Banking

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Fall Semester 2024

Course: Banking [2206]

Measuring and Managing Risks

Disclaimer: The views expressed are my own and do not necessarily represent the views of Banco de Portugal.

To be covered today

- Measuring and Managing Risks

- Risk Appetite Framework
- Risk Management

- Banking Stress testing
- SREP
- ICAAP

Risk Appetite Framework - General overview

Risk Appetite Framework

- Banks should identify types of risk the they want to take on and those they wish to avoid.
- Function of: i) appetite to take either a high or a low level of risk on board
  ii) capacity of the organisation to take the risk.
- Risk appetite/tolerance levels, thresholds and limits set for the identified material risks must be defined and monitored

Governance framework

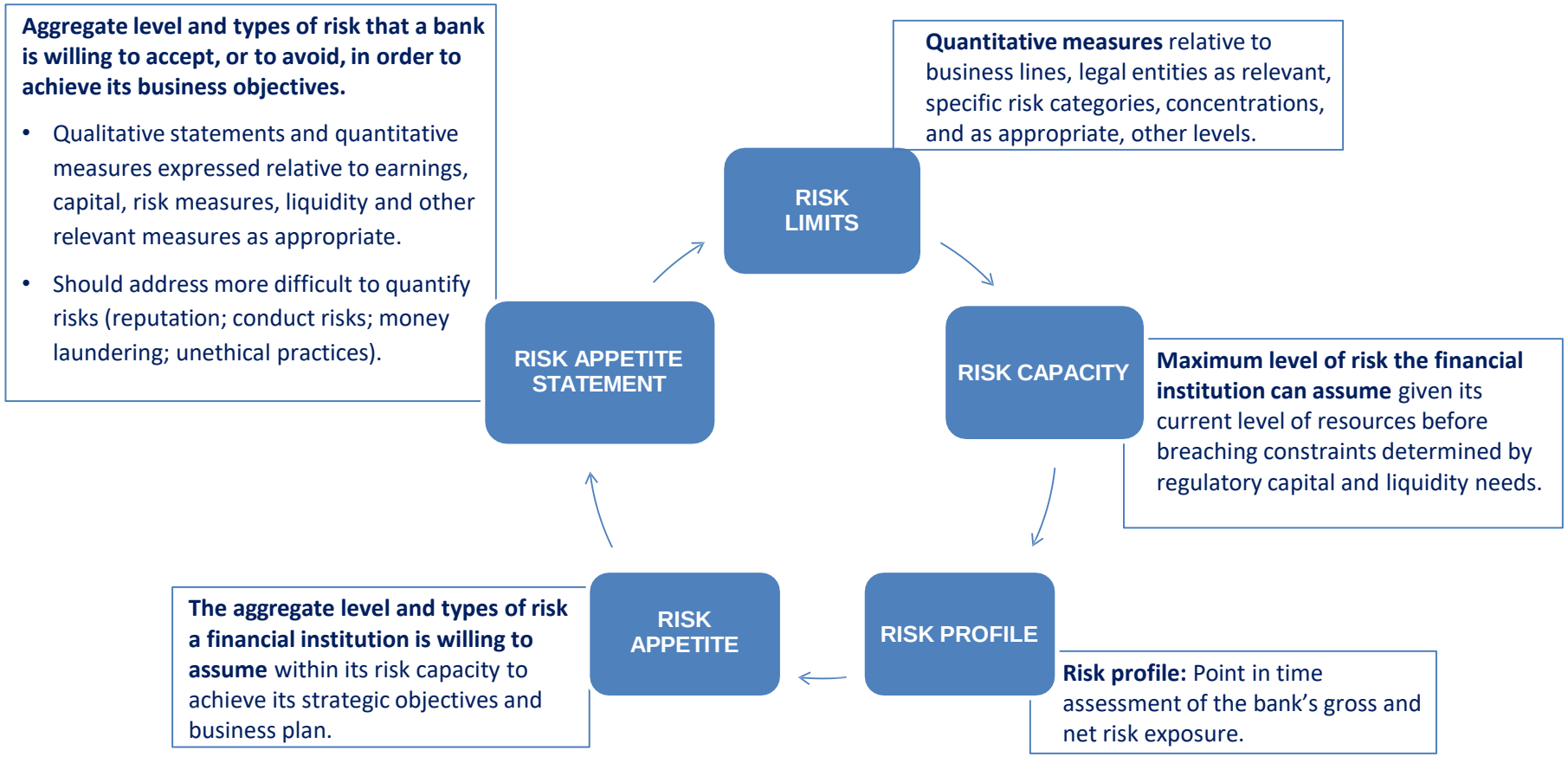
- Banks shall provide information regarding overall governance framework and integration with risk appetite
- The governance structure must ensure integrity of overall business and risk management process.

Policies, processes, controls and systems through which risk appetite is defined, communicated, and monitored.

Material and reputational risks

Alignment with strategy

Risk Appetite Framework - Components



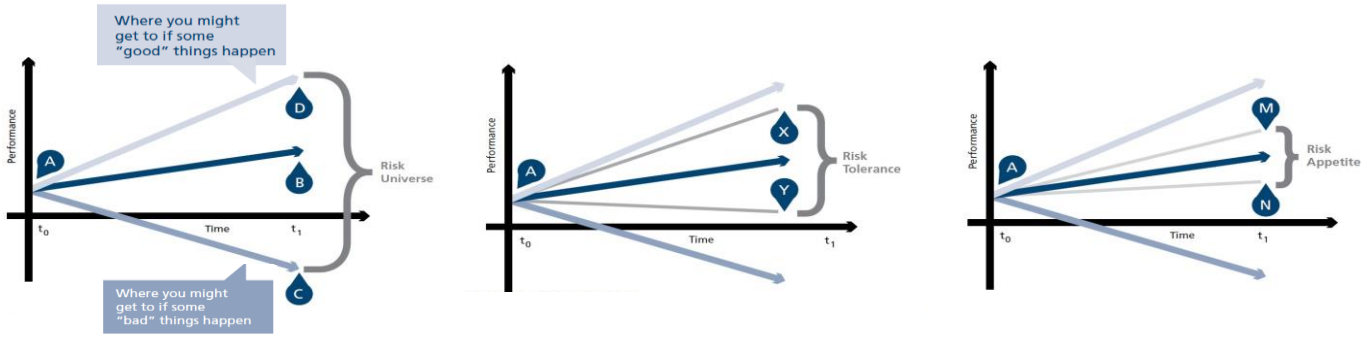
Risk Appetite Framework – How It Works

RAF Practical example

Key point

- When approaching the risks it faces, a bank has four options available in order to control each risk:
  - Eliminate
  - Mitigate
  - Transfer
  - Accept

From risk tolerance to risk appetite



Steps required to build a RAF

Mapping of activities / functions → Identification of risks for each activity → Risk ranking - impact - probability → Definition and set up of control procedures → Reevaluatio of risk impact

IMPACT	
High	Event can cause substantial damaging impact to strategy/business
Medium	Event can cause visible effects but with limited impact on strategy
Low	Event may be burdensome but has no structural impact

+

PROBABILITY	
High	Highly likely (eg: several times on every quarter)
Medium	May occur at some point in the course of the year
Low	Unlikely, very exceptional

+

CONTROL'S EFFECTIVENESS	
Strong	Control is sufficient to nearly eliminate the risk (>90%)
Acceptable	Mitigation is acceptable (risk reduced to 80-90%)
Low	Mitigation is uncomplete (<80%)
Null	No control has been implemented

Risk Management

- The 3-line of defence approach

1ST LINE: FRONT-OFFICE

- Business units (front office, customer-facing activity) are the first responsible for identifying, assessing and controlling the risks of business.
- Internal policies and procedures should be clearly specified in writing and communicated to all personnel.

2ND LINE

Risk officer

- Facilitates implementation of risk management framework;
- Responsible for further identifying, monitoring, analysing, measuring, managing and reporting on risks (holistic view on all risks);
- Challenges and assists in implementation of risk management measures by the business lines

=> ensure process and controls at the first line of defence are properly designed and effective.

Compliance officer

- Monitors compliance with legal and regulatory requirements and internal policies
- Provides advice on compliance to the management body and other relevant staff,
- Establishes policies and processes to manage compliance risks and to ensure compliance.

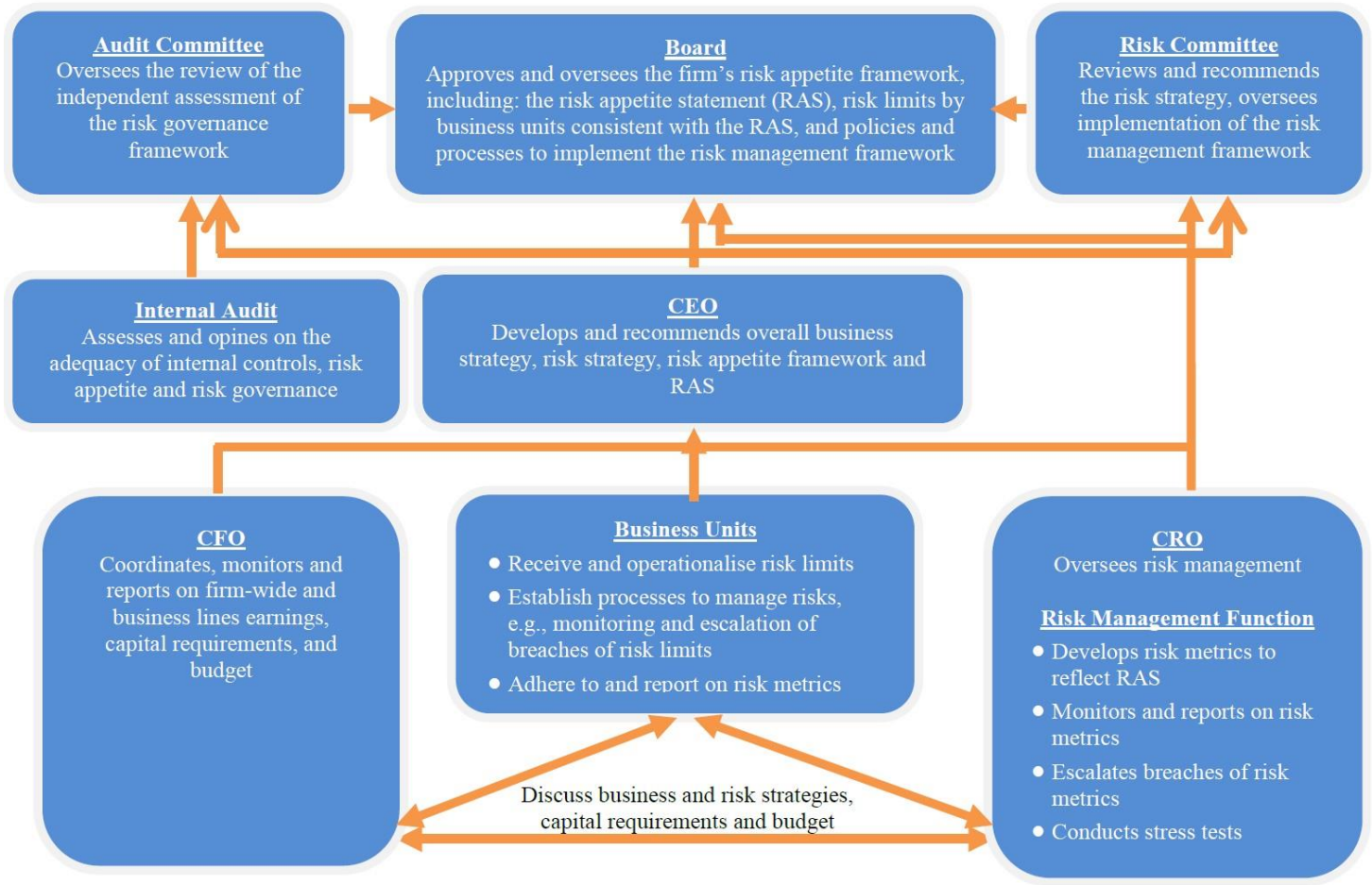
3RD LINE: INTERNAL AUDIT

- Conducts risk-based and general audits;
- Reviews internal governance arrangements, processes and mechanisms to ascertain that they are sound and effective, implemented and consistently applied.
- Carries independent review of the first two lines of defence.

All internal control functions need to be independent of the business they control, have the appropriate financial and human resources to perform their tasks, and report directly to the management body.

Risk Management – Governance

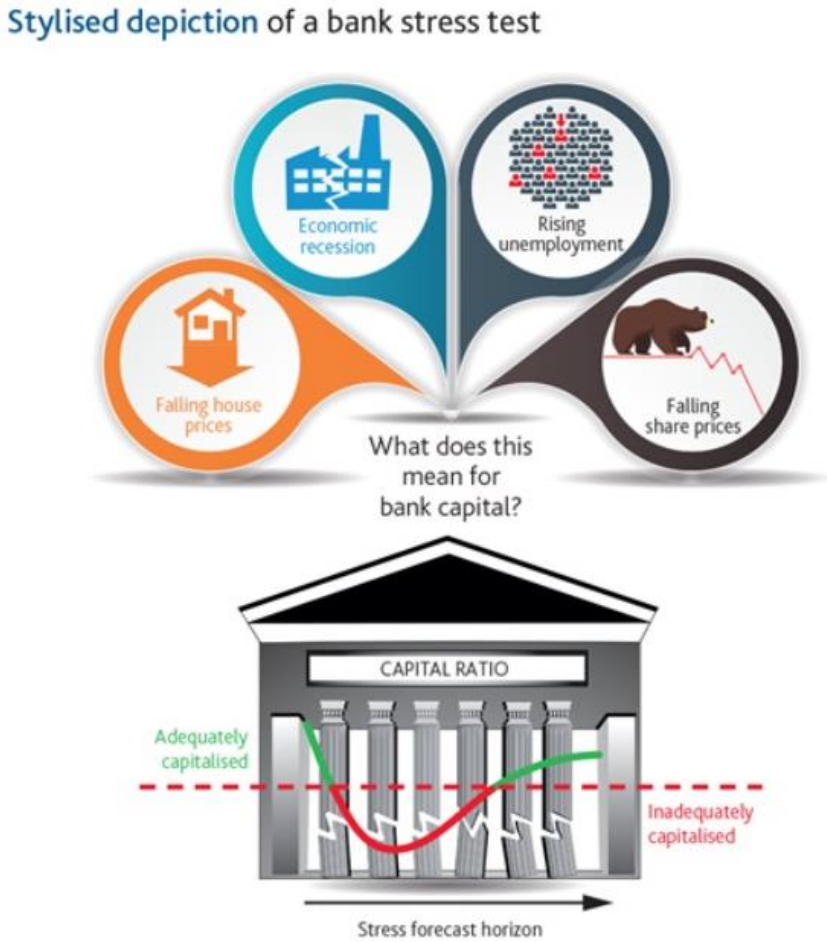
Chart 2: An example of a risk governance framework[9]



Source: FSB: Thematic Review on Risk Governance - Peer Review Report

Stress testing of banks

https://youtu.be/XtihtTHVXTE



Stress testing of banks: an introduction

• The usage and prominence of bank stress tests has risen substantially in the years following the global financial crisis.

They are a key part of the bank regulation toolkit.

What are stress tests for the banking sector?

- Stress tests are **simulation exercises with a forward looking perspective.**
- The most well known exercises are conducted to assess the resilience to a hypothetical scenario of either one bank or the system as a whole.

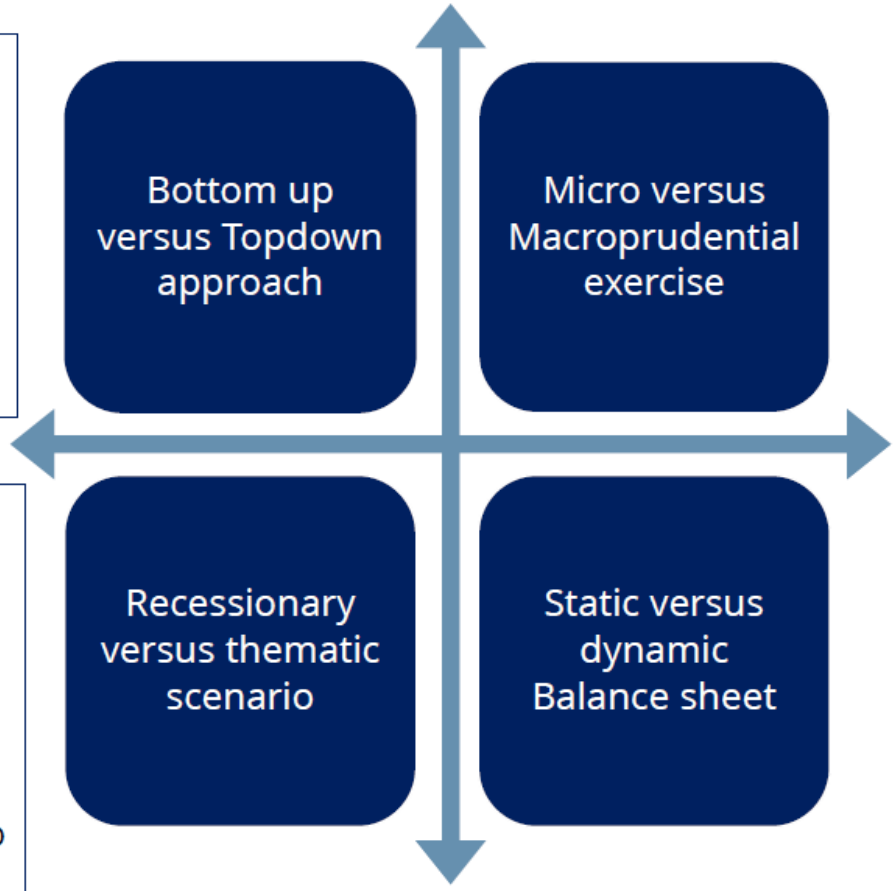
What are the main objectives of a stress test analysis?

- Assess the impact of the materialization of a given scenario ir a bank or the banking system;
- Contribute to policy makers decision on microprudential measures to ensure that individual banks are adequately resilient;
- Support the calibration of macroprudential instruments.

TYPES OF STRESS TEST MODELS

Bottom up: performed by a bank using its own framework, usually as part of an exercise where authorities provide common features

Topdown: performed by an authority using its own framework



Micro: designed to assess the resilience to a scenario of an individual bank

Macro: designed to assess the system wide resilience to a given scenario

Recessionary scenario: a set of economic and financial conditions designed to stress the performance of banks

Thematic: a set of economic and financial conditions that explore other emerging or latent threats to financial stability

Static: assumes that the size, composition and risk profile of a bank does not change in the projection horizon

Dynamic: assumes that the size, composition and risk profile of a bank changes in the projection horizon

Stress testing – the basics

TAXONOMY: In terms of policy objectives, a stress test can be classified as "macroprudential" or "microprudential":

Macroprudential stress test: a stress test designed to assess the system-wide resilience to financial and economic shocks, which may include effects emerging from linkages with the broader financial system or the real economy. Interactions between individual banks can also be taken into account.

Microprudential stress test: a stress test designed to assess the resilience of an individual bank to macroeconomic and financial vulnerabilities and respective shocks. Instruments, mechanisms and measures available to the supervisor are usually applied at the bank level.

Stress testing – the basics

TAXONOMY: In terms of who performs the exercise, a stress test can be either "top- down" or "bottom-up":

Top-down stress test: a stress test performed by a public authority using its own stress test framework (data, scenarios, assumptions and models). Either bank-level or aggregated data may be used, but always in models with consistent methodology and assumptions, generally developed by the authority.

Bottom-up stress test: a stress test performed by a bank using its own stress test framework as part of a system-wide exercise, or as part of a stress test where authorities provide banks with common scenario(s) and assumptions.

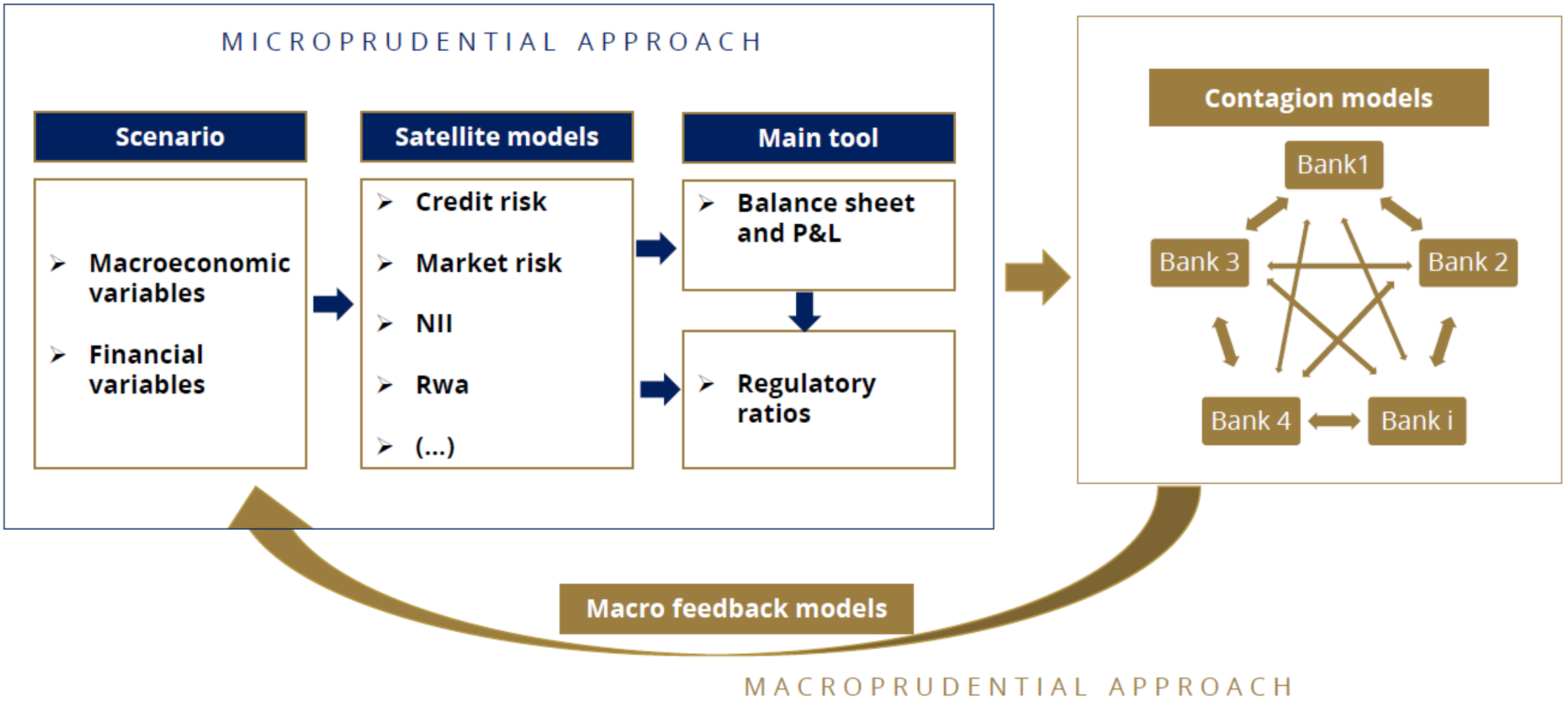
Stress testing – the basics

TAXONOMY: Finally, in terms of balance sheet projections, they can be described as "dynamic" or "static":

Dynamic balance sheet: an assumption that the size, composition or risk profile of a bank's balance sheet are allowed to vary over the stress test horizon.

Static balance sheet: an assumption that the size, composition and risk profile of a bank's balance sheet are invariant throughout the stress testing time horizon.

Stress testing – the structure



How to access the relevance of the stress testing exercise?

1. Realism of the exercise: is the exercise limited by (too) hard assumptions and/or methodological constraints? (static versus dynamic balance sheet)

2. Does the exercise provide a useful forward-lookingperspective on how the financial institutions will address the current structural deficiencies;

3. Does the exercise provide an accountable view on the projected profitability/capital figures? (ownership, gaming)

4. Can the exercise be used in a straightforward way in the supervisory process?

5. Does the exercise bring valuable information for the markets?

6. Do these exercises have potential for improvement?

Source: Neves, P.D. “An Encompassong Forward-Looking Approach to Increase Resilience in the Banking Sector: A second life for EU Stress Tests”, EBI Discussion Paper Series, 2020 – No. 1, September 2020

Stress testing in the EU, UK and USA

	EU	UK	USA
Stress Test	EBA 2018	ACS 2019	DFAST 2019
General features			
Release date	Nov 2018	Dec 2019	June 2019
Frequency	Biennial	Annual	Annual
Inclusion threshold	EUR 30 Billion	---	USD 100 Billion
Number of banks	48	7	18
Time horizon	3 years	5 years	9-quarter
Technical features			
Balance Sheet	Static	Dynamic	Dynamic
Type of stress test	Constrained bottom-up	Hybrid	Top-down
Ownership	Hybrid	Supervisor	Supervisor
Hurdle rate (CET1)	No	6.9-8.1	4.5 + specific buffers
Hurdle rate (Tier 1 leverage)	No	3.47-3.86	4.0
Transparency			
Disclosure of models	n.a.	No	No
Disclosure of bank data	Yes (extremely granular)	Yes	Yes

Source: Neves, P.D. et al (2021) "Stress-testing in banking in the EU: critical issues and new prospects" forthcoming as a chapter in "Capital and Liquidity Requirements for European Banks", editors Bart Joosen, Marco Lamandini and Tobias Tröger, to be published by Oxford University Press

Bank of England - Types of banking stress test

Bank of England (BoE) refers to three types of banking stress test:

1. An **annual concurrent stress test** of the largest UK banks and building societies. This informs the setting of capital buffers by our Financial Policy Committee and our Prudential Regulation Authority (PRA).

2. Firms that are not part of this annual stress test must carry out their own stress testing. The PRA publishes a scenario every six months to serve as a guide for banks and building societies designing their own scenarios.

3. Every other year, BoE runs an additional scenario intended to probe the resilience of the banking system to risks that may not be neatly linked to the financial cycle – **the biennial exploratory scenario**.

Bank of England - banking stress test

UK's 8 biggest lenders pass BoE stress test

Central bank brings back 'rainy day' fund requirement in first analysis of resilience since pandemic hit

The BoE found that leading banks had improved their capital positions over 2020 © Jason Alden/Bloomberg

Laura Noonan DECEMBER 13 2021 31

The UK's top eight banks could withstand a near tripling of national unemployment, a sharp fall in property prices and a large economic contraction, the Bank of England said on Monday evening, as it gave lenders a clean bill of health almost two years into the coronavirus pandemic.

The findings were the result of the first stress test of the UK's biggest lenders in two years after the 2020 assessment was cancelled due to the pandemic. The exercise did not specifically examine the impact of the Omicron variant but officials said they had considered a much more severe pandemic scenario than that which played out for most of 2021.

The central bank assessed Royal Bank of Scotland, HSBC, Barclays, Standard Chartered, Lloyds, Santander, Nationwide and Virgin Money, which was included for the first time. It is the fifth time in succession that all the banks passed without being ordered to take any action since the annual resilience assessment began in 2014.

All eight banks were tested against a doomsday scenario including an £800bn hit to UK GDP between 2020 and 2022, UK unemployment peaking at 12 per cent and a 33 per cent fall in UK residential and commercial property prices over the same period.

Bank of England - banking stress test

Bank of England

Annual concurrent stress test

We published the scenario for the 2022 stress test of the UK banking system on 26 September 2022.

- Stress testing the UK banking system: key elements of the 2022 annual cyclical scenario
- Stress testing the UK banking system: Variable paths for the 2022 scenarios (XLSX 0.3MB)
- Stress testing the UK banking system: Traded risk scenario for the 2022 stress test (XLSX 0.1MB)
- Stress testing the UK banking system: guidance on the 2022 annual cyclical scenario for participants
- Stress testing the UK banking system: 2021 Solvency Stress Test results
- Financial Stability Report - July 2021

Federal Reserve's stress test

The Federal Reserve's stress test assesses whether banks are sufficiently capitalized to absorb losses during stressful conditions while meeting obligations to creditors and counterparties and continuing to be able to lend to households and businesses.

The Federal Reserve Board uses the stress test to set the stress capital buffer (SCB) requirement, which integrates the stress test with the non-stress capital requirements into one forward-looking and risk-sensitive framework.

The Federal Reserve conducts the stress test **annually**, using a **minimum of two different scenarios** to test a bank's capital adequacy during times of stress, and **publicly discloses bank-level results**. Banks must also conduct and publicly disclose the results of their company-run stress tests based on their risk profiles, as defined by the Board's stress testing rules.

Capital stress tests, which played a role in bolstering confidence in the capital positions of U.S. banks during the 2007-09 financial crisis, have become a **critical supervisory tool**.

Federal Reserve's stress test

Stress tests drive higher capital requirements at 3 biggest US banks

JPMorgan, Bank of America and Citigroup tier-one ratios to rise about 1 percentage point

JPMorgan's new common equity tier one requirement is 12.5%, including a surcharge because of its systemically important status © Chris Ratcliffe/Bloomberg

Joshua Franklin in New York JUNE 27 2022 25

JPMorgan Chase, Bank of America and Citigroup have been hit with higher capital requirements by the Federal Reserve following stress tests from the central bank that probed the lenders' ability to weather a severe recession.

The new requirements for the three largest US banks by assets are higher than analysts had expected ahead of last week's stress tests and may constrain the amount of capital the banks are able to use to buy back their own shares.

In statements on Monday, the banks said their Fed-mandated requirements for common equity tier one (CET1) capital ratios relative to risk-weighted assets would rise by about one full percentage point starting from October. The so-called CET1 ratio is a crucial benchmark for financial strength.

JPMorgan's new CET1 requirement is 12 per cent, up from 11.2 per cent, while BofA's will rise to about 10.5 per cent from 9.5 per cent and Citi's will increase to 11.5 per cent from 10.5 per cent.

Federal Reserve's stress test

2022 Stress Test

Scenarios

- 2022 Stress Test Scenarios (PDF)
- Federal Reserve Board releases hypothetical scenarios for its 2022 bank stress tests
- Policy Statement on the Scenario Design Framework for Stress Testing (PDF)
- Scenario Data
  - 2022 Severely Adverse Market Shocks (Excel)
  - 2022 Historic Domestic (CSV)
  - 2022 Historic International (CSV)
  - 2022 Supervisory Baseline Domestic (CSV)
  - 2022 Supervisory Baseline International (CSV)
  - 2022 Supervisory Severely Adverse Domestic (CSV)
  - 2022 Supervisory Severely Adverse International (CSV)

Methodology

- 2022 Supervisory Stress Test Methodology (PDF)

https://www.federalreserve.gov/supervisionreg/dfa-stress-tests-2022.htm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AUTHORITY

European Banking Supervision

The **ECB** conducts **several types of stress test**:

- Annual stress tests
  - EU-wide stress tests led by the **European Banking Authority (EBA)**, complemented by the ECB's stress test under the Supervisory Review and Evaluation Process (SREP)
  - Thematic stress tests

- Stress tests as part of comprehensive assessments (a large-scale financial health check of banks, consisting of a stress test and an asset quality review, that helps to ensure banks have enough capital to withstand losses)

- Stress tests for macroprudential purposes (focusing on financial stability and system-wide effects rather than individual banks)

In addition to these, specific stress tests can also be conducted on individual banks or groups of banks if necessary.

Source:
https://www.bankingsupervision.europa.eu/banking/tasks/stresstests/html/index.en.html
https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing

SSM/EBA stress tests

ECB/SSM performs two supervisory stress test exercises for significant institutions in 2021

EU-wide EBA stress test

- **38** SSM Significant Institutions (EBA banks)
- **Publication** of bank-specific, **granular results**
- EU-wide exercise under **EBA coordination**, in cooperation with ESRB, ECB and NCAs
- **2 macroeconomic scenarios:** baseline (provided by ECB) and adverse (provided by ESRB)
- Launch of the exercise: **January 2021**

SSM stress test

- **51** other SSM Significant Institutions (SSM banks)
- **Publication** of bank-specific, **high-level results**
- Under **ECB/SSM coordination**
- **Same macroeconomic scenarios**
- Launch and methodology **broadly aligned with EU-wide EBA stress test**

Objectives

- Assess the **resilience of financial institutions** to adverse market developments.
- **Contribute to the overall Supervisory Review and Evaluation Process (SREP)** to ensure institutions' capital and liquidity adequacy, as well as sound risk coverage and internal processes.
- **The exercises support also other supervisory initiatives,** e.g. sector-specific stress test data is leveraged in credit risk projects and sectoral deep-dives.

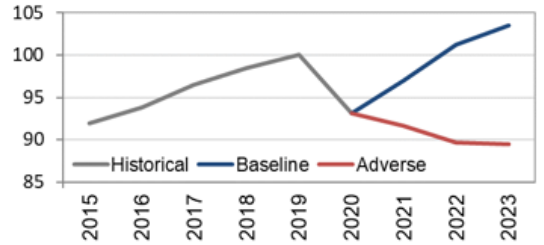
SSM/EBA stress tests

Adverse scenario: a prolonged COVID-19 scenario in a lower-for-longer interest rate environment

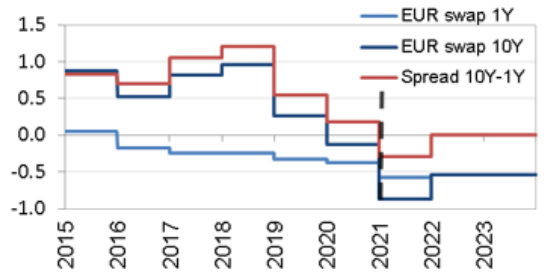
Main characteristics:

- Worldwide adverse confidence effects related to uncertainties surrounding the pandemic leading to a prolonged economic contraction, which is marked by a **sustained drop in GDP and a strong increase in unemployment with no counter-cyclical elements.**
- **Declining long-term risk-free rates globally** from an already historically low level with a yield curve inversion in Year 1.
- A wave of corporate bankruptcies and business downsizing leading to **sizeable adjustments in asset valuations, credit spreads and borrowing costs**.
- **Substantial declines of residential - and especially commercial - real estate prices.**

Real GDP level in the EU *(2019 level = 100)*



EUR swap rates *(%)*



SSM/EBA stress tests

Key takeaways

- The system-level CET1R depletion amounts to around -5.2 pp. (FL) under the adverse scenario (2018 it was around -4.0 pp.).
- Overall, the euro area banking system is resilient with a CET1 ratio (FL) of 9.9% at system level under the adverse scenario.
- The 2021 EBA/SSM stress test results reflect banks' success in NPE reduction and cost cutting, which cushioned the impact of the significantly more severe adverse scenario compared to 2018.
- If the adverse scenario materialises, some banks would need to take action to maintain compliance with their minimum capital requirements, but the overall shortfall would remain contained.

SSM/EBA stress tests

EU stress tests show world's oldest bank would be wiped out in economic shock

Verdict on Monte dei Paschi di Siena comes as UniCredit is in talks to buy ailing lender

José Manuel Campa, chair of the European Banking Authority: 'Early recognition of potential deterioration in credit quality is important' © Luke MacGregor/Bloomberg

Owen Walker, European Banking Correspondent JULY 30 2021

23

Banca Monte dei Paschi di Siena, the world's oldest bank, would see its capital wiped out in a severe economic downturn, according to European stress tests that also delivered relatively weak results for Deutsche Bank and Société Générale.

Under the worst-case scenario in the European Banking Authority's test, MPS's ratio of common equity to risk-weighted assets dropped from 9.86 per cent to minus 0.1 per cent, effectively rendering it insolvent.

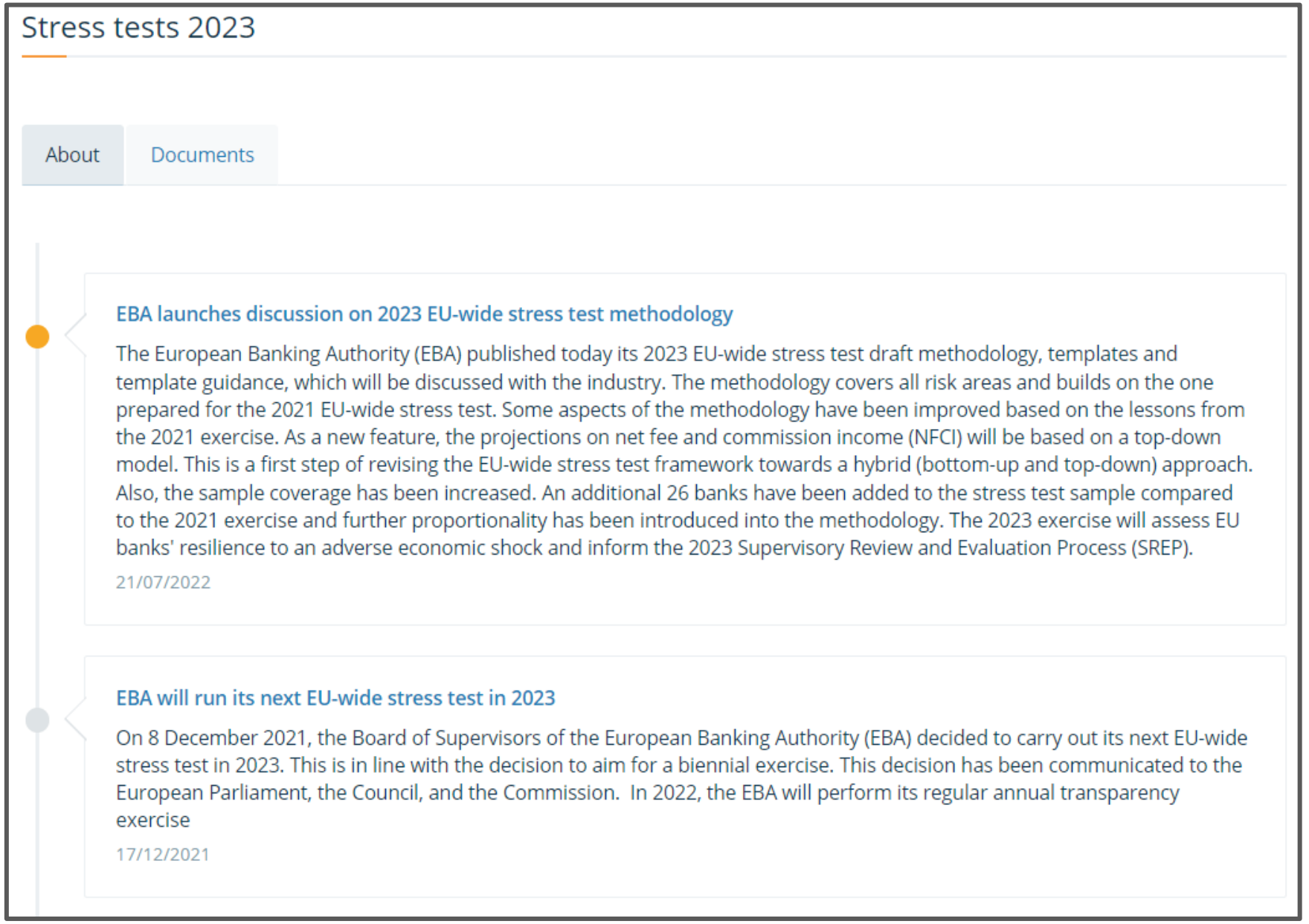
Regulators used the scenario of a 3.6 per cent fall in EU gross domestic product and unemployment reaching 12.1 per cent to test how banks' balance sheets fared.

The Italian government, which bailed out MPS in 2016, entered into exclusive talks with UniCredit on Thursday over a sale of parts of the ailing bank.

When UniCredit's chief executive Andrea Orcel discussed a potential deal for MPS on Thursday he said any acquisition must not affect UniCredit's common equity tier one capital position. "Whatever the effects are as we put the two pieces together, our CET1 needs to remain at the same level as it was before," he said.

UniCredit fared much better under the stress test, with its CET1 ratio falling from 15.14 per cent to 9.22 per cent.

SSM/EBA stress tests



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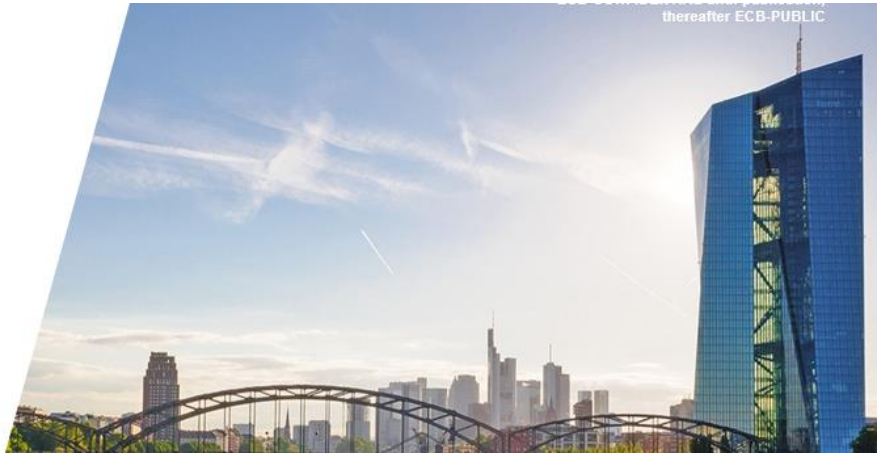
2022 climate risk stress test



2022 Climate Risk Stress Test

The 2022 climate stress test is the ECB Banking Supervision's bi-annual thematic stress test exercise

Questionnaire and peer benchmarks (Modules 1&2)

- **104 significant institutions**
- **Rationale:** All significant institutions (SIs) are being assessed as part of the regular climate risk assessments and will be subject to the **new EBA Pillar 3 requirements** (including requirements close to metrics in Module 2)

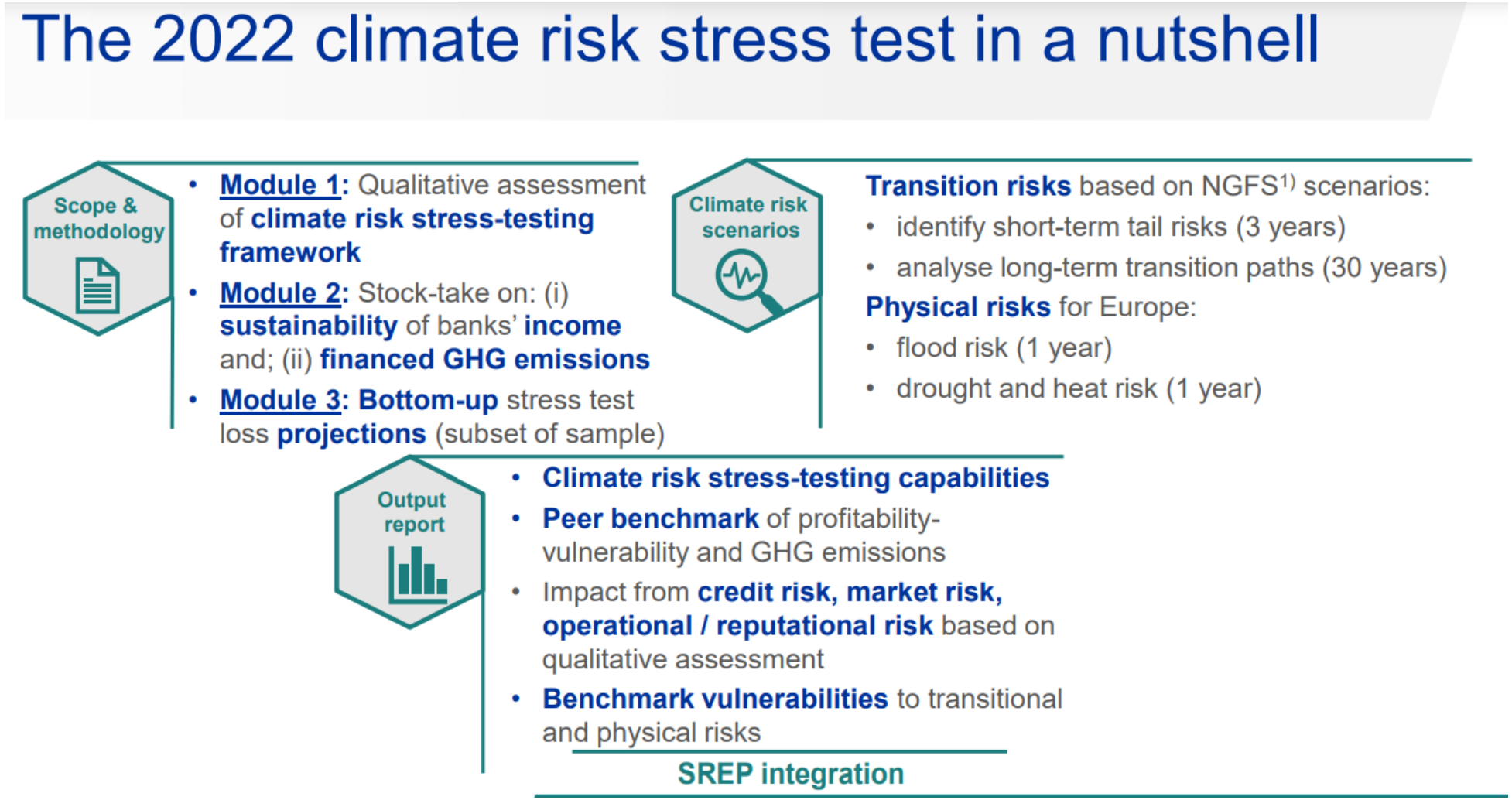
Bottom-up projections (Module 3)

- **41 significant institutions**
- **Rationale:** Proportionality principle being applied to factor in **different levels of preparedness** of the banks

Objectives

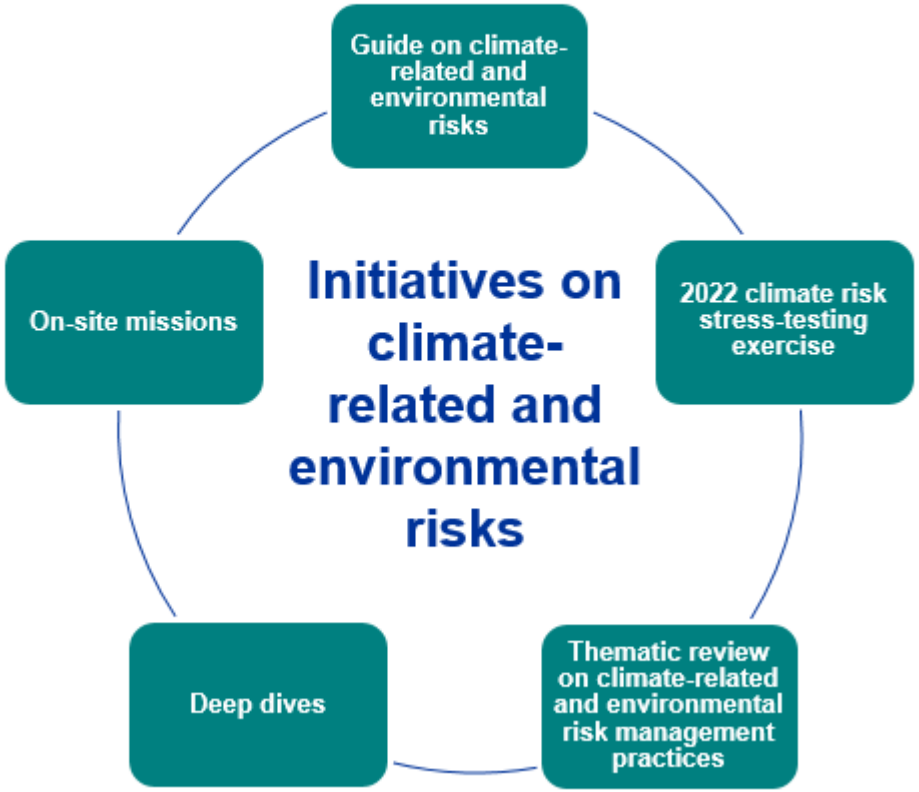
- **Contribute to the overall Supervisory Review and Evaluation Process (SREP)** in a qualitative way. It is not a capital adequacy exercise
- **Joint learning exercise** to enhance banks' and supervisors' ability to assess climate-related risk
- **Make more information available** on climate risk stress-testing
- **Prepare banks** for the upcoming regulatory changes[1)]
- **Leverage** on ECB's stress-testing approach
- **Support other ECB/SSM Banking supervision initiatives**, e.g. thematic review

2022 Climate Risk Stress Test



Climate stress test within a broader supervisory perspective

- 2022 climate stress test exercise is **part of a broader set of activities** by the ECB to assess supervised institutions' level of preparedness for properly managing climate risk.
- It is complemented by the **thematic review** of banks' climate-related and environmental risk management practices.
- It will seek to comprehensively assess how banks have incorporated these risks into their **strategy**, **governance** and **risk management frameworks and processes.**
- Climate risk stress test and thematic review are complemented by **deep dives** (e.g. commercial real estate) and **on-site missions.**



2022 Climate Risk Stress Test

Lessons learnt

By banks

- Banks have **provided comprehensive and innovative information**, giving insight into their climate risk stress-testing capabilities.
- For some areas, **information** is **pioneering** (e.g. climate risk stress-testing parameters)
- **but they:**
  a) face **significant challenges** in terms of data availability and modelling techniques, affecting quantitative measurements;
  b) are **sensitive to credit loss** arising from transition and physical risks;
  c) **only 20%** of banks consider climate risk when **granting new loans**;
  d) are not able to **properly reflect transition paths** in their long-term strategies.

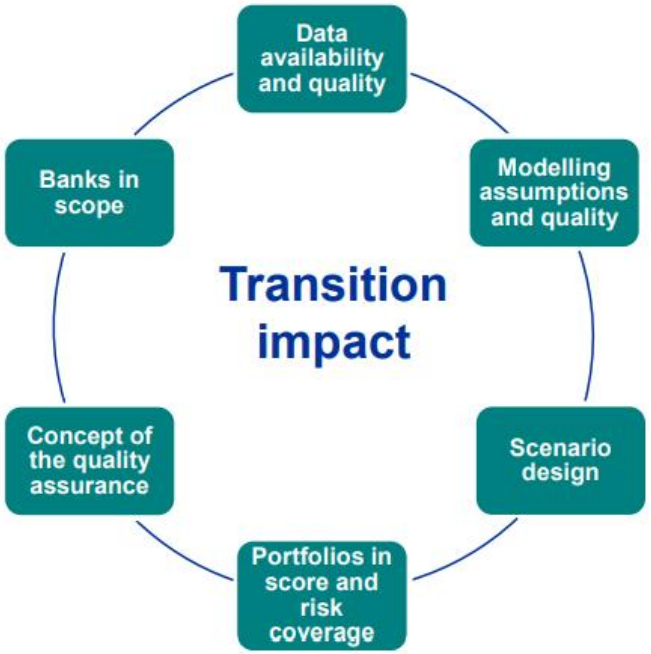
By supervisors

- Supervisors have gained valuable insight into banks' **climate risk stress-testing frameworks and capabilities.**
- Supervisors have a good overview of **data availability and use of proxy information.**
- Supervisors have gained **insight into vulnerabilities** of banks' business models to climate risk
- **but they need to:**
  a) reflect further on developing **bottom-up stress scenarios;**
  b) enhance **methodological approaches** (e.g. market risk, holdings);
  c) help banks overcome challenge of **data availability;**
  d) provide **guidance on "good practices" (2022H2).**

2022 Climate Risk Stress Test

Quantitative findings should be interpreted with caution

- Projecting[1] banks reported **€70bn of aggregate losses** under the 3 short-term exercises (3-year disorderly transition and the two physical risk scenarios)
  - €53bn losses reported under the short-term disorderly transition scenario
  - €17bn losses reported under the short-term physical risk scenarios (drought & heat risk and flood risk)
- This **may significantly understate** the actual transition risk:
  - a) **benign scenarios** where climate shocks are not accompanied by an **overall economic downturn**
  - b) **narrow risk coverage and reported exposures** targeting specific portfolios[2]
  - c) **banks data and modelling capacity** is at preliminary stage with still limited sensitivity to climate factors
  - a) **no supervisory overlays** applied in the bottom-up projections reflecting the learning nature of the exercise



2022 Climate Risk Stress Test

Recommendations to banks

- ✓ Banks need to **invest much more in climate-relevant data collection** by **engaging with customers** and **improving their proxy assumptions**
- ✓ Banks need to **enhance their climate risk stress-testing frameworks** to account for various transmission channels and asset classes; they should **cover both physical and transition risks**
- ✓ Banks need to **integrate climate risk stress test outputs into their banking activities/planning**
- ✓ Banks should enhance climate risk management, **understand their client's transition plans** and **strengthen their strategic plans** to exploit the opportunities of the green transition

The Supervisory Review and Evaluation Process (SREP)

Internal Capital Adequacy Assessment Process (ICAAP)

ICAAP versus SREP

In the context the Basel II regulatory framework:

ICAAP denotes the set of activities and processes that must be undertaken by regulated financial institutions ***themselves***. It plays a key role in the risk management of credit institutions

The ICAAP is also an important input factor in the Supervisory Review and Evaluation Process (**SREP**) that is carried out by the ***supervisor***. The ICAAP feeds into all SREP assessments and into the Pillar 2 capital determination process.

SREP and the Pillar 2

The aim of the Pillar 2 processes is to enhance the link between an institution's risk profile, its risk management and risk mitigation systems, and its capital planning.

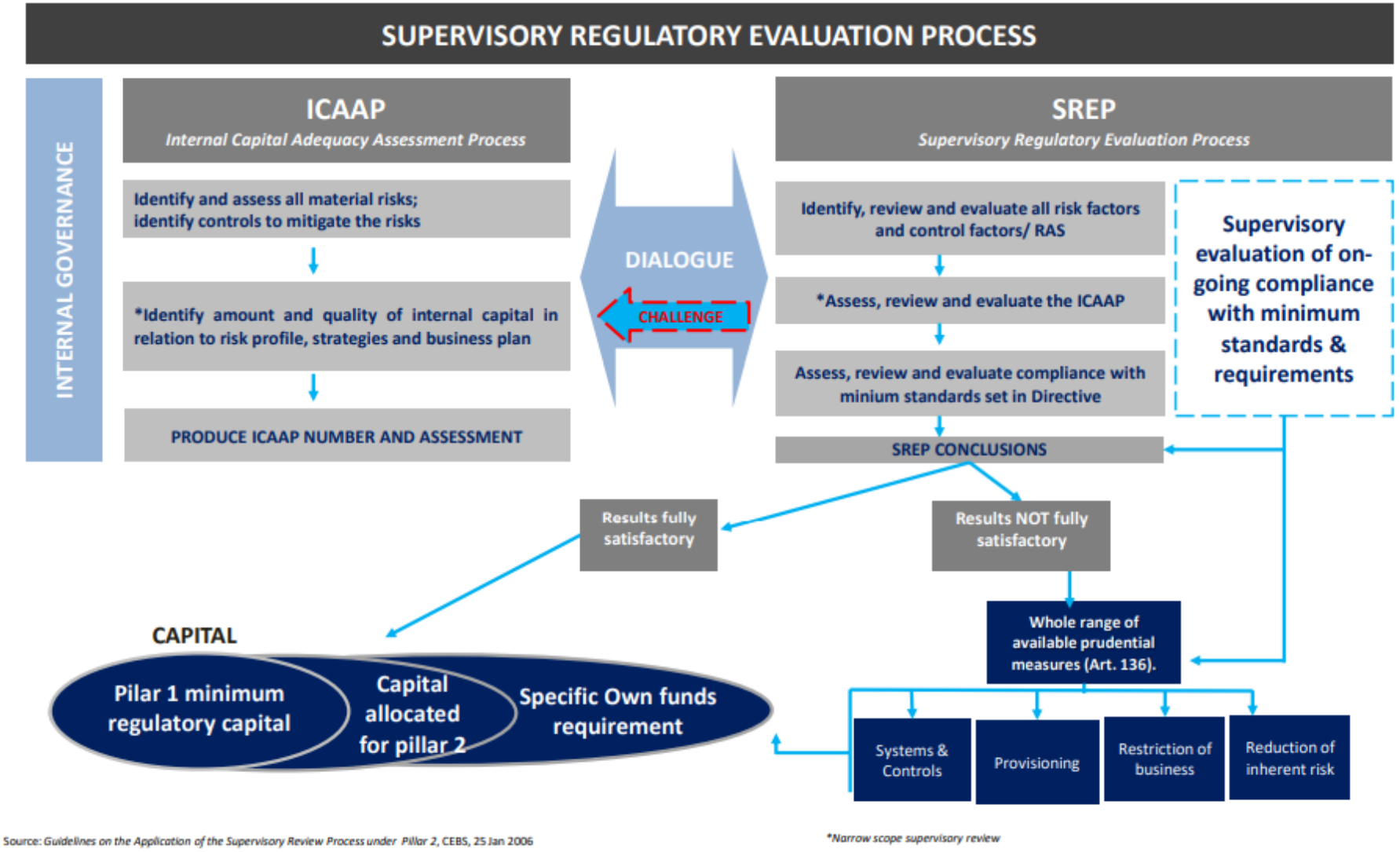
Pillar 2 can be divided into two major components:

(i) aimed at institutions, where those are 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, and

(ii) supervisory review and evaluation process (SREP). The key purpose of SREP is to ensure that institutions have adequate arrangements, strategies, processes and mechanisms as well as capital and liquidity to ensure a sound management 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.

https://www.eba.europa.eu/regulation-and-policy/supervisory-review-and-evaluation-process-srep-and-pillar-2

SREP and ICAAP



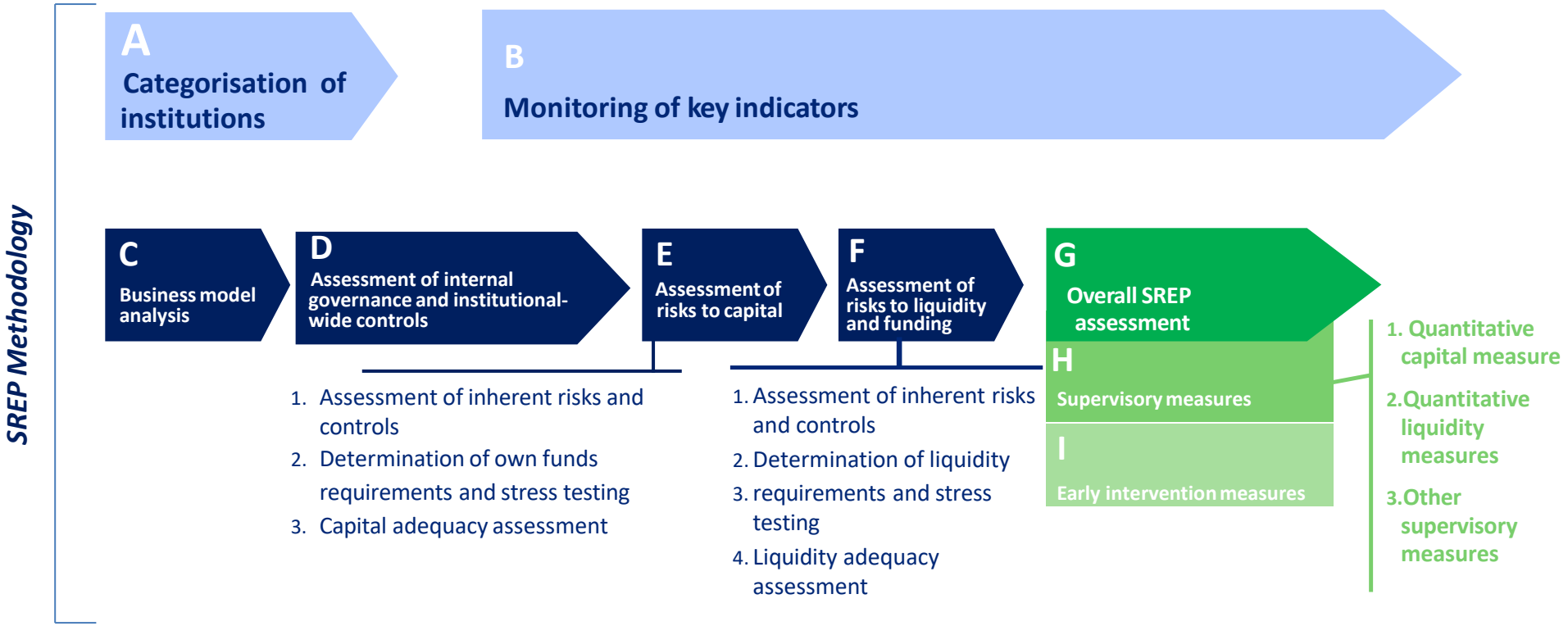
Source: *Guidelines on the Application of the Supervisory Review Process under Pillar 2*, CEBS, 25 Jan 2006

*Narrow scope supervisory review

SREP – General Overview

SREP goals

- Guide harmonization of banking supervision at an European level
- Increasing the consistency and quality of supervision across the Banking Union.



"Guidelines on common procedures and methodologies for SREP", EBA, Dec 2014

SREP – CORE COMPONENTS

C

Business model analysis

- **Business model viability** on a year time horizon?
- **Strategic sustainability** in the next 3 years?
- **Main vulnerabilities** that may impact the bank or lead to a situation of recovery/resolution?

D

Assessment of internal governance and institutional-wide controls

- Adequacy of **Governance model and implemented controls** to risk profile, business model, size and complexity of the bank?
- **Compliance** degree with **requirements** and standards of a good **governance** / internal control practices?

E

Assessment of risks to capital

- Material risks will result in a grade based on the inherent risk and management/ control of existing risks.
- This evaluation will use ICAAP as its main tool. The output will then be used to determine the adequate capital levels.

F

Assessment of risks to liquidity and funding

- Assessment focused on liquidity and funding risks & liquidity management / internal controls.
- Assessment will use ILAAP as its main tool;
- Assessment can lead to specific measures to comply with the liquidity requirements previously defined.

SREP – Potential Implications

G
Overall SREP assessment

- Components from C to F will be evaluated by the regulators on a scale from 1 to 4.
- Overall assessment (OA) results from a synthesis of all components (diferent from a weighted average) on the following scale:

  - **1: No discernible risk;**
  - **2: Low risk;**
  - **3: Medium Risk;**
  - **4: High Risk;**
  - **F: "*Failing*" or "*Likely to fail*".**

OA of 4 OR
OA of 3 with at least one component assessed as 4.

H
Supervisory measures

Different supervisory measures, dependent on the impacted areas and the criticality level:

- *capital and liquidity measures*
- *changes to business plan,*
- *organizational changes,*
- *reduction of exposure*
- *etc.*

I
Early intervention measures

Potential resolution
(eg: OA of 4 of a bank which failed to implement early intervention measures).

SREP – The Implications

SREP CAPITAL RATIOS FOR 2018

The supervision authorities regularly evaluate and measure the risks each bank is exposed to by means of the so-called Supervisory Review and Evaluation Process (SREP).

Banco BPI learnt in December 2017 of the European Central Bank's (ECB) decision concerning the minimum prudential requirements that it must comply with effective from 1 January 2018, a decision which is based on the "SREP" results. In addition, Banco BPI was informed by the Bank of Portugal about the capital buffer required from it as an "other systemically important institution"(O-SII).

The decision in question (SREP Decision) defines, as regards the minimum own funds requirements to be observed with effect from that date, the following ratios, determined according to the total value of the risk-weighted assets (RWA):

Minimum consolidated capital requirements

	Consolidated capital ratios 31 Dec. 2017		Capital requirements in 2018 (SREP)				Fully loaded capital requirements (SREP) (applicable in 2021)			
	Fully loaded	Fully loaded pro-forma[1]	Capital ratios	Of which:			Capital ratios	Of which:		
				Pilar 1	Pilar 2	Buffers[2]		Pilar 1	Pilar 2	Buffers[2]
CET1	12.3%	13.0%	8.75%	4.5%	2.25%	2.0%	9.75%	4.5%	2.25%	3.0%
T1	12.3%	13.0%	10.25%	6.0%	2.25%	2.0%	11.25%	6.0%	2.25%	3.0%
Total ratio	14.0%	14.7%	12.25%	8.0%	2.25%	2.0%	13.25%	8.0%	2.25%	3.0%

1) Considering the impact of application of IFRS 9 and the sale of subsidiaries and businesses to be completed in 2018.

Table 19

2) The capital conservation buffer increases linearly during a period of four years starting in 2016, until reaching 2.5% in 2019 (in 2018 it is 1.875%). The counter-cyclical buffer is currently set at 0% in Portugal. The O-SII buffer increases linearly for four years starting in 2018 until reaching 0.5% in 2021.

In light of the "SREP" requirements for 2018, and taking into account the ratios reported at the end of 2017, the Bank complies with the new minimum ratios required with respect to CET1 (Common Equity Tier 1), Tier 1 and total ratios.

Source: BPI, Annual Report 2017

ICAAP – The Concept

INTERNAL CAPITAL ADEQUACY ASSESSMENT PROCESS

Concept

- Annual exercise of stressed financial forecasting in order to prove the bank is adequately capitalised over the projection period (there is a capital buffer)
- The bank defines the types of stress tests, frequency, methodological details and models used, governance arrangements, interaction between solvency and liquidity stress test

Objectives

- Evaluate the bank's robustness under stressed environments, in particular capital adequacy.
- To allow the bank to better understand, plan and manage its risks, capital and liquidity.
- To allow for the identification of concentrations.
- To allow for the early identification of mitigating actions.

Stress test	Sensitivity	Multi-year scenario	Reverse
Objectives	To investigate the impact of one risk driver on a particular portfolio/risk type	To investigate the impact of a confluence of events on the bank	To understand what possible events could cause the bank to fail
Scenario	The source of the shock is not important	A full description of the scenario, through time, is required	A full description of the scenario, through time, is required (if applicable)
Outputs	Limited to just one variable	Wide range of outputs produced	Outputs will depend on the definition of failure

ICAAP – How it works?

Type of risk	Background	Rationale	Stress methodology	Capital requirements	
Credit risk	Largest Balance sheet exposure	Unexpected Losses Standard + IRB	Use PDs/LGD rules as per EBA's stress test scenario	474 648	49,05%
Concentration risk	Top20 debtors > 25% loan book	Large exposures rule: no single debtor can exceed 25% of own funds	Simulate that Top 3 creditors increase exposure by 10%	62 838	6,49%
Real estate risk	Foreclosed assets = 3rd largest asset category	Foreclosed assets need to be sold	Simulate RE portfolio would need to be sold in less than 7 years	289 611	29,93%
Strategy risk	Asset sales (Real estate assets + non-core subsidiaries) lagging behind	Capital ratios compliance depends heavily on RWA deleverage	Simulate that RE sales would take twice to be sold and that non-core subsidiaries would be sold with 50% discount vs budget	37 811	3,91%
Business risk	Recurrent negative deviations versus business plan		Simulate impact of -15% deviation in net income	11 830	1,22%
Liquidity risk	Too heavy reliance on short-term unsecured wholesale funding		Simulate that funding gap would have to be covered by deposits @ higher rates	17 900	1,85%
Market risk	Sovereign bond portfolio = 2nd largest exposoure	Recalculate VaR assuming worse bond price series	Simulate historic VAR assuming range of bond prices had shown twice the volatility level	25 142	2,60%
Interest rate risk	Mismatch between rates of deposits (fixed rate) and loan rates (floating)		Simulate that deposits would have priced at higher rates because of market stress	13 122	1,36%
Operational risk	Impact from operational risk events (fraud/clients' complaints)			34 712	3,59%
Total capital requirements				**967 614**	**100%**
RWAs (= total capital requirements * 12,5)				**12 095 175**	

Source: private project carried by a Big Four consultancy firm in 2014.

Banking

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Course: Banking [2206]