iv) Reverse stress tests.

Pillar II

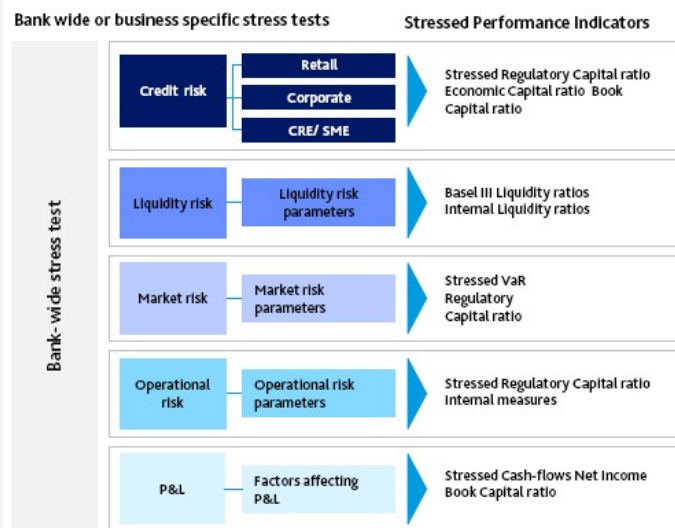
□ **Stress Tests - Risks to be covered** (EBA/GL/2018/04, 19 Jul.):

- (i) credit and counterparty
- (ii) securitization
- (iii) market
- (iv) operational
- (v) conduct-related
- (vi) liquidity
- (vii) interest rate (non-trading activities)
- (viii) concentration
- (ix) foreign exchange lending

Pillar II

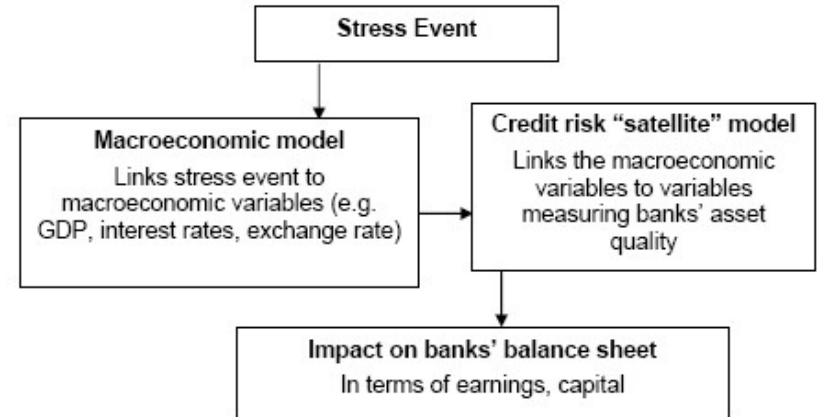
- Stress tests on credit risk are typically based on macroeconomic scenarios, impacting on impairments (via PDs) and NII (via interest rates).

Figure 4. Scope of Stress Testing



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

Figure 1: Credit risk - a typical macro stress testing process⁴



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

Pillar III

- Banks must release additional public information about their risk assessment procedures and the way they allocate capital and the risks they take, namely:
 1. Banking Group - the entities to which Basel II is applied and adjustments made for entities to which it is not applied.
 2. Capital Structure and Adequacy - the terms and conditions of the main features of all capital instruments, with a list of the Tier 1 capital instruments and the amount of capital provided by each item, as well the total amount of Tier 2 capital and the capital requirements for credit, market, and operational risk.
 3. Other general information on the risks to which a bank is exposed and the assessment methods used by the bank for different categories of risk, namely to identify, measure, monitor and control those risks, as well as the techniques used for credit risk mitigation, hedging and asset securitization techniques.
 4. The structure of the risk management function and how it operates.

3.2. Regulation in the post-subprime

Summary

- Main Goals
- Basel 2.5
- Basel III
 - Leverage ratio (LR)
 - Countercyclical Capital Buffers
 - SIFIs
 - Liquidity
 - Market Risk
- European Regulatory Initiatives
- EU Basel III Package

Main Goals

- **Increase the resilience of financial institutions**, taking into account systemic risk (macroprudential regulation), by:
 - (i) increasing capital and liquidity requirements;
 - (ii) improving supervision and stress testing;
 - (iii) introducing structural reforms (trying to insulate banks from capital market activities); and
 - (iv) making shadow banking and derivatives markets safer.
- **Implement appropriate resolution procedures for banks** (“no more bailouts”).
- **Strengthen the corporate governance** of financial firms and the regulation of banks’ executive compensation.
- **Reinforce consumer and investor protection.**

Basel 2.5

- **Jul09 - Basel 2.5:** “Enhancements to the Basel II Framework” (BCBS WP No.157) and “Revisions to the Basel II market risk framework” BCBS WP No.158), to increase risk coverage and capital requirements, focusing on trading instruments exposed to credit risk (also securitizations), including:
 - Requirements for internal models to better address risks observed during the crises, namely by **imposing a stressed VaR (SVaR) measure**, to better measure tail losses;
 - **Requirement of an Incremental Risk Capital (IRC)**, to take into account default and grade migration;
 - **Exclusion of trading booking securitization exposures** from internal models’ coverage.
 -
- **2012 – “Fundamental Review of the Trading Book”** (BCBS WP No. 219, 3 May): consultative paper to address inadequacies in design and calibration of internal models and standardized approaches (later replaced by “Consultative Document Fundamental review of the trading book: A revised market risk framework”, WP No. 265, 31.10.2013).

Basel 2.5

- **2016 - Revised framework - “Minimum capital requirements for market risk”** (BCBS DP No. 352, 14 Jan), revised in 2019 by BCBS DP No. 457, 14 Jan. (rev. in Feb.2019):
 - **Internal Models Approach (IMA)** - replacement of 10d, 99% VaR by 10d, 97,5% ES (computed on a daily basis for each trading desk), calibrated to a period of stress.
 - **Standard Approach (SA)** - revision to have a much more risk sensitive approach.
 - **Trading Book** - stricter criteria to assign assets.
- **2017** - Simplified alternative to the standardized approach – “Simplified alternative to the standardized approach to market risk capital requirements”, DP No. 408, 29 jun.

Basel 2.5

- **2018 - BCBS proposed additional improvements:**

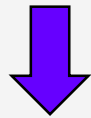
- revisions to the assessment framework about the adequacy of banks' internal models;
- refinements and recalibrations of the standardized approach.

- **2019 - new framework approved, involving the following key improvement:**

- **boundary between the banking and the trading books** - clarify the scope of positions subject to the market risk framework, including the treatment of equity investments in funds and foreign currency positions.
- **internal models approach** - improve differentiation between good/bad models and
- **standardized approach** - improve alignment of the treatment of foreign currency positions, options and index instruments with the associated risks.
 - Risk weights are lowered by 30% for general interest rate risk and by 50% for FX risk.
 - Banks with relatively small or simple trading portfolios may continue to use a recalibrated Basel 2.5 standardized approach, subject to supervisory approval.

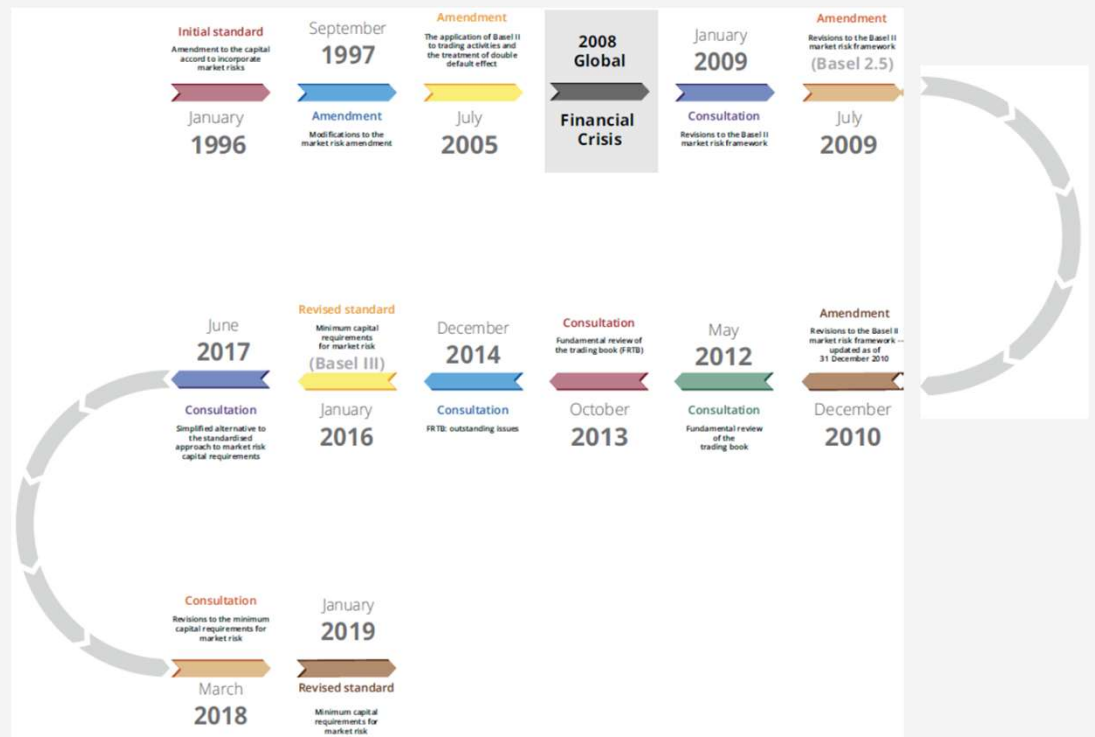
Market Risk

- Compared with Basel 2.5, the amended framework was estimated to increase average market risk capital requirements by 22%.



- Market risk-weighted assets (RWAs) would account for 5% of total RWAs on average, compared with 4% under Basel 2.5.

A history of minimum capital requirements for market risk



Source: BIS (2019), “The Market Risk Framework – in brief”, DP No.457.

Market Risk

Key features of the revised market risk framework

Current Basel 2.5 framework (amended in 2010)	Boundary between the banking book and trading book	Use and validation of banks' internal models	Risk measurement under the internal models approach	Risk measurement under the standardised approach
	Assignment to the trading book primarily relies on the bank's intent to trade an instrument <i>Issue: weak definition provides opportunity for banks to move instruments across the trading book-banking book boundary in pursuit of lower capital requirements</i>	Model approval/removal determined on a bank-wide basis <i>Issue: model approval processes poorly positioned to deny/remove approval for trading desks that are deemed inappropriate for model use</i>	Capital requirements primarily determined using value-at-risk (VaR) models <i>Issue: insufficient measurement of tail risks and liquidity risk of trading portfolios; permits unrestrained diversification benefits</i>	Risk measurement based on an exposure-by-exposure building block approach <i>Issue: outdated calibration and insufficiently risk-sensitive to serve as a credible complement and fall back to the internal models approach</i>
Standard (issued in 2016)	Robust boundary to clearly specify appropriate contents of the trading book and restrict arbitrary reassignment	Model approval/removal determined at the trading desk level; separate, more stringent capital requirements for risks not appropriate for modelling ("non-modellable risk factors" or NMRFs)	Expected shortfall measure replacing VaR; separate NMRF capital requirement; fall back to the standardised approach for trading desks that fail model approval assessments	Risk-sensitive measurement primarily based on the loss a bank could suffer (ie sensitivities) under a defined stress scenario
Revised standard (issued in 2019)	Further specification of regulatory book assignment requirements with better articulated precedence and clarification for certain exposures	New test metrics to discern poorly performing models; improved criteria for the identification of NMRFs	Adjustment to capital requirements to address cliff effects and calibration issues for trading desks and risks that fall short of processes to assess modellability	Refined measurement method for FX risk, options and index instruments; recalibrated risk weights for general interest rate risk and FX risk

Source: BIS (2019), "The Market Risk Framework – in brief".

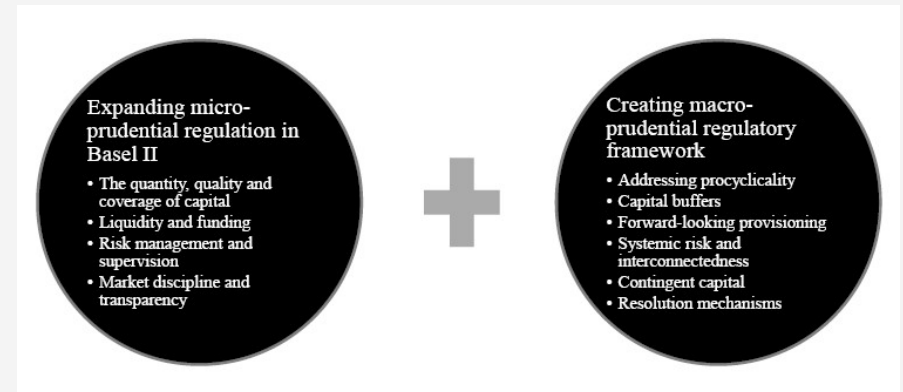
Basel III

□ **Main impositions:**

- (i) higher capital requirements
- (ii) liquidity requirements
- (iii) strengthening of macroprudential role

□ **Main Goals:**

- (i) reduce the probability of bank failures
- (ii) ensure that no bank is TBTF



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

Basel III

□ **BIS action points:**

(1) Banks

- **Capital** - Improve capital adequacy rules, e.g. by establishing a maximum leverage ratio, reducing the cyclical nature of capital requirements and reducing incentives for TBTF banks.
- **Liquidity** – set international rules on liquidity risk 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

Basel III

- The GHOS met on 26.Jul.2010 to review the BCBS capital and liquidity reform package and reached an agreement on the overall design of the capital and liquidity reform package, namely the definition of capital, the treatment of counterparty credit risk, the leverage ratio, and the global liquidity standard.
- At its 12.09.2010 meeting, the GHOS announced a proposal for a substantial strengthening of capital requirements, to submit to the Seoul G20 summit in November.
- Basel III recommendations were published in Dec.2010: “Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems”, WP No. 189 (revised in Jun11), after the G20 meeting in Nov.10.
- Basel III phasing-in started in 2013, to be fully implemented in 2019, but the GHOS decided in Dec.2017 to postpone the implementation date to 2022.
- In 2017, the BCBS concluded the Basel III framework - “Basel III: Finalising post-crisis reforms”, DP No. 424, 7 Dec.”, focusing on standardized and IRB approaches for credit risk, the minimum capital requirements for operational risk and the Leverage Ratio.

Basel III

□ Basel III - 2010:

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.

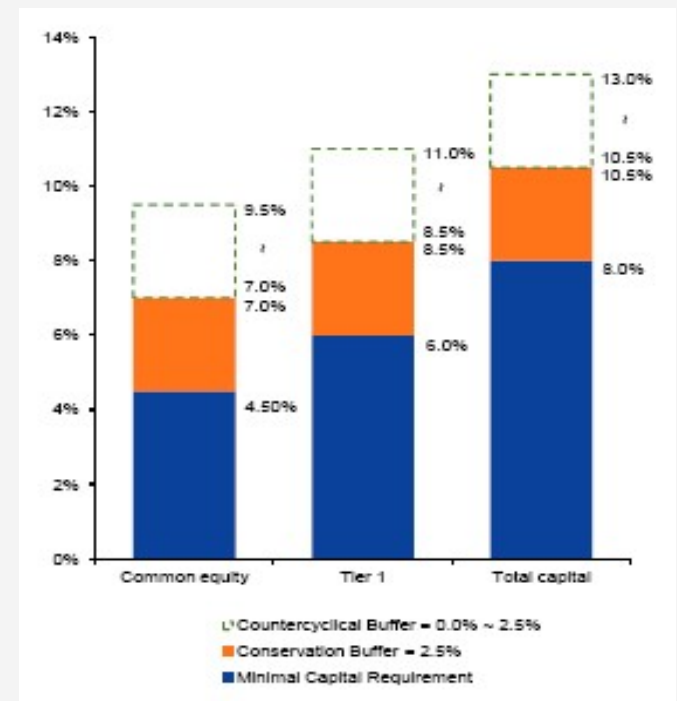
Basel III

- Minimum CT1 ratio was increased to a level between 7% and 9.5% (10.5% to 13% for total pillar I capital, with higher minimum levels for G-SIBs, that can reach 16,5%).

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”.

Basel III

- In the EU, the implementation of Basel III was ensured by the Capital Requirements Directive 2013/36/EU (CRD IV), and the Regulation No. 575/2013 (CRR), 26 Jun.
- **EU banks exhibit total capital ratios around 19%**, decreasing to around 16% after the phasing-in of those rules (expected to be fully implemented in 2028).

Bank group	Capital ratios — CRR 2/CRD 5 (fully phased-in)				Capital ratios — Basel III framework (2028)			
	CET1	Tier 1	Total capital	LR	CET1	Tier 1	Total capital	LR
All banks	15.3	16.5	19.0	5.5	13.2	14.3	16.3	5.6
Group 1	15.2	16.4	19.0	5.4	13.0	14.1	16.2	5.5
Of which: G-SIIs	14.0	15.3	17.7	4.7	11.6	12.7	14.4	4.8
Group 2	15.5	16.6	18.7	6.0	14.0	14.9	16.6	6.1

Source: EBA (2023), “Basel III Monitoring Exercise – Results Based on Data as of 31 December 2022 ”, EBA/Rep/2023/32, 26 Set.

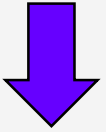
Note: Group 1 comprise banks with capital above 3B€ and internationally active.

Basel III

New Basel III requirements:

- (1) Leverage Ratio (LR)
- (2) Countercyclical Capital Buffer (CCyB)
- (3) Systemically Important Financial Institutions' (SIFIs) buffers
- (4) Liquidity

Leverage ratio

- BCBS published “Basel III leverage ratio framework and disclosure requirements”, WP No. 270, 12.01.2014.
 - **LR is a non-risk based measure** (like a risk-weighted capital ratio, with all weights = 1) to supplement the already existing risk-based capital ratios: $LR = \text{Tier 1 Capital} / \text{Assets} > 3\%$
 - 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, having migrated to a Pillar 1 treatment on 1 Jan.18.
 - The GHOS agreed on 10.Jan.2016 that additional requirements for G-SIBs should be discussed.
- 
- **In Dec.2017, the BCBS introduced a leverage ratio buffer requirement for G-SIBs = 50% of the risk-weighted capital buffer, to come into effect in 2023.**

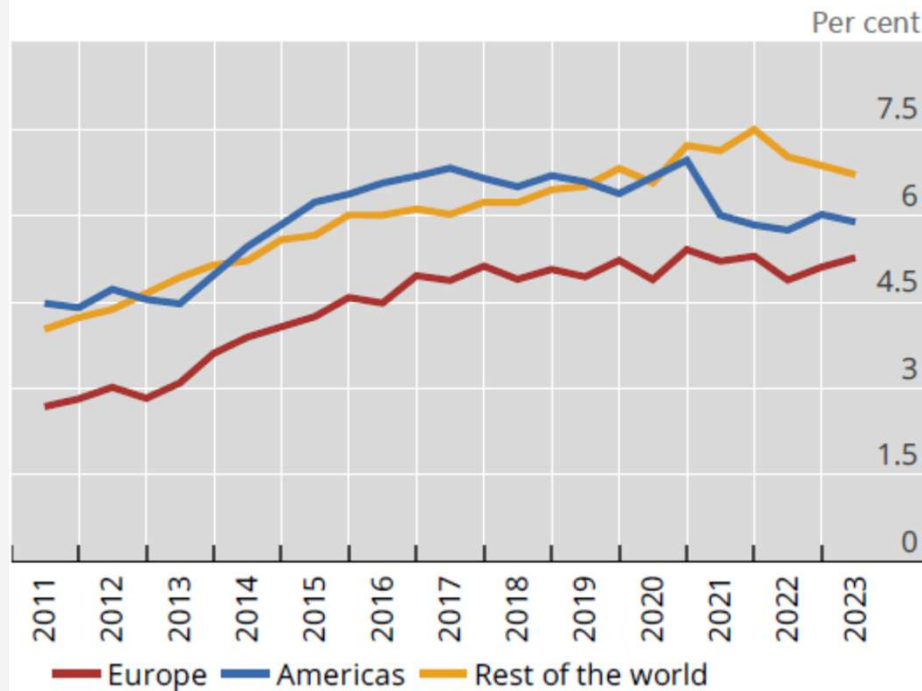
Leverage ratio

- Purpose: to reduce regulatory arbitrage opportunities through RWA optimization and reduce the financial fragility of individual FIs and the financial system.
- As the risk in the balance sheet is difficult to measure, authorities decided to impose a minimum on a non-risk-weighted capital ratio.
- Leverage Ratio tends to become a binding constraint when banks have low risk weights.
- According to the "EBA Report on the Leverage Ratio Requirements Under Article 511 of the CRR", EBA-Op-2016-13, 03 Aug., the minimum LR of 3% is a higher capital requirement than a risk-based Tier 1 requirement of 8.5% for around 33% of the banks.
- Moreover, the LR is more sensitive to the business cycle than risk-based capital requirements => the LR is a relatively tighter constraint in booms and a relatively looser constraint in recessions.

Leverage ratio

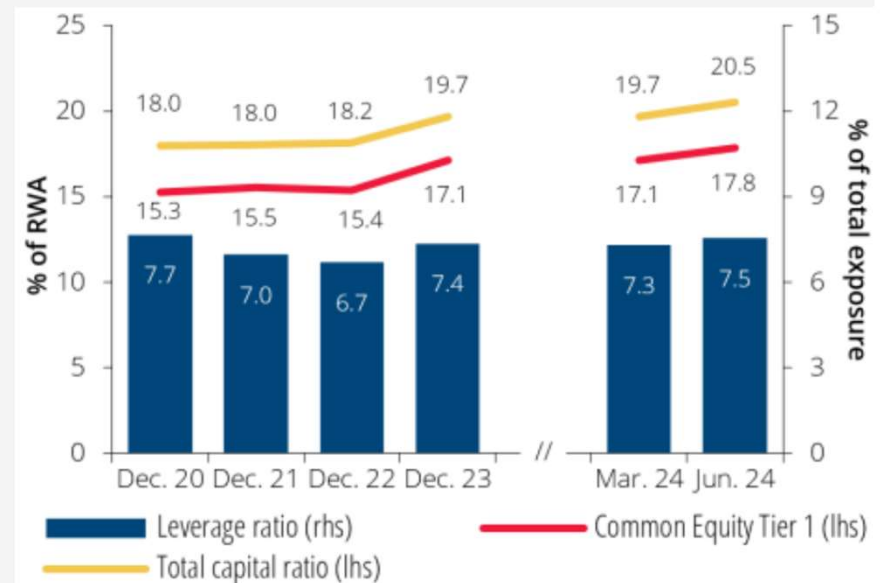
- LR in Portugal is above Europe's average.

Leverage ratios by region



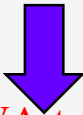
Source: BCBS (2023), “Basel III Monitoring Report”, Mar.

Own funds ratios and leverage ratio



Source: Banco de Portugal (2024), “Portuguese Banking System: Recent Developments - 2Q24”, Sept.

Countercyclical Capital Buffer

- **BCBS promoted countercyclical provisions** (“Guidance for national authorities operating the countercyclical capital buffer”, BCBS WP No.187, Dec.2010) - **main goals**:
 1. To protect the banking sector from losses due to periods of excessive credit growth;
 2. To ensure credit keeps available during periods of stress.
- 
- A capital buffer between 0% and 2,5% of RWA 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;
 - All Member States designated an authority to settle quarterly this buffer since 2016 (being reported to the ESRB), considering the credit growth and changes to the ratio of credit/GDP and other variables and qualitative information relevant to assess the sustainability of credit growth and the system-wide risk, e.g.:
 - various asset prices;
 - funding spreads and CDS spreads;
 - credit condition surveys;
 - real GDP growth.

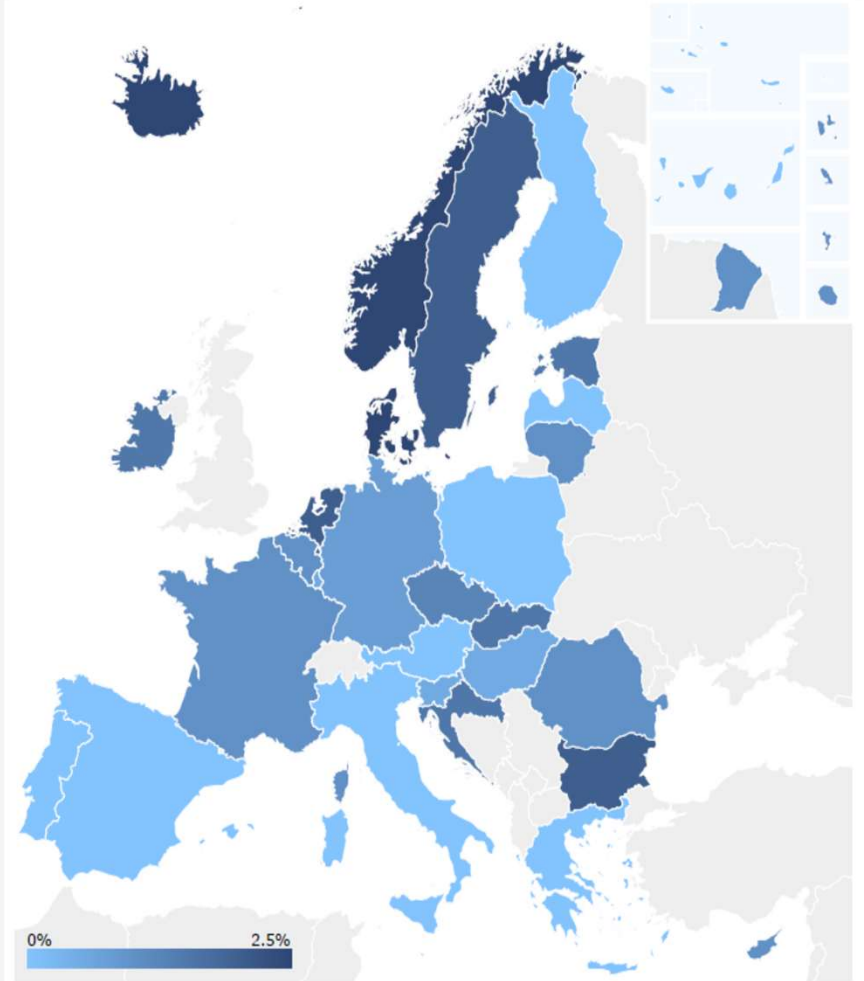
Countercyclical Capital Buffer

- Banks have 12 months to meet higher CCyB requirements, while decisions to decrease it take effect immediately.
- Recommendations issued by the ESRB about CCyB requirements have to be followed.
- According to BIS preparatory works (Drehmann, Borio, Gambacorta, Jimenez and Trucharte (2010) "Countercyclical capital buffers: Exploring options", BIS WP 317), credit related variables perform very well, e.g. credit-to-GDP ratio, that tends to rise smoothly above the trend before the most serious episodes, with several advantages over credit growth or other variables => **the gap between the credit/GDP ratio (Basel gap) and its trend was taken as the key indicator.**
- In addition to the credit/GDP ratio, **authorities should form their own judgments about the sustainable level of credit in the economy**, to conclude about the size of the CCyB.
- **Alternative tools**, such as loan-to-value limits, income gearing limits or sectoral capital buffers, may be employed when excess credit growth is concentrated in specific sectors but aggregate credit growth is judged not to be excessive.

Countercyclical Capital Buffer

- Most European Countries (including Portugal) have been setting their CCyB at 0%, even though BdP has announced on 07.10.2024 that a public consultation would occur until 19.11.2024 about setting CCyB at 0,75%.

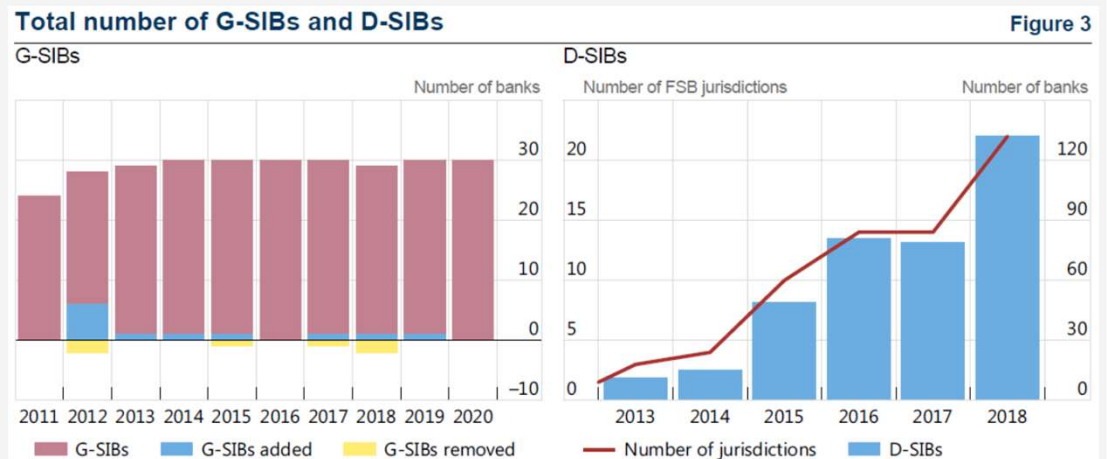
Source: ESRB (2024),
https://www.esrb.europa.eu/national_policy/ccb/html/index.en.html



SIFIs

- Until the subprime crisis, SIFIs were not seen as a problem and were even considered as safer than smaller banks, given that SIFIs are typically very diversified institutions and losses in one area of their activities were expected to be offset by profits in other areas.
- Since then, SIFIs are perceived to increase:
 - (i) Systemic risk;
 - (ii) Incentives for Government bail-outs, as they are TBTF, visible in the differences between standalone and support ratings (that include the implicit Government support), being higher for larger banks (Haldane (2010)).

Source: FSB (2021), “Evaluation of the Effects of Too-Big-To-Fail Reforms - Final Report”, 1 Apr.



SIFIs

- In Apr.09, a new set of rules and supervision procedures for G-SIBs was agreed in the G20 => “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 G-SIBs’ capital, in order to reduce the probability and impact of a G-SIB’s default, as well as the systemic relevance of the institutions;
 - (ii) Ex-post measures - ensuring that a G-SIB’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*).
- Resolution plans requirements by end-2012.

SIFIs

□ Goal:

“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: Ötcher-Robe *et al* (2010), “Impact of Regulatory Reforms on Large and Complex Financial Institutions”, IMF, SPN/10/16.

SIFIs

- **FSB** - 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.
- **FSF** - founded in 1999 by the G7 Finance Ministers and Central Bank Governors, to enhance cooperation among the various national and international supervisory bodies and international financial institutions, in order to promote financial system stability.
- **TBTF banks** - FSB was the 1st body to set a policy framework, publishing in Oct.2010 “Reducing the moral hazard posed by systemically important financial institutions”, to improve the resolvability of SIFIs, without the support of taxpayers, including:
 - (i) Enhancements to resolution regimes;
 - (ii) Higher requirements for loss-absorption capacity (TLAC–Total Loss Absorption Capacity);
 - (iii) Improved coordination in the supervisions and resolution planning.

SIFIs

2011 - an initial group of G-SIBs and additional capital requirements were announced by the FSB (“Policy Measures to Address Systemically Important Financial Institutions”, 4 Nov.):

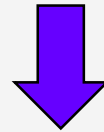
- (i) Additional capital requirements (over Basel III) for G-SIFIs - 1%-2.5% of RWA, with an empty bucket of 3.5%, to discourage further systemicness to be met with common equity;
- (ii) More intensive and effective supervision of all G-SIFIs, including stronger supervisory mandates, resources and powers, and higher supervisory expectations for internal control functions, data aggregation capabilities and risk governance;
- (iii) Mandatory recovery and resolution plans, subject to review by a high-level FSB Resolvability Assessment Program;
- (iv) List of G-SIBs to be updated every November.

* 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

2012 - G-SIBs started to be allocated to buckets corresponding to higher capital buffers.

2013 - FSB Report on *Progress and Next Steps Towards Ending “Too-Big-To-Fail”*, Sept.)



there must be sufficient loss-absorbing and recapitalisation capacity available to implement an orderly resolution that minimises impacts on financial stability, ensures the continuity of critical functions, and avoids exposing public funds to loss.

2015 - FSB term sheet implementing these principles as an internationally agreed standard on the adequacy of TLAC for G-SIBs – “Total Loss-Absorbing Capacity (TLAC) Principles and Term Sheet”, 9 Nov.:

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

SIFIs

- The additional capital requirements were initially applied to the banks identified in Nov. 14 as G-SIBs, phased in starting in Jan.16 with full implementation by Jan.19.
- In 2012, BCBS extended the G-SIBs principles to D-SIBs, after releasing “A framework for dealing with domestic systemically important banks”, WP No.233, Oct., stating that national authorities should begin to apply requirements to D-SIBs in line with the phase-in arrangements for the G-SIB framework.

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

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

SIFIs

- BCBS methodology - provides a score for each entity, based on indicators reflecting banks' international activity, size, interconnectedness, substitutability, and complexity, with a equal weight of 20% to each:

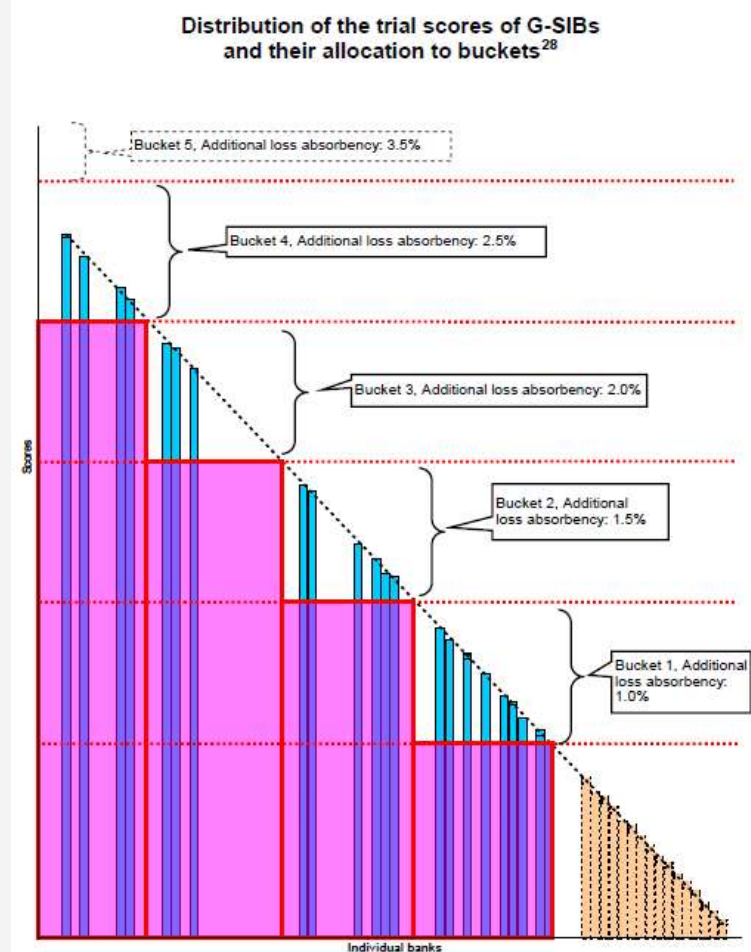
Indicator-based measurement approach		Table 1
Category (and weighting)	Individual indicator	Indicator weighting
Cross-jurisdictional activity (20%)	Cross-jurisdictional claims	10%
	Cross-jurisdictional liabilities	10%
Size (20%)	Total exposures as defined for use in the Basel III leverage ratio	20%
Interconnectedness (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”, WP No. 255, 3 Jul.

SIFIs

- **Banks are placed in 5 different buckets, with additional loss absorbing requirements between 1% and 3,5% (with a 1-year grace period, when a bank is classified as a G-SIB for the 1st time.**

BCBS (2013), “Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement”, WP No. 255, 3 Jul.



SIFIs

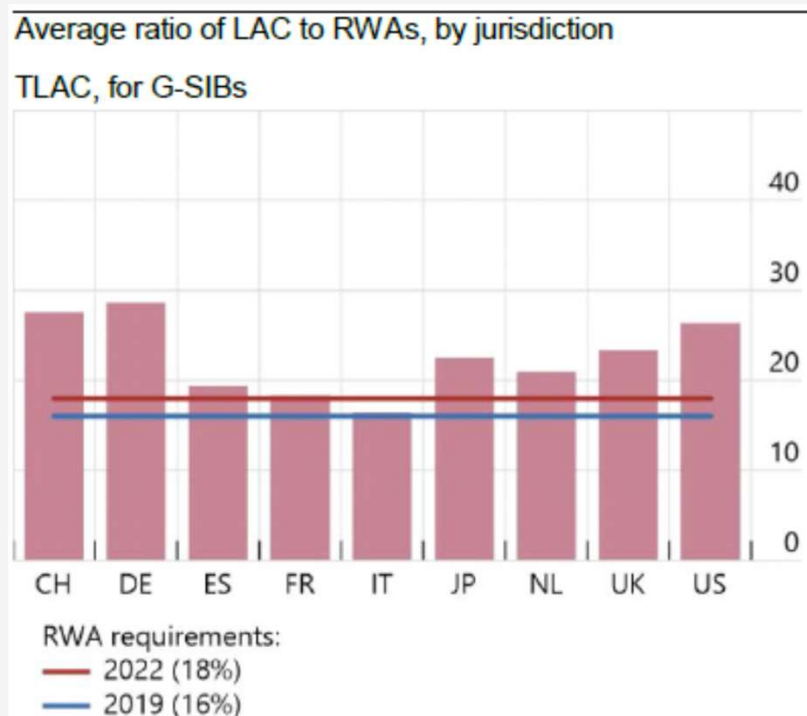
- The group of G-SIBs is updated annually and published by the FSB each November, to be implemented 14 months after, at the beginning of the following year.
- FIs no longer designated as a G-SIFI will continue to be subject to the requirement for recovery and resolution plans if the bank is considered by national authorities to be a SIB or critical in the event of failure.
- BCBS methodology was transposed to CRD IV (art. 131).

Source: FSB (2023), “2022 list of global systemically important banks (G-SIBs)”, 27 Nov.

G-SIBs as of November 2023 ¹⁰ allocated to buckets corresponding to required levels of additional capital buffers	
Bucket ¹¹	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 HSBC
2 (1.5%)	Agricultural Bank of China Bank of China Barclays BNP Paribas China Construction Bank Deutsche Bank Goldman Sachs Industrial and Commercial Bank of China Mitsubishi UFJ FG UBS
1 (1.0%)	Bank of Communications (BoCom) Bank of New York Mellon Groupe BPCE Groupe Crédit Agricole ING Mizuho FG Morgan Stanley Royal Bank of Canada Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG Toronto Dominion Wells Fargo

SIFIs

- **G-SIBs have made important progress in building up their TLAC resources**, with all G-SIBs showing at the end of 2018 ratios TLAC ratios above the 2019 transitional minimum and 21 above the 2022 full-implementation minimum:



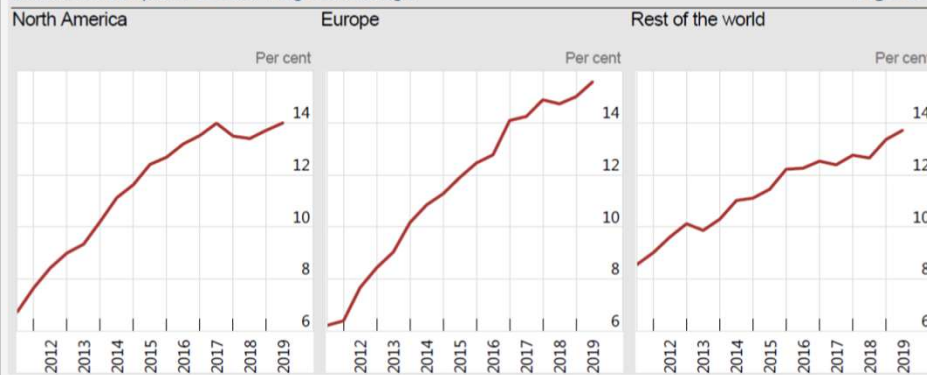
Source: FSB (2021), “Evaluation of the Effects of Too-Big-To-Fail Reforms - Final Report”, 1 Apr.

SIFIs

- The capital and liquidity ratios of G-SIBs have improved worldwide:

Initial Basel III Tier 1 risk-based capital ratio, by region

Consistent sample of G-SIBs, weighted average



Net stable funding ratio, by region

Consistent sample of G-SIBs, weighted average



Fully phased-in final Basel III leverage ratio, by region

Consistent sample of G-SIBs, weighted average



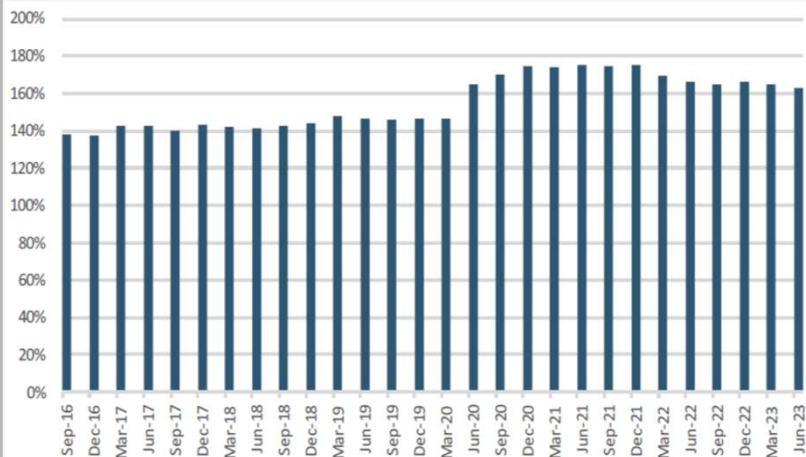
Source: FSB (2021), “Evaluation of the Effects of Too-Big-To-Fail Reforms - Final Report”, 1 Apr.

Liquidity

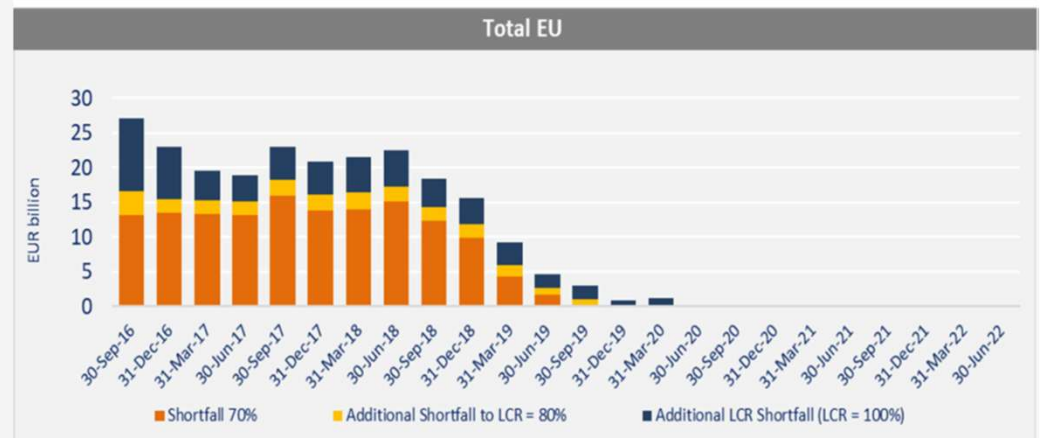
- **BCBS (2013)** - “Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools”, W.P. 238, January):
 - Increases relevance of liquidity management, including contingency plans;
 - Include liquidity costs in pricing and decision processes.
- Purpose: to ensure that banks can meet their obligations without relying on fire sales of their illiquid assets or on borrowing from the central bank, that must be the lender of *last* resort, not the lender of *first* resort.

Liquidity

- **LCR** - the average LCR for a sample of 134 banks monitored by EBA was around 150% in Dec19, having increased to 176% in Jun21 and Dec21 and decreased to 166% in Jun22, being much above the minimum requirements.
- After starting with a shortfall of 225B€ of liquid assets in Sep13 (in the EBA's monitoring of Sep.2013), it decreased to 27 B€ in Sep16 and to no shortfall since Jun20.



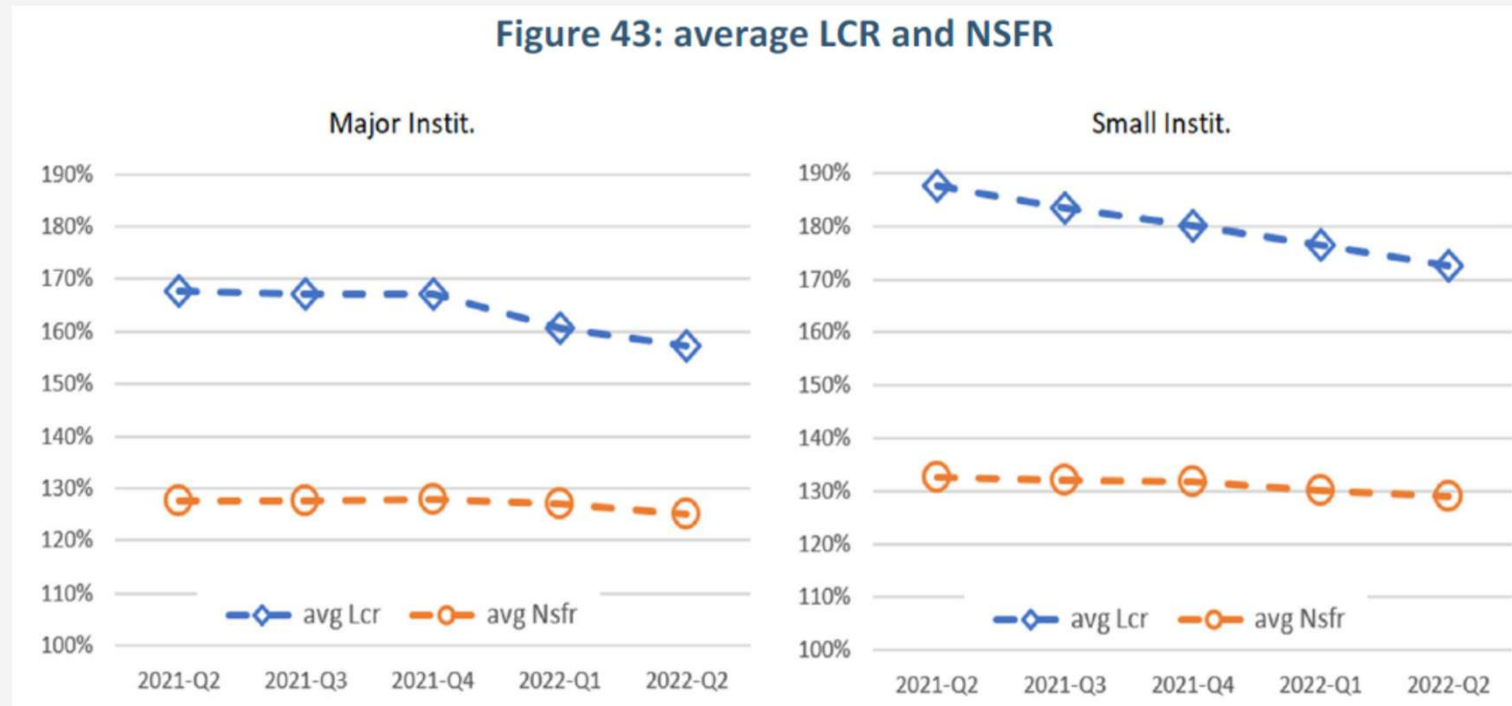
Source: EBA (2023), “Report on Liquidity Measures under Article 509(1) of the CRR”, EBA/Rep/2023/40



Source: EBA (2023), “Report on Liquidity Measures under Article 509(1) of the CRR”, EBA/Rep/2023/04

Liquidity

- **NSFR** - also above the minimum requirements, but less than LCR, namely among major FIs.



Source: EBA (2023), “Report on Liquidity Measures under Article 509(1) of the CRR”, EBA/Rep/2023/04, 13 Jan.

European Banking Union

- Only after the severe financial contagion of 2011 and early 2012 the political leaders understood the necessity of a banking union for the Euro Area.
- This decision was taken in the EU summit of 28-29 Jun12, based on **3 pillars**:
 - (1) **SSM – Single Supervisory Mechanism**
 - (2) **SRM - Single Resolution Mechanism**
 - (3) **EDIS - European Deposit Insurance Scheme** (still to be enacted)

European Banking Union

(1) SSM

- Regulated by Reg. 1024/2013, 15.Oct, with the following goals:
 - (i) Separation between ECB's monetary policy and supervision roles;
 - (ii) Integrated decision-making process, delegating supervision tasks to national authorities (defined in Reg. 468/2014, 16 Apr.);
 - (iii) Adoption of a common set of prudential rules.
- **Main ECB tasks within SSM:**
 - banking supervision, including tasks within recovery plans and early intervention measures in situations of non-compliance of prudential requirements (or risks of)
 - 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
 - perform stress tests
 - impose additional specific capital requirements.

European Banking Union

- The ECB also set a list of priority less significant institutions (LSI), taking into account the risk situation and potential impact on the domestic financial system.
- **Reasons for a LSI to be deemed “high priority”:**
 - (i) being close to be classified as significant institutions due to their size;
 - (ii) 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.
- A minimum of 3 high-priority LSIs per country applies.

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, with the following results (announced on the 26.10.2014):
 - Capital shortfall of €25B detected at 25 participant banks
 - Banks' asset values needed 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%	2.5%	-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-Verband	11.5%	10.3%	7.2%	2.1%	0.86	0.00	0.86
permanet tbk	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 Varesino	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 Hypothekbank	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 ⁴	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

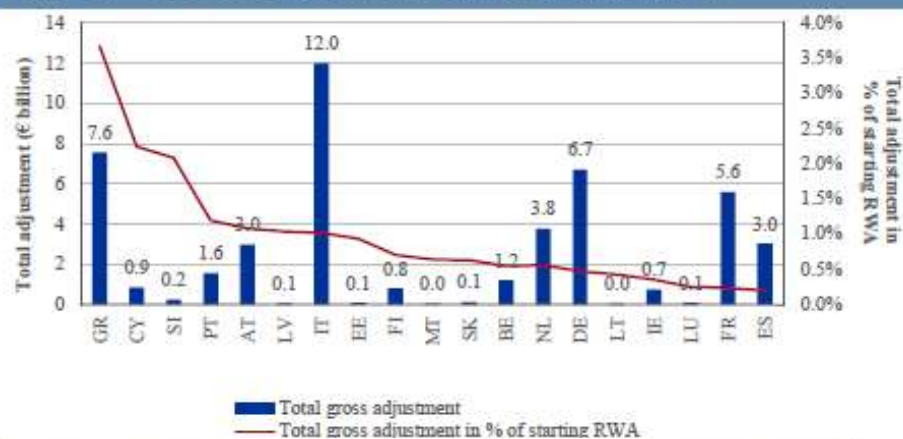


Figure 52 Impact of the stress test on the aggregate CET1 capital by country under the adverse scenario in € billion and in percentage of RWA



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

European Banking Union

(2) SRM - Single Resolution Mechanism

- in charge of the application of the EU uniform rules and a uniform procedure for the resolution of banks, along with the national resolution authorities.
- includes the Single Resolution Board (SRB) and the Single Resolution Fund (SRF), leading to the merger of national resolution funds into a single European fund by 2024;
- the use of the SRF depends on the entry into force of an agreement among the participating Member States on transferring the funds raised at national level to the SRF, as well as on a progressive merger of the different funds raised at national level to be allocated to national compartments of the Fund.
- established by Regulation 806/2014, 15 July (SRM Regulation, amended by Regulation 2019/877, 20 May – SRMR II), entered into force in 01.01.2016.

European Banking Union

(i) Single Resolution Board (SRB)

- the European Resolution Authority, set-up to decide if, when and how a bank must be resolved, as well as to appoint a special manager to a failing bank for a limited period;
- responsible for set-up of the MREL (Minimum Requirements for Own Funds and Eligible Liabilities for Bail-ins, equivalent to the TLAC), the resolution plans and all decisions related to the resolution of banks subject to the direct supervision of the ECB.

(ii) Single Resolution Fund (SRF)

- owned by the SRB, to break the link between the risk of the sovereigns and the banks and facilitate the resolution of cross-border EU-based banks;
- to be built over 8 years (2016-2023), expected to reach 80B€;
- provides capital support to banks, by reaching at least 1% of the covered deposits.

European Banking Union

- in Dec18, it was agreed at the Euro Summit that the **European Stability Mechanism (ESM)** would **act as a common backstop for the SRF**, from 2024 onwards at the latest, with a credit line of at least 1% of covered deposits in the Banking Union (with a cap of 68 B€), doubling the resources of the SRF and ensure their immediate availability, reaching an amount of around 120B€.
- this safeguard can reassure markets and block contagion, even though in the last crisis governments injected around 360B€ into banks' capital.
- **ESM** - Set up in Oct12 as a permanent solution to provide funding to Euro Area countries that lose access to the bond markets.
- **Its forerunner was the European Financial Stability Facility (EFSF)**, which had been set up in Jun10 as a temporary solution, still existing, being allowed to roll-over previously issued bonds, but not to make new loans (to be granted by the ESM).
- The EFSF and ESM remain separate legal entities but share staff, facilities, and operations. Together, the EFSF and the ESM have around €700 billion in firepower.

EU Basel III package

1. **CRD IV and CRR**

- (1) Pillar I capital requirements;
- (2) Additional capital buffers;
- (3) Leverage ratio;

2. **BRRD**

3. **Regulatory technical standards for credit rating agencies**

4. **Requirements on Remuneration of staff**

5. **Stress Testing**

6. **SREP**

7. **ILAAP**

EU Basel III package

1. CRD IV and CRR

- CRD IV - Directive 2013/36/EU, 26.06, amended by Directive 2019/878, 20.05 (CRD V).
- CRR – Regulation 575/2013, 26.06.2013, amended by Reg. 876/2019, 20.05 (CRR II).
- **CRR II implemented the leverage ratio and the NSFR, entering into force in 28.06.2021.**

(1) Pillar I capital requirements

- Common Equity Tier 1 (CET1) $\geq 4,5\%$
- T1 (CET1+Additional Tier1) $\geq 6\%$
- Solvency Ratio (T1+T2) $\geq 8\%$

(all % of RWA)

EU Basel III package

(2) Combined Capital Buffer Requirement (CBR)

- (i) Capital Conservation Buffer (CCoB) = 2,5%
- (ii) Countercyclical Capital Buffer (CCyB) – 0% to 2,5%
- (iii) Systemic Risk Buffer (SyRB) – multiples of 0,5%, with no limit
- (iv) Global Systematically Important Institutions (G-SII) capital buffers – no limit;
- (v) Other Systematically Important Institutions (O-SII) capital buffers $\leq 3\%$

EU Basel III package

(i) Capital Conservation Buffer (CCoB)

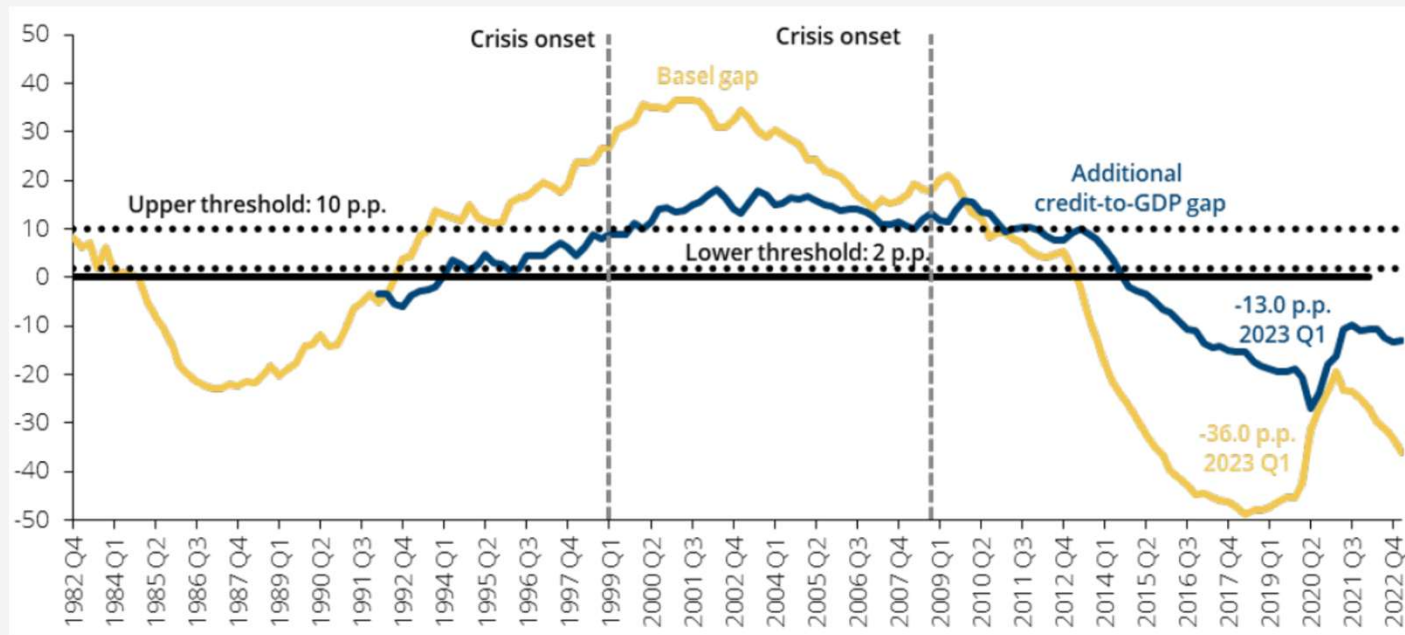
- constant over time, aiming to accommodate losses in a potentially adverse scenario.

(ii) Capital Countercyclical Buffer (CCyB) – 0% to 2,5% (multiples of 25 bp)

- to strengthen the resilience of the banking sector in periods when cyclical systemic risk increases due to excessive credit growth, being defined based on the analysis of a set of macroeconomic and financial indicators, providing information on cyclical systemic risk developments.
- the ESRB gave guidance to national authorities on setting countercyclical buffer rates (Recommendation ESRB/2014/1), following BCBS recommendations, e.g. on 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.).

EU Basel III package

- Actually, the Basel and the BdP indicators of cyclicality are still significantly below the long-term mean:



Source: BdP (2023), "Countercyclical Capital Buffer", 29 Sept.

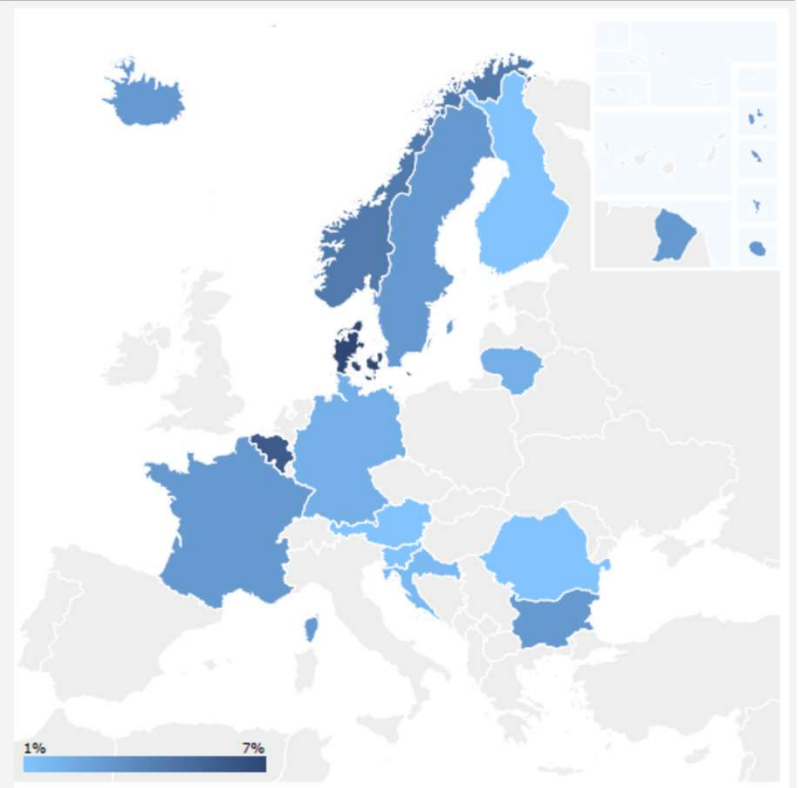
EU Basel III package

- As additional information to the Basel gap, BdP considers 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.

EU Basel III package

(iii) Systemic Risk Buffer (SyRB)

- aims to address systemic risks of a long-term, non-cyclical nature that are not covered by other macroprudential instruments of the CRR and the CRD.
- the systemic risk buffer rate may apply to all exposures or a subset of exposures, thus allowing SyRB to be applied, on a sectoral basis, to all institutions or one or more subsets of those institutions.
- the buffer level may vary across institutions, being updated monthly, by each country.



Source: ESRB (updated on the 2nd Nov.2023).

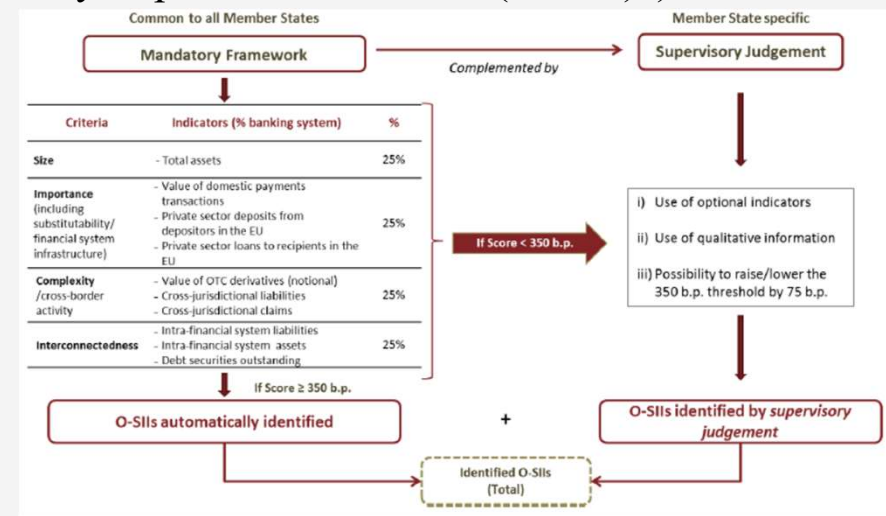
EU Basel III package

(iv) Global Systematically Important Institutions (G-SII) capital buffers

- Identified by the FSB

(v) Other Systemically Important Institutions (O-SIIs)

- Relevant FIs at a domestic level, following the criteria set by EBA in EBA/CP/2014/19 - “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 and Calibration of O-SIIs Capital Buffers”, July.

EU Basel III package

- Whilst the G-SIB buffers are largely mechanical, the O-SIIs framework is more principle based, with a larger discretionary power of national authorities, namely regarding the weights attached to the different criteria:
 - (i) Size
 - (ii) Interconnectedness
 - (iii) Relevance for the domestic economy
 - (iv) Complexity within domestic economy (including cross-border activities).

EU Basel III package

- 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), phased-in since 2020.

Banking institutions identified as O-SII in 2023

O-SII	Size	Importance	Complexity	Interconnectedness	Scores ¹
Banco Comercial Português, S.A. JU1U650DG9YLT7N8ZV32*	509	485	812	355	2161
Caixa Geral de Depósitos, S.A. T082200VT80V06K0FH57*	579	489	526	290	1884
Santander Totta, SGPS, S.A. 5493005RLLC1P7V5VC58*	317	464	251	370	1402
LSF Nani Investments S.à.r.l. 222100K6QL2V4MLHWQ08*	262	253	320	295	1130
Novo Banco, S.A. 5493009W2E2YDCKY6581*	-	-	-	-	-
Banco BPI, S.A. 3DM5DPG3W6OU6G4N92*	220	281	146	203	850
Caixa Central – Caixa Central de Crédito Agrícola Mútuo, CRL 529900H2MBEC07BLTB26*	137	115	97	100	449
Caixa Económica Montepio Geral, Caixa Económica Bancária, S.A. 2138004FIUUX3B2MR537*	108	125	42	75	350

¹ According to the guidelines of the European Banking Authority, the threshold adopted for the identification process was 350 basis points.
* LEI (Legal Entity Identifier)

Source: BdP (2023)

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 %

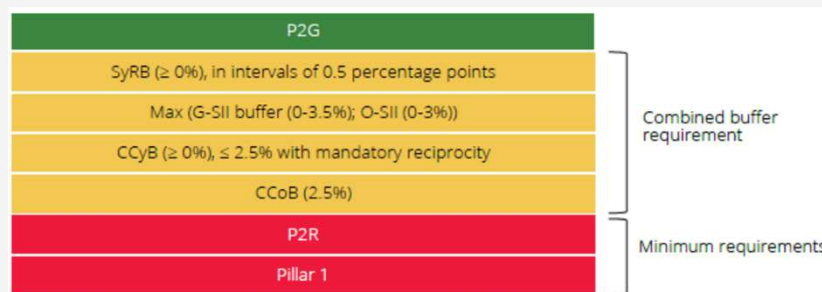
Source: BdP (2016), “Identification of O-SIIs and Calibration of O-SIIs Capital Buffers”, July.

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- CBR is intended to increase the financial system's capacity to absorb losses, as to preserve financial stability.
- The buffers are available to be used during adverse periods, following a decision by the macroprudential authority to release them (except the CCoB).
- Institutions that fail to meet the combined buffer requirement (CBR) are subject to automatic restrictions on dividend distribution.
- For G-SII, the buffer can be replaced by the O-SII if the latter is larger.
- A cap is established on the aggregate value of G-SII/O-SII and SyRB buffers of 5% of total RWA, which can only be exceeded upon authorization of the European Commission.

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□ Total capital requirements:



Source: BdP (2020), “Financial Stability Report”, June.

□ Pillar 1 + P2R have to be met on an ongoing basis, including adverse scenarios.

P2R:

- safety margin for prudential requirements, to be met with at least 75% of T1P2R (according to CRDV) and microprudential authorities shall assess the institution's specific risks and their control mechanisms, being able to decide to impose specific measures on the institution, including additional capital requirements.
- a bank failing to meet the P2G shall be the object of increased attention by the microprudential authority, but doesn't have the same type of consequences of the non-compliance with minimum requirements and capital buffers.
- However, when a bank repeatedly fails to comply with P2G, the authority may take additional measures, including the conversion of the P2G into an additional own funds requirement under P2R.

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(3) Leverage ratio

- As in the case of risk-based capital requirements (pillar I and P2R), the leverage requirement includes the Pillar 1 and P2R components.
- Pillar 1 corresponds to a minimum level requirement for the leverage ratio of 3%, as a % of the total exposure measure and should be met with Tier 1 capital.
- Banks shall also comply with the P2R leverage ratio requirement (P2R-LR) specific to the institution, as determined by the microprudential supervisory authority.
- As with risk-based capital requirements, the supervisor may also introduce a guidance on the leverage ratio (P2G-LR).
- According to CRR II, the LR entered into force in 'Mar23.

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2. BRRD

- Directive 2014/59/EU, 15.05, amended by Directive 2019/879, 20.05 (BRRD II):
 - establishes the framework for the recovery and resolution of banks;
 - harmonizes the rules relating to the resolution of banks across the EU;
 - provides cooperation among resolution authorities to deal with the failure of cross-border banks;
 - leaves discretion to national authorities in the application of the tools and in the use of national financing arrangements in support of resolution procedures.
- Besides allowing new tools for resolution and imposing capital buffers for banks to cushion losses in case of resolution, **BRRD imposes banks to set-up:**
 - (1) **Recovery plans** - to be set-up by banks, defining the early actions to restore long term viability;
 - (2) **Resolution plans** - to be set-up by banks and to be approved by the resolution authorities in cooperation with supervisors;
- In Portugal, Decree-Law 31-A/12, 10 Feb. established the resolution law.

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- BRRD is specially relevant in EU, as Government bail-ins were the rule until the subprime crisis and the resolution of SIBs was hampered by cross-border issues and lack of harmonization of different national regulations:
 - (1) requires that banks meet MREL, expressed as a percentage of their Total Liabilities and Own Funds (TLOF) set-up by resolution authorities, ensuring that shareholders and creditors bear losses regardless of which resolution tool is applied;
 - (2) extends the powers of supervisors to intervene at an early stage;
 - (3) harmonises the triggers for the application of resolution measures, ensuring that authorities are able to take an action without being required to establish that an institution is insolvent.

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□ The main resolution measures include:

- (1) sale of (part of) a business;
- (2) bridge institution (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 (imposition of losses, by order of seniority, on shareholders and unsecured creditors) - eligible deposits from individuals and micro, small and medium-sized enterprises + liabilities to the EIB will have preference over the claims of ordinary unsecured, non-preferred creditors and depositors from large corporations.

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- **The BRRD requires 3 basic conditions for a resolution to be undertaken:**
 - (i) the bank is failing or likely to fail, which is based on the ECB's assessment;
 - (ii) there is no alternative private solution; and
 - (iii) it is necessary for the public interest.
- The last 2 requirements are decided by the SRB.
- Resolution authorities must set an adequate transitional period, to be as short as possible, as well as to communicate to the institution a planned MREL for each 12-month period during the transitional period.
- **MREL entered into force in 2019, corresponding to the TLAC set by the FSB for the G-SIBs**, even though TLAC is a Pillar 1 capital requirement, while MREL is set-up by the resolution authority for each individual bank, based on the resolution plan, 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) the Deposit Guarantee Scheme can contribute to the financing of resolution.

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- The MREL must be expressed in two ratios to be met simultaneously:
 - (i) **MREL-RW** - as a percentage of total risk-weighted exposure amount; and
 - (ii) **MREL-LR** - as a percentage of the total exposure measure.
- Consequently, since 2022, 3 capital ratios have to comply with minimum levels.

Regulatory requirement	Entry into force
Minimum leverage ratio requirement	June 2021
Leverage ratio buffer	January 2022 (legislative proposal to be deferred to January 2023)
MREL	January 2022 (intermediate objectives)
MREL	January 2024 (end of phase-in period)

Source: Banco de Portugal (2020), “Interaction between regulatory minimum requirements and capital buffers”, in Financial Stability Report, June 2020.

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- These capital ratios are calculated on the basis of total RWA or total exposure (Total Assets).

Regulatory requirement	Purpose	Requirement ratio denominator
Risk-based capital requirements (RW)	Prevent institutions from taking on more risk to increase their profitability, without having an adequate level of own funds to cover this risk	Total risk-weighted exposure amount
Leverage ratio requirements (LR)	Restrain the accumulation of excessive leverage in the expansionary phase of the cycle and mitigate the risks emerging from underestimated capital requirements determined through internal approaches	Total exposure measure
Requirements for own funds and eligible liabilities (MREL)	Allow institutions and entities to absorb expected losses in case of resolution or at the point of non-viability, as appropriate, and to be recapitalised after the implementation of the actions provided for in the resolution plan	Total risk-weighted exposure amount (MREL-RW) and total exposure measure (MREL-LR)

Source: Banco de Portugal (2020), “Interaction between regulatory minimum requirements and capital buffers”, in Financial Stability Report, June 2020.

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- BRRD II distinguishes between various types of banks, subject to different requirements and timelines for MREL implementation, in line with the principle of proportionality:
 - (i) G-SII - minimum requirements for Pillar 1 MREL of 18% of RWA and 6,75% of Total Assets from the beginning of 2022 onwards (16% and 6% until 2021)
 - (ii) top banks - minimum requirements for Pillar 1 MREL of 13.5% of RWA and 5% of Total Assets
 - (iii) smaller banks, but considered by resolution authorities as likely to constitute a systemic risk in insolvency – similar to top-tier banks
 - (iv) all other institutions – only Pillar 2 MREL-RW and Pillar 2 MREL-LR are required.

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- Pillar 2 MREL-RW =

loss absorption amount (LAA) in resolution = total capital ratio of 8% (Pillar 1 req.) + P2R

+

a recapitalization amount (RCA) enabling the institution resulting from the resolution to restore compliance with Pillar 1 and P2R requirements after the implementation of the resolution strategy.

- Pillar 2 MREL-LR =

amount of losses to be absorbed in resolution (Pillar 1 requirement for the 3% leverage ratio)

+

a recapitalization amount allowing the institution resulting from the resolution to restore compliance with the Pillar 1 requirement for the leverage ratio after implementation of the resolution strategy

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- **The bail-in tool must be applied to all banks' liabilities except:**
 - (a) deposits covered by the Deposit Insurance Scheme;
 - (b) secured liabilities, including covered bonds;
 - (c) liabilities to other banks, excluding entities that are part of the same group, with an original maturity < 7 days;
 - (d) liabilities to:
 - (i) employees (salaries, pension benefits or other fixed remuneration);
 - (ii) a commercial or trade creditor;
 - (iii) tax and social security authorities;
 - (iv) deposit guarantee schemes.
- **MREL – EBA regulatory instruments:**
 - 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.
 - EBA/ITS/2017/06 (5 Sept.) - Draft Implementing Technical Standards on procedures and templates for identification and transmission of information by resolution authorities to the EBA on MREL.

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3. Regulatory technical standards for credit rating agencies (CRA)

- (i) registration of credit rating agencies to the ESMA;
- (ii) information to be provided by a credit rating agency in its application for registration;
- (iii) the presentation of the information to be disclosed by CRA in a central repository (CEREP), so investors can compare the performance of different CRAs in different rating segments;
- (iv) how ESMA will assess rating methodologies; and
- (v) the contents and frequency of information CRAs have to submit to ESMA.

4. Requirements on Remuneration of staff

- (i) Directive 2010/76/EU (CRD III) introduced requirements on remuneration of staff who have a material impact on the institution's risk profile, which came into force on 1 January 2011.
- (ii) Later, EBA followed BIS recommendations ("Corporate governance principles for banks", Jul.2015), in order to improve remuneration practices, according to Articles 92 and CRD IV:
 - 2016 - "On sound remuneration policies under Articles 74(3) and 75(2) of Directive 2013/36/EU and disclosures under Article 450 of Regulation (EU) No 575/2013", EBA/GL/2015/22, 27.06.2016;
 - 2017 - "Guidelines on internal governance under Directive 2013/36/EU ", EBA/GL/2017/11, 26.09,

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□ Main issues:

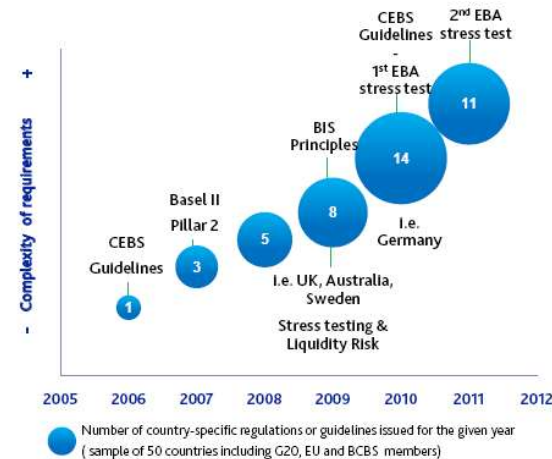
- Definition of a remuneration policy, to be revised annually, with clawback rules for variable remuneration;
 - Integration of risk in performance measurement;
 - Deferment of variable remuneration, becoming more dependent on long term performance;
 - Variable remuneration shall not exceed fixed remuneration (set in CRD IV, since 2014);
 - Independence between the remuneration of internal control functions' staff and the performance of the activities controlled by those functions;
 - Setting up a Remuneration Committee, as an advisor to the supervisory function.
- NCAs have to collect information on the No. individuals per bank in pay brackets of at least 1 M€, including the business area and the main elements of salary, bonus, long-term award and pension contribution, to submit to the EBA, which shall disclose it on an aggregate Member State basis.
- The 1st report on “Benchmarking of Remuneration Practices at the European Union Level and Data on High Earners” was published by EBA on 29.11.2013, while the most recent report (EBA/REP/2022/17) was published on 21.07.2022 (with 2019 and 2020 data).

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5. Stress Testing

- Higher relevance of stress testing exercises in banking management and capital planning since the end of the last decade, following international recommendations:
 - 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”;
 - Committee of European Banking Supervisors (2010), “CEBS Guidelines on Stress Testing”.

Figure 3. Growth of global and local stress testing regulations

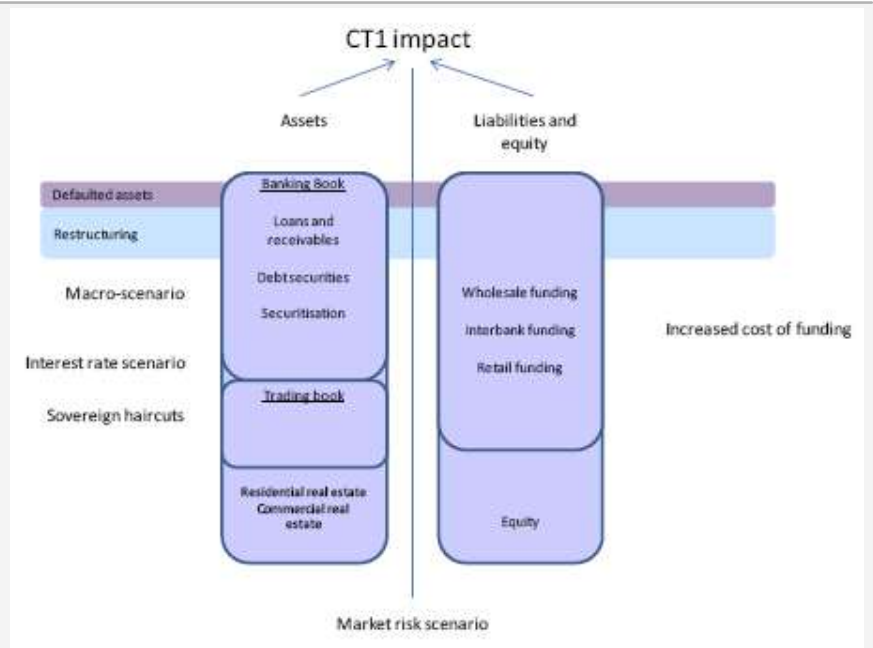


Source: Moody's (2011), “Moody's Analytics 2011 Banking Industry Survey on Stress Testing”.

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□ 1st EBA/CEBS* stress test

- requested by the European Council in Jul.10, for the main banks 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), concluding:
 - (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€.



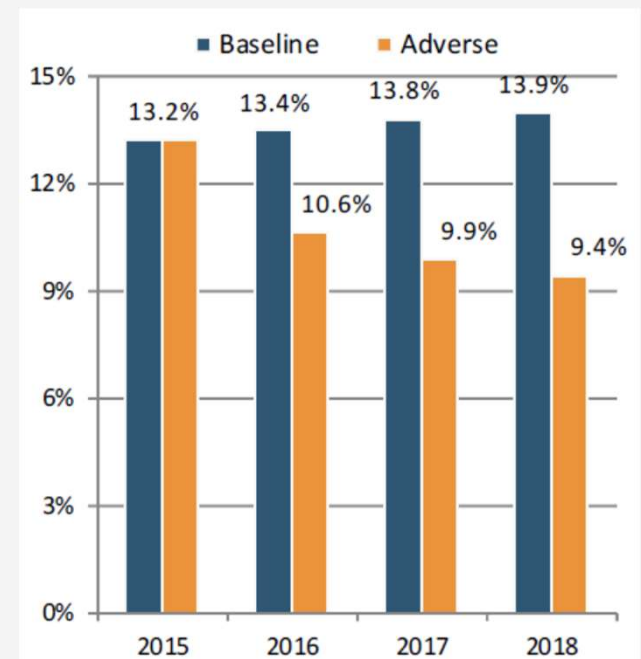
Source: EBA (2011), "2011 EU-Wide Stress Test - Objectives, outcome and recommendations", 16 July.

*CEBS was the forerunner of EBA.

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□ 2016 EBA stress test

- Assessed 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 discussed the impact of the stress test with banks and assessed how credible actions could offset its impact, namely taking into account their capital plan.
- These impacts were incorporated in the SREP.

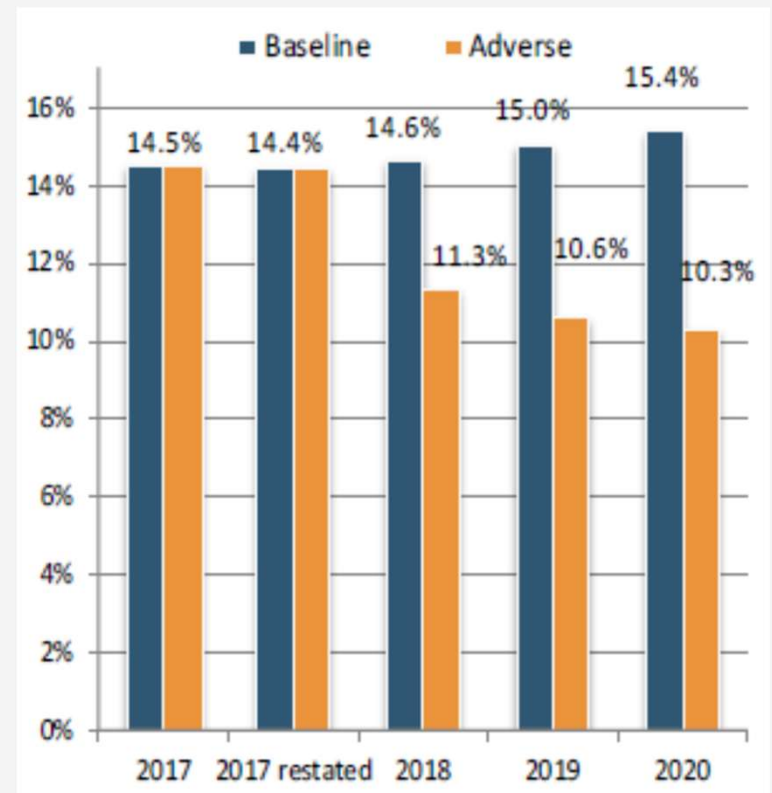


Source: EBA (2016), “2016 EU-Wide Stress Test”, 29 July.

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□ 2018 EBA stress test:

- Assessed 48 banks in 15 countries from 15 EU and EEA countries.
- Adverse scenario - EU real GDP growth rates over the 3 years of the exercise of -1.2%, -2.2% and 0.7% as of 2018, 2019 and 2020 respectively - a deviation of -8.3% from its baseline level as of end-2020.
- Weighted average CET1 ratio falls by -410bps, to 10.3% at the end of 2020, mostly driven by a capital depletion of 358B€, due to credit risk losses.



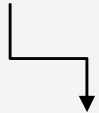
Source: EBA (2018), "2018 EU-Wide Stress Test", 2 Nov.

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- **EBA guidelines** - EBA (2018), “Guidelines on institutions’ stress testing”, EBA/GL/2018/04”, with entry into force in 01.01.2019:
 - Stress tests should be undertaken with appropriate frequency, taking into account the nature, scale, size and complexity of the bank (proportionality principle), portfolio characteristics, as well as changes in the macroeconomic environment or the bank’s business activities;
 - The stress testing program must be challenged across the organization, for instance by the risk committee and internal auditors;
 - **Stress Testing Components:**
 - (i) Scenario analyses;
 - (ii) Sensitivity analyses at the level of individual exposures, portfolios or business units, proportionate to their complexity;
 - (iii) Reverse stress tests;
 - Banks must scenarios are severe but plausible.

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- In addition to the EBA, SSM or IMF (FSAP) stress tests, the ECB developed **STAMP** - Stress-Test Analytics for Macroprudential Purposes.



top-down quantitative methodology to assess the resilience of euro area FIs to main systemic risks, covering about 100 large and medium-sized banking groups directly supervised by the ECB. - Dees, S., Henry, J. and Martin, R. (eds.), “STAMP: Stress-Test Analytics for Macroprudential Purposes in the euro area”, ECB, February 2017; Henry, J and Kok, C. (eds.), “A macro stress testing framework for assessing systemic risks in the banking sector”, Occasional Paper Series, No 152, ECB, October 2013.

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□ Two adverse scenarios are considered:

- (1) **Abrupt repricing of global risk premia** => very strong financial contagion to the euro area, mainly via financial contagion in equity and bond markets => Yield curves steepen and credit spreads widen both in advanced and emerging economies => re-emergence of public debt sustainability concerns for countries with lower credit ratings.
- (2) **Strong economic slowdown** => negative feedback loop between the banking sector and the real economy. Lower than expected economic growth in US and emerging economies, in addition to trade disruptions due to more protectionist policies in some advanced economies, is assumed to spill over to euro area countries via trade channels => domestic demand confidence shocks, negatively affecting private consumption and investment => higher levels of risk in the non-financial corporate sector => bond yields increase sharply and unemployment also increases more abruptly than in the past due to the preponderance of flexible working contracts => households and firms face difficulties in paying back their debt, especially in countries with highly indebted private sectors => drop in property market activity, both in the residential and commercial property segments => lower collateral value of mortgages.

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	Risk	Exogenous shocks triggering the scenarios
Scenario 1	• Spillovers from a disruptive repricing of term and other risk premia in global financial markets • Public debt sustainability concerns amid historically high debt levels • Liquidity risks in the non-bank financial sector, with contagion to the broader system	• Shock to risk-free bond yields in global markets • Shock to sovereign credit spreads in the euro area • Shock to stock prices in global markets • Shock to Expected Default Frequencies (EDF) of the largest insurance and investment funds in the euro area • Shock to household wealth in the euro area • Shock to consumption • Shock to foreign demand
Scenario 2	• Lower than expected growth • Impaired intermediation capacity of banks amid weak performance and structural challenges • Private debt sustainability concerns amid historically high debt levels	• Shock to foreign demand • Shock to private investment in euro area countries • Shock to private consumption in euro area countries • Shock to corporate bond spreads in euro area countries • Shock to residential property prices in euro area countries

Source: European Central Bank (2018), “Financial Stability Review”, May.

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- Stronger macroeconomic impact of scenario 2 – GDP falls by more than 5%, with residential property prices decreasing around 22%

Overall impact of the two adverse scenarios on euro area macroeconomic variables

	Baseline 2020 - change with respect to end-2017	Scenario 1		Scenario 2	
		Total deviation from baseline level	Contribution of second-round effects	Total deviation from baseline level	Contribution of second-round effects
Real GDP	+5.9%	-2.8%	-0.3%	-5.1%	-0.6%
Unemployment rate	-1.8 p.p.	+0.5 p.p.	+0.1 p.p.	+1.8 p.p.	+0.4 p.p.
Residential property prices	+11.6%	-6.0%	-1.0%	-22.1%	-5.4%
Commercial property prices	+9.1%	0.0%	0.0%	-31.4%	-6.1%
Investment	+11.0%	-5.8%	-0.8%	-16.9%	-2.6%
Credit to the private sector	+6.2%	-2.8%	-2.8%	-5.6%	-5.6%

Source: European Central Bank (2018), “Financial Stability Review”, May.

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- Nonetheless, the impact on financial markets of scenario 1 is stronger, increasing 10-year bond yields in more than 100 bp:

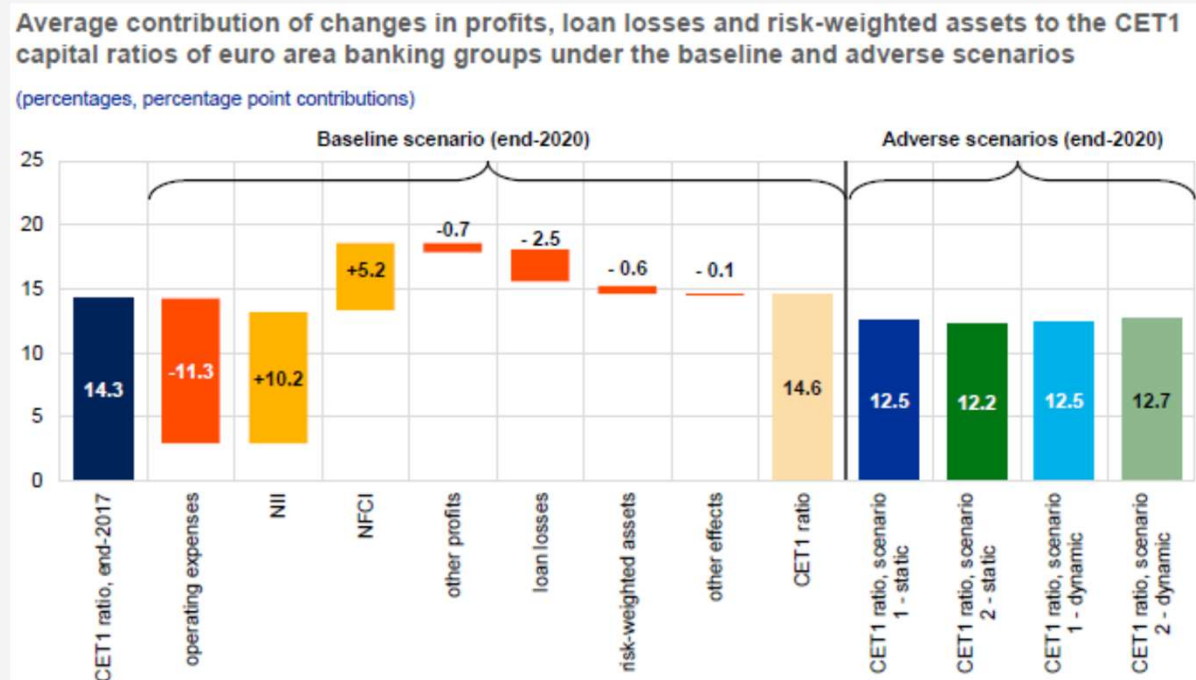
Evolution of financial variables under the adverse scenarios

	Scenario 1 – deviation from the baseline level	Scenario 2 – deviation from the baseline level
Average euro area increase in short-term interest rates (basis points, peak deviation from baseline)	24	-6
Average euro area increase in one-year government bond yields (basis points, peak deviation from baseline)	66	-2
Average euro area increase in ten-year government bond yields (basis points, peak deviation from baseline)	116	-12
Average increase in the iTraxx non-financial index (basis points, peak deviation from baseline)	16	60
Average euro area increase in banks' CDS spreads (basis points, peak deviation from baseline)	56	80
Change in euro area equity prices (% deviation from baseline)	-36	-8

Source: European Central Bank (2018), “Financial Stability Review”, May.

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- Conclusion: the euro area banking sector as a whole was concluded to be resilient to the main financial stability risks, with CET1 ratio declining by just about 2 p.p. under adverse scenarios.



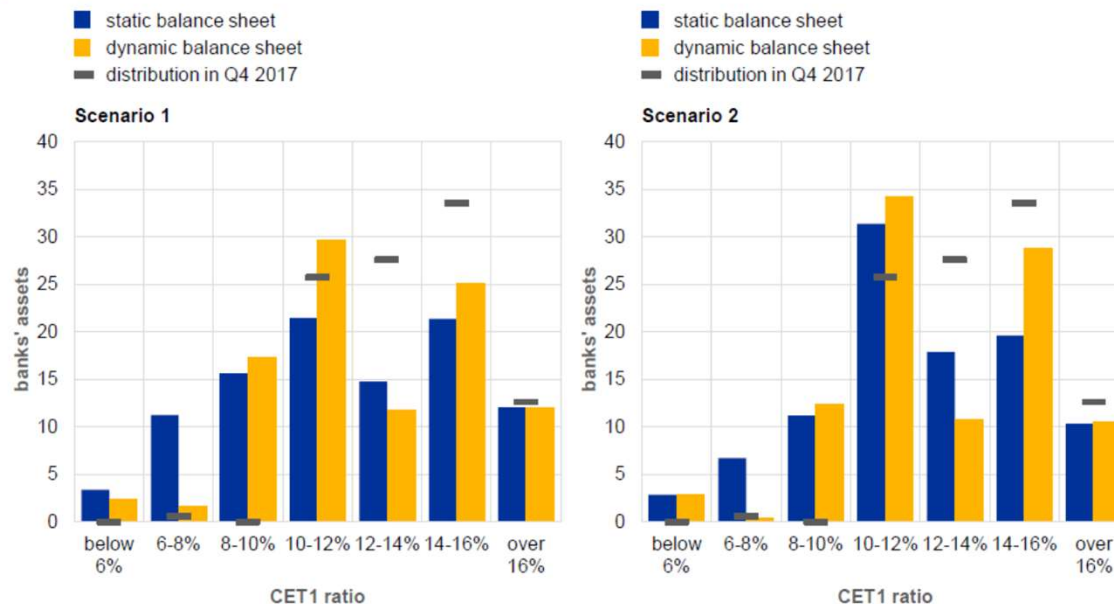
Source: European Central Bank (2018), “Financial Stability Review”, May.

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- Nonetheless, under the static balance sheet assumption, CET1 ratio in banks representing between 20% and 30% of total assets would fall below 10% and a few small banks would face severe solvency difficulties (CET1 ratio < 6%).

Distribution of banks' assets by CET1 capital ratio

(percentages)



Source: European Central Bank (2018), "Financial Stability Review", May.

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6. 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:

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. (EBA/GL/2014/13, “Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP)”, 19 Dec.2014).

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- SREP was initially the outcome of guidelines (GL) issued by CEBS – Guidelines on the Application of the Supervisory Review Process under Pillar 2 (2006), CP03 revised, 25 Jan.).
- These GL defined a set of requirements for banks and also for the supervisors and were among several guidelines issued by CEBS on internal governance.
- While being CEBS guidelines, these were non-binding, even though supervisors were expected to implement them or to explain why they hadn't (comply or explain).
- After a survey on the implementation of internal governance by banks and supervisors in 2009, CEBS concluded that internal governance issues were a crucial factor behind the financial crisis, often due to an insufficient implementation of the guidelines.
- Therefore, after its foundation in 2011, EBA updated all the guidelines on internal governance issued by CEBS, consolidating them in the “EBA Guidelines on Internal Governance (GL 44)”, which became mandatory.

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- SREP is applied proportionally, to SIFI and LSI, with a frequency and intensity depending on 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 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

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- 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.
- 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.

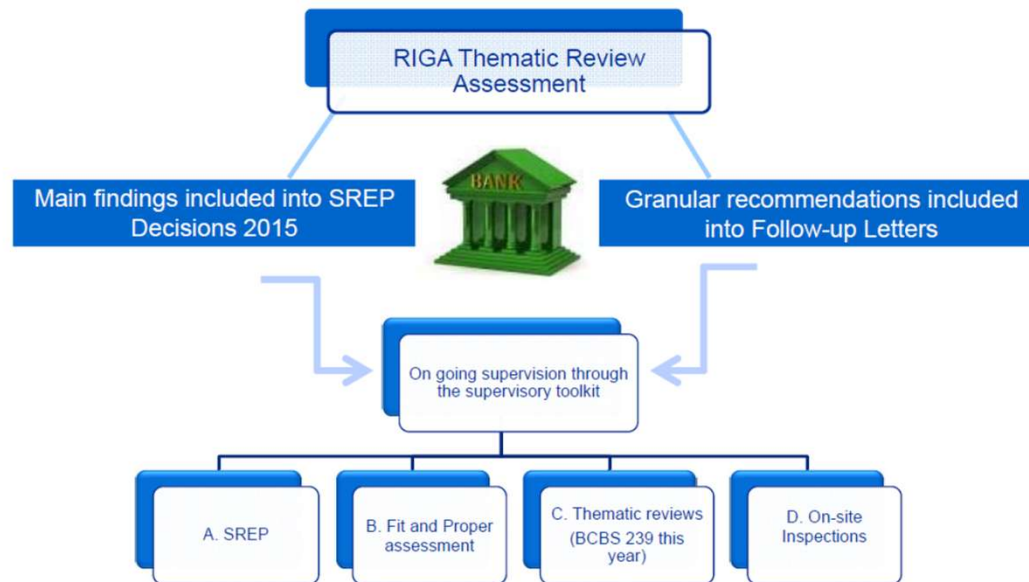
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- Supervisory authorities must monitor regularly financial and non-financial relevant indicators, to identify changes in the financial conditions and in the risk profile of FI, e.g.:
 - a) All capital ratios and the corresponding national laws, e.g. regarding CT1, LCR and NSFR (in line with CRR and CRR II);
 - 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.

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

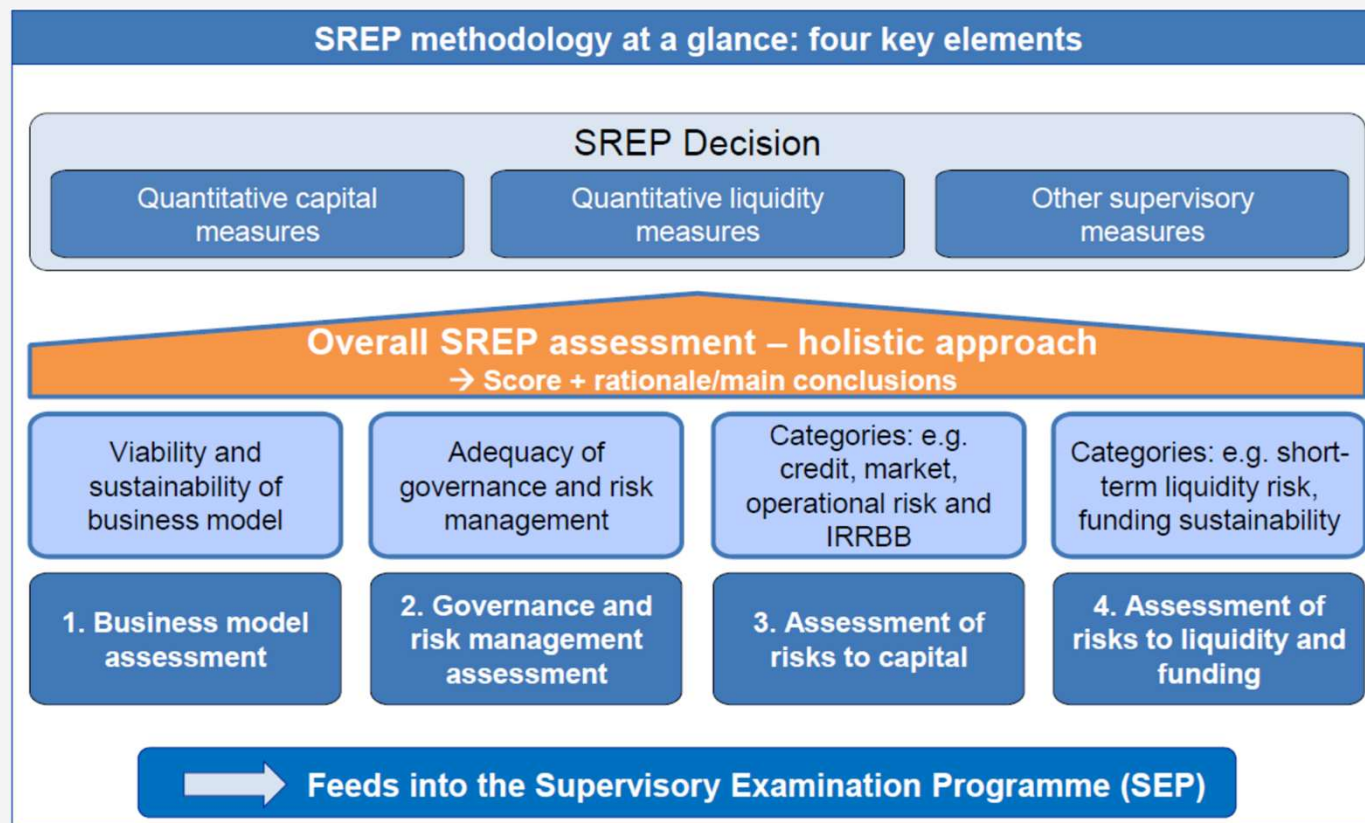
How the outcomes of the RIGA Thematic Review feed into the regular supervision



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

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- SREP involves 4 key elements:



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

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- **Provides synthetic overview of an institution's risk profile:**

- based on the assessment of all 4 elements (not the simple sum);
- these 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.

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
- Business environment and model
- Forward-looking strategy and financial plans
- Viability (within one year) and Sustainability (within three years and over the cycle)
- Key vulnerabilities

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1. Business model assessment

I. 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).

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

EU Basel III package

III. 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

IV. Competitive advantages:

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

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2. Governance and risk management assessment

- 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
- 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.

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3. Assessment of Risks to Capital

□ 3 blocks:

- (i) Supervisory perspective - Scores on risk categories: credit, market and operational risk + IRRBB
- (ii) Bank's perspective - ICAAP (EBA (2016), "Guidelines on ICAAP and ILAAP information collected for SREP purposes", EBA/GL/2016/10, 03.11.2016, into force in 1Jan2017).
- (iii) Forward looking perspective – ICAAP and bank internal and supervisory stress tests

□ Specific information to the ICAAP - EBA (2016), "Guidelines on ICAAP and ILAAP information collected for SREP purposes", EBA/GL/2016/10, 03 November 2016:

- (i) overall ICAAP framework
- (ii) risk measurement, assessment and aggregation
- (iii) internal capital and capital allocation
- (iv) capital planning
- (v) stress testing

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4. Assessment of Risks to Liquidity and Funding

- 3 blocks:
 - (i) Supervisory perspective - scores on short-term liquidity and funding sustainability risks
 - (ii) Bank's perspective
 - (iii) Forward looking perspective - ILAAP and bank internal and supervisory stress tests

EU Basel III package

7. ILAAP

- In addition to the new ratios imposed by Basel III, CRD IV imposed the ILAAP:

“Competent authorities shall ensure that institutions have robust strategies, policies, processes and systems for the identification, measurement, management and monitoring of liquidity risk over an appropriate set of time horizons, including intra- day, so as to ensure that institutions maintain adequate levels of liquidity buffers. Those strategies, policies, processes and systems shall be tailored to business lines, currencies, branches and legal entities and shall include adequate allocation mechanisms of liquidity costs, benefits and risks”.

- EBA defined the main ILAAP requirements: EBA (2016), “Guidelines on ICAAP and ILAAP information collected for SREP purposes”, EBA/GL/2016/10, 03 November 2016.

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- ILAAP covers the main liquidity risk management procedures:
 - (i) funding risk management framework
 - (ii) funding strategy
 - (iii) strategy regarding liquidity buffers and collateral management
 - (iv) intraday liquidity risk management
 - (v) liquidity stress testing
 - (vi) liquidity contingency plan.

EU Basel III package

- **Common information to the ICAAP and ILAAP** - Business model and strategy:
 - (i) Risk governance and management framework
 - (ii) Risk appetite
 - (iii) Stress testing framework
 - (iv) Risk data, aggregation and IT systems

- **In Portugal, this regulation was enforced by Instruction No.2/2019** (published on the 25th Jan.), imposing that:
 - (i) Liquidity strategies must include the assessment of economic recession scenarios;
 - (ii) Reports to the supervisor are done on an annual basis.

EU Basel III package: Consequences

□ Pros:

- Banks with sounder capital and liquidity positions

□ Cons:

- Higher entry barriers
- Higher cost of equity => higher cost of funding for the economy, even though currently cancelled by the very low level of interest rates.
- Higher level of regulation => private investors move financial activity to non-regulated areas and compliance costs become unbearable for smaller banks.
- Higher concentration, aggravating the TBTF problem.

EU Basel III package: Shortcomings

□ Stress tests:

- a backstop is necessary to deal with banks that fail the test.
- euro area authorities have been reluctant to stress sovereign bonds, which are a material part of the assets of southern European banks (and which contribute to the doom loop between bank and sovereign solvency in a monetary union).
- On both sides of the Atlantic, stress tests have not yet incorporated a systemic perspective taking into account feedback effects among entities.

□ Rating agencies:

- No major changes have been made to the regulation, with the big 3 still controlling more than 95% of the market), notwithstanding the major conflicts of interest in rating ABS before the crisis.

EU Basel III package: Shortcomings

- Separation between commercial and investment banking activities:
 - EU - Liikanen Report proposed the separation of large trading activities within a banking group, but not much progress was made in that direction;
 - UK - recommendations by the Independent Commission on Banking (Vickers Commission) to ring-fence retail activities in a universal bank became effective since Jan19.
 - US - Dodd-Frank imposed the Volcker Rule (a lighter version of the Glass-Steagall separation between commercial and investment banking) forbidding proprietary trading by banks on their own account, but allowing securities dealing for their clients.

Pandemic - Main Measures

- Regulatory measures to fight the impact of the pandemics have been designed to mitigate the accounting and prudential impacts of the pandemic, focusing on:
 - (i) releasing temporarily the conservation capital buffer (2,5%) until end-2021;
 - (ii) deferring compliance of pillar II capital guidance;
 - (iii) allowing pillar II capital requirement to be fulfilled with tier II capital;
 - (iv) allowing banks to avoid the classification of loans as NPEs (initially until 30.09.2020, and extended in early Dec20 to end-Mar21) if these loans benefit from general (i.e. not borrower-specific) moratoria due to the pandemic, as long as customers are perceived as likely-to-pay after the moratoria ends and only the schedule of payments is changed (e.g. interest rates are kept);
 - (v) postponing the full implementation of Basel IV, IFRS 9 and the stress tests;
 - (vi) allowing flexibility in restoring the LCR required levels.

Pandemic - Main Measures

Selected policy measures

Table 1

Jurisdiction	Government guarantees	Capital requirements	Asset classification	Expected loss provisioning	Dividends and other payouts
Australia	Yes	Encouragement to use buffers	New guidance	-	Expectation to limit
Canada	Yes	Lower Domestic Stability Buffer, Encouragement to use buffers	New guidance	New guidance, Introduction of transitional arrangements	Expectation to halt increases
EU/SSM	Yes (*)	Release CCyB, Encouragement to use buffers	New guidance	New guidance	Expectation to halt
Japan	Yes	Encouragement to use buffers	Adjust risk weights of certain loans	-	-
United Kingdom	Yes	Release CCyB, Encouragement to use buffers	New guidance	New guidance	Expectation to halt
United States	Yes	Encouragement to use buffers, Adjust supplementary leverage ratio	New guidance, Definition of restructured debt	Optional suspension, Extension of transitional arrangements	Expectation of prudent decisions, Smoothing of automatic restrictions

(*): conditions vary across member countries.

Source: Publications by national authorities. As of 7 April 2020.

Source: Borio, Claudio and Fernando Restoy (2020), "Reflections on regulatory responses to the Covid-19 pandemic", FSI Briefs, No.1, BIS.

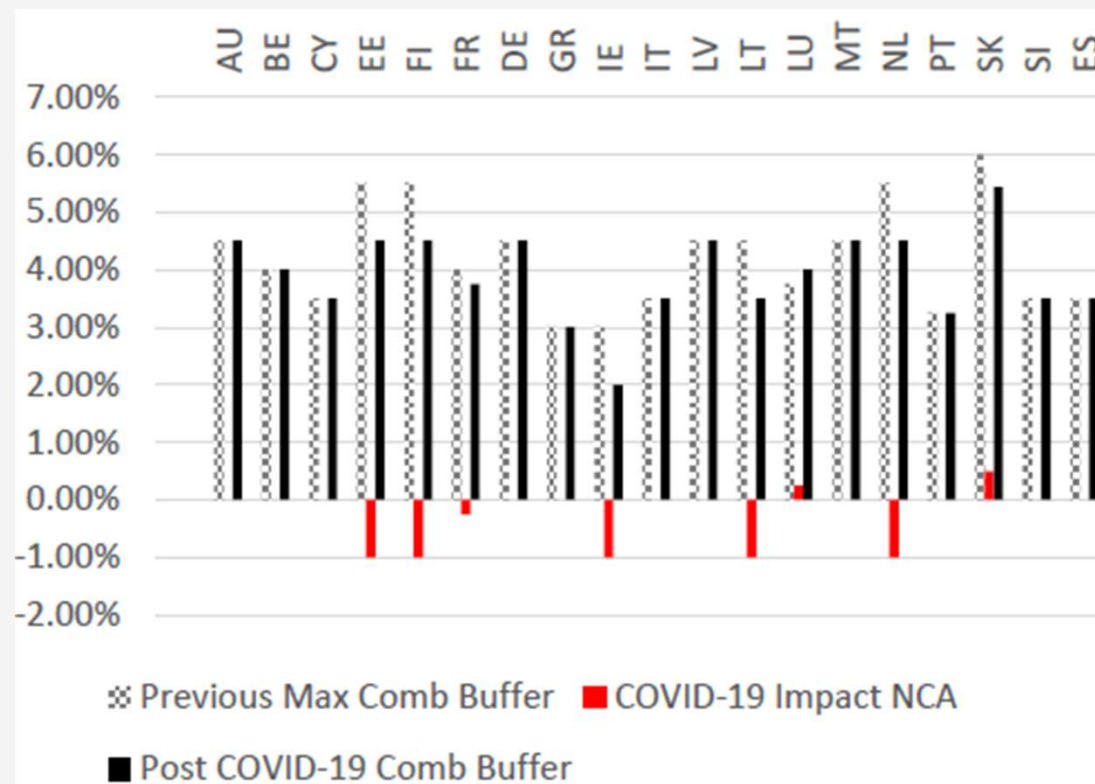
Pandemic - Main Measures

□ Main Decisions in EU:

- (i) **CCyB** - among the 7 euro area countries with CCyB>0, 3 countries (France, Ireland and Lithuania) reduced it to 0%, while in Belgium and Germany the previously announced CCyB activations and the previously announced CCyB increase in Slovakia were revoked.
- (ii) **SyRB** – The authorities in Estonia and Finland dropped the SyRB to 0%, while the SyRB was reduced for 3 banks in the Netherlands.
- (iii) **O-SII**– In addition to the reductions in the SyRB, Finland and the Netherlands also decided to lower the O-SII buffer for 1 bank each.
- (iv) **Postponement of phase-in or introduction of announced measures** – The authorities in Cyprus, Lithuania and Portugal announced that they will delay the phase-in of O-SII buffers by 1 year either for all or for some O-SIIs.

Pandemic - Main Measures

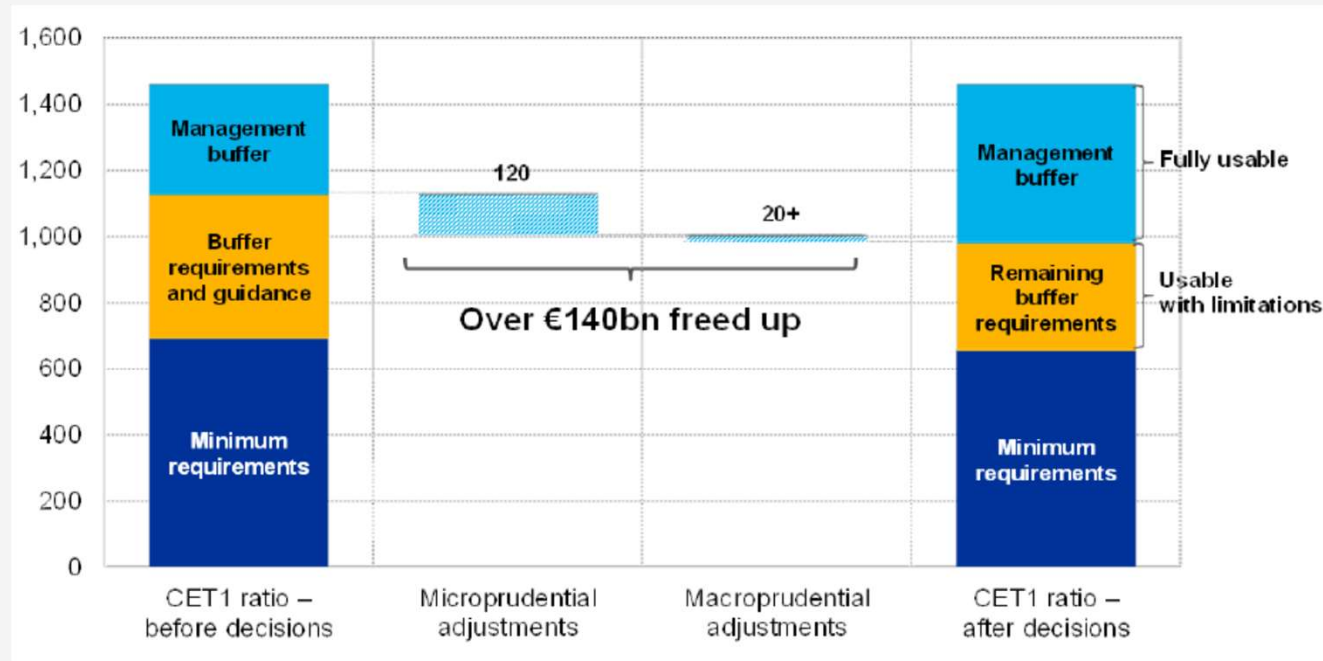
- Therefore, the combined capital buffers were reduced in several countries.



Source: EBI(2020), "Pandemic Crisis and Financial Stability", 2020.

Pandemic - Main Measures

- These prudential measures allowed over €140 billion of capital to be freed up, supporting an increase by 10% of total lending (around 1.3T€).



Source: ECB (2020), “Macroprudential measures taken by national authorities since the outbreak of the coronavirus pandemic”.