Università Ca'Foscari Venezia
Dipartimento di Economia

With the support of the Erasmus+ Programme of the European Union

JEAN MONNET CHAIR

"DIGITALISATION IN EU FINANCIAL STUDIES" – EUDIFIN

Beyond the veil: Stress-ing vulnerabilities
EU-Wide stress Tests as a tool to enhance Transparency and Confidence in the Banking System

Alessia Tortato

MSc Student in Finance

Ca' Foscari University of Venice

EUDIFIN course: International Financial Regulation

EUDIFIN Jean Monnet Chair

EUDIFIN

RESEARCH WORKING PAPER NO. 14

APRIL 2021

NOTICE

The work has been produced by the author in the framework of EUDIFIN's teaching and research activities.

As part of the assessment methods, each EUDIFIN courses require students to engage in a research-oriented assignment. This assignment prompts students to deal with the current political and scholarly debate revolving around the challenges the European Union faces to further integration in the internal financial market. This learning experience rewards those students who demonstrate interest, commitment and dedication, and who are keen to channel this enthusiasm into a "contest" between peers for the best "Research Papers".

The best papers will be published as EUDIFIN Working Paper on the EUDIFIN website of Ca' Foscari University of Venice.

UNIVE.EUDIFIN

EUDIFIN
Jean Monnet Chair

Abstract

The Financial Crisis highlighted the importance for Supervisors to make sure Banks' capital position is sound enough to face adequately unexpected threats pervading the Banking system: EU-Wide Stress Test proved to be a valuable supervisory tool to challenge Banks and timely address vulnerabilities in case they arise.
EU-Wide Stress Test showed to have a disciplining effect on banks, which resulted to be more resilient as a consequence of increased, high quality, and tighter supervision. Supervisory scrutiny together with top-level transparency enhanced the confidence in the banking system as a whole, after the widespread disillusion of the aftermath of the crisis.
The Paper is going to explore EU-Wide Stress Tests, providing insights on how they are performed and how Authorities cooperate in order to ensure their effectiveness. Then, the features that make them so transparent will be presented, together with the benefits recognized on banks' performance after the Exercise.
Finally, EU-Wide Stress Tests role in enhancing the confidence in the EU Banking System will be addressed and commented.

Key words: EU-Wide Stress Test, Capital Position, Prudential Supervision, Transparency, Confidence.

Summary

In 1628, the Vasa – the pride of the Swedish navy – was the most powerful warship in the Baltics. Until she sank about half an hour into her maiden voyage, that is. So what happened? Well, nothing special when it comes to sailing ships: the wind simply picked up.

[…]

Now, why am I telling you the story of the Vasa? In my view, it shows how beneficial it is to spend a moment or two thinking about what might happen if the wind picks up. This is true when it comes to building ships and, in a sense, it is also true when it comes to managing banks. How will lenders fare in a storm? Are they stable enough to weather a storm? Or do they need additional weight below the waterline, in the form of more capital. [1]

[1] Keynote speech by Andrea Enria, Chair of the Supervisory Board of the ECB at the European Systemic Risk Board (ESRB) Annual Conference. Frankfurt am Main, 26 September 2019.

Introduction

After the crisis Europe found itself to be the strongest Union in the world facing not only a big financial crisis but also a fragmentation crisis.

In the aftermath of the subprime crisis it was clear that the threat was still around and that repercussions of US instability were still making their way within Europe.

The problem was that nobody actually knew which were the banks that were really affected and to what extent they were affected.

The result has been a widespread disillusion in the European Financial System as a whole and a widespread lack of confidence and trust with respect to banks.

Starting from 2010 the European Union committed itself to the creation of bodies and institutions whose primarily role is to reduce fragmentation, enhance transparency and promote confidence and trust in the European Banking System.

The European Union reacted in two ways. The first one consisted in the creation of the European System of Financial Supervisors[2], the ESFS, composed respectively by the ESAs (European Supervisory Agencies) and the ESRB (European Systemic Risk Board). The ESAs are three European Agencies whose aim is to ensure the proper functioning, soundness and integrity of system at a micro-prudential level in order to create a level-playing field and reflect the increasing level of integration of financial markets in the Union. The agencies are in place in order to grant micro-prudential supervision in the Banking (EBA), Markets and Securities (ESMA) and Pension and Insurance (EIOPA) fields. The ESAs are so important because they are composed by professionals that operate thanks to their expertise and skills with the goal to have someone at the European level checking over the National Competent Authorities.

[2] Created after the recommendations released by a High-Level Group mandated by the European Commission and chaired by Jacques de Larosière. "De Larosière report", February 25, 2009. The ESFS is composed by the ESRB, the ESAs, the Joint Committee of the European Supervisory Authorities and by the NCAs.

The ESRB[3] instead is a board which is responsible for the macroprudential oversight of the financial system as a whole, namely, to spot and report about the possible threats to financial stability which could potentially trigger systemic crisis.

The second reaction[4] coincided instead with the creation of the European Banking Union, which is composed by three Pillars each having specific tasks: the SSM is concerned with the Prudential Supervision of Banks and is composed by the ECB and the National Competent Authorities, the SRM, which is responsible for the recovery and the resolution of banks and is composed by the SRB and the National Resolution Authorities and finally the Deposit Guarantee Scheme which is ensures equal protection of depositors' savings.

Those above-mentioned steps correspond to the EU reaction to the crisis are trying to create a level playing field and to ensure a resilient financial system within the Union enhancing transparency and safety in order to prevent further crisis to occur and to "train" the financial system to be ready to overcome eventual unexpected shortcomings.

To this purpose, this research paper is going to deal with the role of EU-Wide Stress Tests in the development of a more resilient system and to explain how they helped in enhancing the overall confidence and trust in European Banking System.

The Objective of the paper is to highlight the key features that make it a useful tool for transparency and increasing confidence purposes, starting from the definition of the EU-Wide Stress Test, the presentation of the Authorities and their contribution to the exercise, going through the methodology and the main passages undertaken for the performance of the test and finally pointing out the main results and insights.

1. EU – Wide Stress Test

European Supervisors carry Stress tests in order to challenge Banks and observe their ability to cope with financial and economic shocks that could potentially hit them.

[3] ESRB Mission & Establishment, ESRB website, about us section.
[4] Starting from 2012

The ECB performs different kinds of stress tests in cooperation with the European Competent Institutions. They are respectively Annual Stress Tests[5], Stress tests as part of Comprehensive Assessment[6] and Stress tests for Macroprudential Purposes[7]. Moreover, if deemed to be necessary, the ECB can perform specific stress tests to individual banks.

Among Annual Stress tests we can find EU-Wide Stress Tests, which are led by the European Banking Authority (EBA) in cooperation with the European Central Bank (ECB), the European Systemic Risk Board (ESRB) and the National Supervisory Authorities.

In particular, EU-Wide Stress tests are performed every two years with the aim to challenge Banks Capital Positions on a regular basis and ensure they are solid enough to withstand severe economic shocks; in case weaknesses arise, Competent Authorities are able to promptly intervene.

By definition, Capital works as an efficient tool to absorb losses; over time capital is also used to prevent systemic crises and shortcomings that might affect the system as a whole.

The core business of banks is the transformation process from assets to liabilities: banks have to pay particular attention to the creditworthiness of their clients in order to avoid credit risk to materialize.

The key point concerning Capital Requirements is that the more banks are exposed to credit risk, the more they should be equipped with capital in order to be able to absorb potential losses (for example, arising from Non-performing Loans).

[5] Annual Stress tests are comprehensive of EU-Wide stress tests and Thematic Stress Tests. Thematic Stress tests are performed in years when EBA EU-Wide stress tests are not performed and aim at testing one specific type of shock (for instance, 2019 test has been on the Sensitivity analysis of Liquidity risk).

[6] Stress Tests as part of Comprehensive Assessment are tests performed by the ECB on banks it supervises directly. The aim is to check on banks' financial health through a stress test and an asset quality review of significant banks.

[7] Stress Tests for Macroprudential Purposes aim at testing the banking system as a whole rather than focusing on individual banks.

Starting from 1988, Basel Committee on Banking Supervision (BCBS)[8] developed Standards concerning Bank's Capital Requirements that have been improved on a continuous basis and came out under the Basel I, Basel II, and Basel III.

Such standards are not directly applicable to banks; they are reported in the EU Legislation respectively in the Capital Requirements Regulation[9] (CRR) and in the Capital Requirements Directive[10] (CRD), that come out under the CRR-CRD package.

In particular, the CRR requires banks to set aside a sufficient amount of capital to cope with unexpected losses. It is defined as a percentage of banks' risk weighted assets so that banks having larger exposures are required to keep a proportionate amount of capital aside.

Capital ratio = Total Capital / Bank's Risk Weighted Assets = 8%

Capital can be classified according to its quality and risk. Notably, the highest quality of capital is the most liquid one, and it is the one that enables banks to promptly cover losses.

The Common Equity Tier 1 (CET1) is the highest quality equity. It is composed by the shareholder's equity and thus it is freely available to absorb losses at all times. It is also called "Going Concern" Capital, since it allows the bank to perform its activities on a regular and continuous basis.

The Tier 2 instead is called "Gone Concern" Capital: it is in fact used when the institution is about to fail and thus to help the bank to repay depositors and creditors once the bank becomes insolvent.

During Stress Tests, Banks are required to illustrate how they would act and perform in case of two scenarios: a baseline one, which stands for how the economy is expected to go, and an adverse one, which requires Banks to behave *as-if* they were facing financial and economic distress.

[8] The BCBS is the primary global standard setter for the prudential regulation of banks and provides a forum for regular cooperation on banking supervisory matters. Its 45 members comprise central banks and bank supervisors from 28 jurisdictions.

[9] CRR - REGULATION (EU) No 575/2013

[10] CRD DIRECTIVE 2019/878 – its content shall be transposed into the Member States' national law. It covers the area of capital buffers, bankers' remuneration and corporate governance. CRD IV is currently in force.

Since 2016, as provided by article 100 of the CRDIV the EU-Wide Stress Test is the starting point for the Supervisory Review and Evaluation Process[11]: *The competent authorities shall carry out as appropriate but at least annually supervisory stress tests on institutions they supervise, to facilitate the review and evaluation process under Article 97*. It consists in an annual check of banks soundness and ability to manage risks properly. The SREP aims at assessing bank's risk profiles on an annual basis; and at the end of the annual cycle each banks receives a specific decisions summarising all the findings and providing suggested measures to be taken (e.g. raise capital to a certain amount)[12].

2. The Role of EU Institutions in EU-Wide Stress Tests

EU-Wide Stress tests are performed every two years and they are the result of a tight cooperation among different European Bodies: the EBA, the ECB, the ESRB and the NCAs.

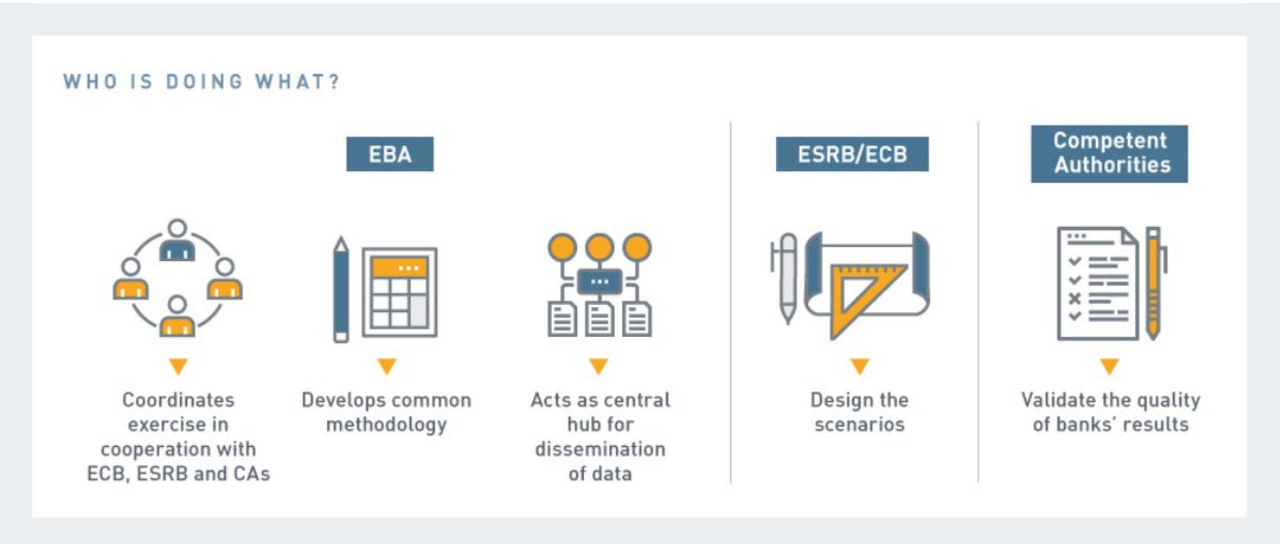

Figure 1 - The Role of European Bodies[13]

[11] As conveyed by Articles 97, 98, 100 of CRD IV - DIRECTIVE 2013/36/EU
[12] The SREP analyses the bank's business model, internal governance, risk to capital and risk to liquidity.
[13] EU-wide stress testing 2018: *All you need to know about the 2018 EU-wide stress test*, EBA website, Risk, Analysis and Data Section

As stated in Article 32.2 of the EBA regulation *The Authority shall, in cooperation with the ESRB, initiate and coordinate Union-wide assessments of the resilience of financial institutions to adverse market developments.*[14] In particular it requires the EBA to develop a common methodology for the implementation of the test and the assessment of the impact of the scenarios as well as publishing the results obtained. To this aim, the EBA has to provide the National Competent Authorities with detailed guidelines on the methodologies to be applied by when performing the tests as well as all the relevant statistics on the main risk parameters to ensure a rigorous and consistent assessment of results.

The ESRB[15] designs[16] the adverse macroeconomic scenario, under which banks have to prove they are able to withstand a situation of financial distress provoked by an unexpected shock hitting the economy. For instance, the aim is to make sure an unexpected shock would not impact the smooth and well-functioning of banks.

By contrast, the ECB designs the baseline scenario based on National Central Banks projections. It reflects how the economy is likely to go and requires banks to provide evidence on their capability to carry on the relevant operations on a continuous basis. The ECB, together with the NCAs, is also responsible for the correct application of the methodologies developed by the EBA and for the assessment of the reliability of the data provided. As Andrea Enria stated in one of its interview[17] for *L'Echo*, the EBA, the ECB and the NCAs have to make sure the banks participating in the EU-Wide Stress Test Exercise provide credible and realistic outcomes instead of showing a too high level of optimism to demonstrate they would react in a more resilient way with respect to their peers.

[14] Article 32, Assessment of market developments - REGULATION (EU) No 1093/2010

[15] The European Systemic Risk Board is a Board that is responsible for Macroprudential Oversight of the Financial System with the aim to prevent and mitigate the Systemic Risk to financial Stability. Moreover, the ESRB has to contribute to the smooth functioning of the internal market and to the economic growth of the financial sector. The main objectives of the ESRB are high-profile in nature, however the ESRB has no legal independence. Nevertheless, the ESRB contributes to the development of the EU-Wide Stress Tests with its expertise in collecting and processing extensive statistical information that are used in order to design a precise and rigorous scenario.

[16] The adverse scenario is designed by the ESRB's Task Force on Stress Testing and has to be subsequently approved by the ESRB General Board.

[17] Interview to Andrea Enria for *"L'Echo", Les banques mises face à un scénario "extrême mais plausible",* 3 March 2021

The ECB and NCAs are then responsible for the determination of appropriate supervisory actions to be taken where the results trigger the intervention from the authorities.

3. Process and Methodology

The general objectives of stress tests are basically two: to identify banks vulnerabilities in good times and to eventually support crisis management and resolution of banks in crisis times: therefore, it is important to investigate on how banks perform in such situations, understand whether there are capital gaps and opt for either recapitalization or resolution of the bank it if there are no other ways of saving it.

In normal times, when banks are sufficiently robust, the stress test is mostly a diagnostic tool to assess where potential vulnerabilities may arise and to understand the impact of the shocks on the different metrics. This can lead to an increase in the capital position of the vulnerable bank but also to a request to change the business plan or to take other actions that may not necessarily directly affect the bank's capital position.

The core passages of such process can be summed up as follows:

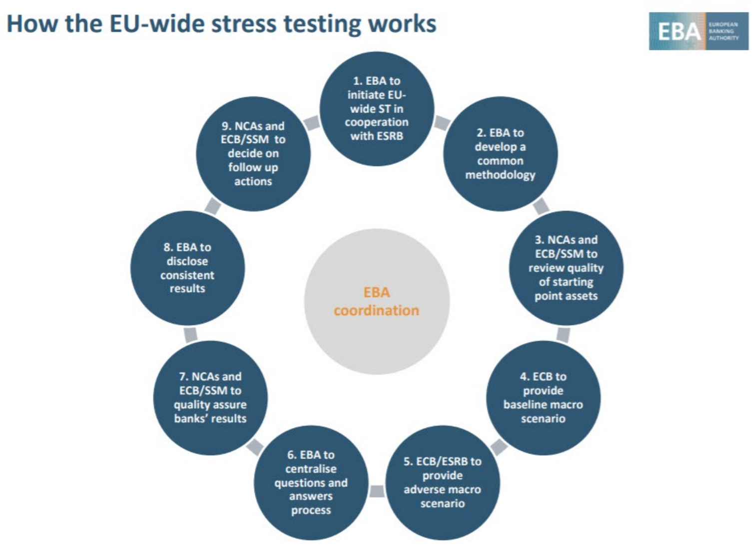

Figure 2: EU-Wide Stress testing process[18]

[18] Presentation for the Florence School of Banking and Finance Online Seminar on Stress Testing, held by Mario Quagliarello (Director Economic Analysis and Statistics of the EBA), 2019

- First of all, the EBA initiates the EU-Wide Stress test in cooperation with the ESRB.
- The EBA develops a Common Methodology to be applied to the whole sample of banks involved in the exercise.
- The ECB and the National Competent Authorities make a first assessment on the reliability of banks data as a starting point performing an asset quality review on banks' bank's balance sheet.
- The ECB and the ESRB then provide the baseline and the adverse scenarios.
- The EBA puts in place a Questions-and-Answers centralized process: banks can ask questions both before and during the exercise. They do that in a public way so that all banks participating in the exercise can benefit from other's doubts and the following clarification.
- Once the test is concluded the ECB and the NCAs have to perform a quality assurance process of the bank's results with the aim of assessing the robustness of the assumptions used by banks and to assess the quality and credibility of data.
- Bank-by-bank results are then published by the EBA on its website[19] together with their underlying exposure.
- Finally, follow up actions are taken by the ECB together with the National Competent Authorities and the EBA in case countermeasures are needed.

The 2021 Exercise involves 51 banks established in the European Union (including both Eurozone and non-Eurozone Member States) with the aim to cover 70% of the banking sector.

[19] EBA Website, Risk Analysis and Data, EU-Wide Stress Tests Results

The main features of the exercise are basically three:

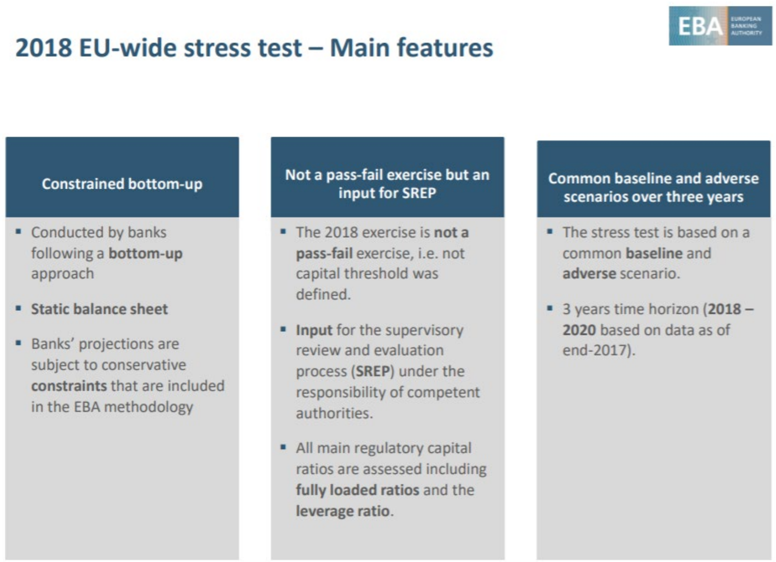

Figure 3- Summary of the Main features of 2018 EU-Wide Stress Test[20]

- The EU-Wide Stress Test is a Bottom-up Exercise, meaning that banks are required to use their own models for the estimation of impacts of the two scenarios. However, they must follow the common methodology designed by the EBA, which works as a sort of guide for banks for the correct implementation of the test. It also imposes constraints on banks actions and decisions, for this reason, the exercise is said to be *constrained bottom-up*, highlighting the presence of backstops banks cannot overcome. One of the constraints applied is the Static Balance Sheet assumption, which basically requires banks to "freeze" their balance sheet at the reference date and to leave them unchanged till the end of the exercise. Even though the static balance sheet assumption is criticized as unrealistic, it represents one of the most important devices to ensure the creation of a level playing field among banks and the comparability of results.
- The second key characteristic is that from 2016, the stress test is no longer a pass-fail exercise. Before 2016, the EBA used to set a threshold of the capital ratio below which banks were not assumed to be resilient. In that case banks were supposed to try to reach that threshold afterwards. Currently, with the non-pass-fail-exercise there is no

[20] Mario Quagliarello (Director Economic Analysis and Statistics of the EBA) presentation for the Florence School of Banking and Finance Online Seminar on Stress Testing, 2019

specific capital threshold below which banks are told to have failed the stress test. Instead, Stress tests results are not used as an input for the SREP.[21]

- The last characteristic is related to the choice of two Scenarios: a baseline and an adverse one, with a tree years-time horizon. The scenarios take in consideration different key macroeconomic and financial variables such as GDP.

The Methodological Note[22] released by the EBA designs the way in which banks should calculate the impact of the scenarios imposed by the ECB and the ESRB and sets the constraints to which banks should undergo. The EBA also publishes the templates and additional guidelines for banks to perform the test properly.

The EU-Wide Stress test consists in a solvency stress test and thus the authorities aim is to assess to which extent the capital position of banks is affected by the shock and highlights which are the sources of both the decrease of the increase in the CET1 ratio.

As a consequence, the main risks examined are Credit Risk, Market Risk and Operational and Conduct Risk.

- Credit risk is defined as the risk that the counterparty does not repay the bank back. For this reason, it is related to the creditworthiness of the bank's clients and has to be taken into account together with the probability of default, the loss given default and the size and dynamics of the credit exposure.
- Market risk consists in the risk that securities hold by banks for proprietary trading face a decline in market value. To this aim, banks are required to make a full revaluation of their balance sheets.

[21] For instance, the choice to switch to a non-pass-fail result stress test, namely a test whose purpose is to provide insights on banks' position rather than a pass-fail response is due to the very objective of the exercise. In crisis times it was very important to understand capital needs and ask banks to recapitalize; this is why in 2014 the EBA set a threshold of 5.5% of the capital ratio to be reached: all banks falling below such threshold were supposed to get to that amount of capital afterwards. In 2016 the banking sector was much better capitalized so the EBA chose to move to a non-pass-fail exercise to avoid that banks could think that there was no other risk once they recognized they had reached the threshold. The objective thus shifted from the one of purely testing to the one of impacts-assessment, which ended up to be useful both for supervisors and for single banks, which paid more attention to their assets quality.

[22] The Methodological Note is released every time a new Stress Test is announced to be performed. It is available on the EBA Website, more precisely on the section related to the incoming Stress Test. In the same sections Banks can find Templates and other documents that may be useful for the correct performance of the test.

- Operational risk and conduct risk are considered as components that may affect the capital position of the bank: they embed the risks derived from an inadequate internal process (both in terms of quality of management and cooperation and in terms of the correct functioning of the computer system for instance) but also form the external events that may affect products and activities within the institution.

4. Beyond the veil: results and insights

The EBA publishes Stress Tests results in terms of the overall impact on CET1 capital ratio as it is a key measure to summarize the robustness of banks facing financial distress. In particular, results are published both on a transitional CET1 ratio basis and on a fully loaded CET1 ratio basis. The transitional CET1 ratio is a key variable since it considers the CET1 ratio level at any point in time of the adverse scenario. By contrast, the fully loaded one does not take into account transitional arrangements and bank specific discretionary items, which are eventually removed.

The impact on the CET1 capital ratio depends on the sensitivity of banks and on the severity of the scenario designed. The EBA discloses data on the different drivers of impact, stating which were the drivers to an increase or a decrease of CET1 ratio for each bank. They can be displayed in the "Aggregate Waterfall of impacts"[23] that is available for every bank. Red bars represent the items that negatively impacted CET1 whereas green ones display the ones resulting into an increase of the CET1 ratio.

[23] The Aggregate Waterfall displays in green the elements having a positive impact on the CET1 capital ratio and in red those driving it down.

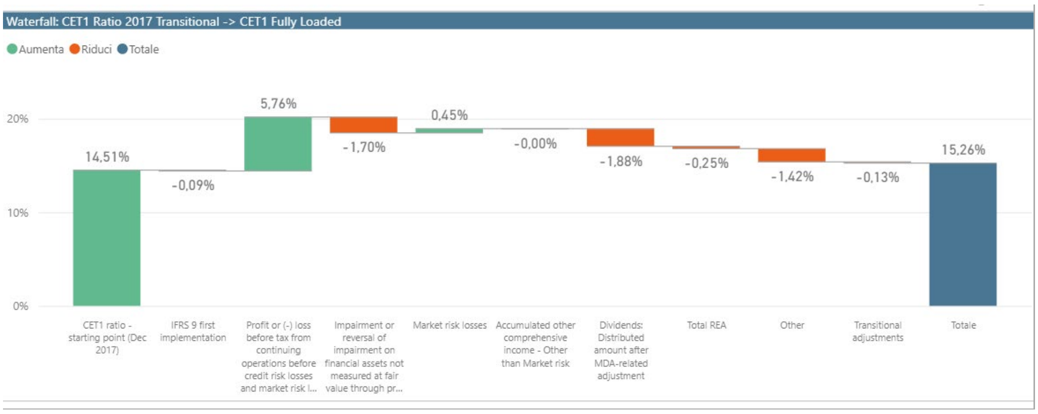

Figure 4: Aggregate Waterfall - 2018 EU-Wide Stress Test Results[24]

Even though the adverse scenario proved to be one of the most severe[25], 2018 exercise highlighted that banks were on average resilient[26]: on the one hand this is due to the fact that their initial capital position was very solid and, on the other, they showed a lower sensitivity as a consequence of an improvement in their credit quality.

From 2010 on, data show that EU banks improved significantly their capital position, starting from an overall average of CET1 of 8.9%[27] to an overall average CET1 ratio of 16.9%[28] in 2018, reflecting a significant strengthening of the capital position on a continuous basis.

Despite the more severe adverse scenario, banks involved in the 2018 exited the test with a CET1 level of 11.8% compared to 8.5% in 2016[29].

The overall improvement of the resiliency of the banking sector can be explained in many ways. For instance, as conveyed by Christoffer Kok, Carola Müller and Cosimo Pancaro in their Article on the empirical analysis on long-term effects[30] of stress tests in the Euro Area, “supervisory scrutiny” on data quality has a disciplining effect on banks risk taking.

[24] Aggregate Waterfall - 2018 EU-Wide Stress Test Results – EBA Website, Interactive tool
[25] Speech by Luis de Guindos, Vice-President of the ECB, 5 November 2018
[26] Banks performing poorly often do because they are facing challenges in terms of profitability.
[27] Initial Average Capital Position at the beginning of 2011 exercise. EBA 2011 EU-Wide Stress Test Aggregate Report, 15 July 2011
[28] Initial Average Capital Position at the beginning of 2018 exercise. EBA 2018 EU-Wide Stress Test Results, 2 November 2018
[29] EU-Wide Stress Test 2018, Press Release
[30] Christoffer Kok, Carola Müller and Cosimo Pancaro, *The disciplining effect of supervisory scrutiny on banks' risk-taking: evidence from the EU-wide stress test*, ECB Eurosystem Research & Publications, 18 February 2020

The empirical analysis[31] has as a starting point the critique to the bottom-up approach: many argue that given that it requires banks to conduct the stress test based on their own models, it leaves room for discretion and banks are often incentivized to distort results in order to show they are more solid than they actually are. This is what both Andrea Enria and Mario Quagliarello described as a "Beauty Contest" among banks to appear more solid relative to their peers.

However, the ECB and the NCAs are involved in an intense supervisory scrutiny and quality assurance process whose aim is to ensure that data submitted by banks are credible and reliable: they do so through different perspectives: first of all they make sure constraints are respected, then they compare projections to their top down models and with their peers projections.

Results proved that banks participating in the 2016 stress test reduced the average risk weight density by 4.2 percentage points compared to those not taking part to in the exercise. Moreover, the output of the analysis showed that a tighter supervisory scrutiny successfully resulted in a reduction in bank's risk taking.

Moreover, as conveyed by Mario Quagliarello, Director of Economic Analysis and Statistics Department at the EBA, in his interview[32] to the Italian newspaper *"La Repubblica, Affari & Finanza"*, the system proved to be increasingly solid, and non-performing loans (NPLs) as a percentage of banks total credits significantly reduced from 2007 to 2020. In particular, NPLs started to decrease dramatically by 2014, when the EBA first applied the BCE Asset Quality Review of bank's balance sheets. This produced a decrease in the riskiness of assets and an increase in their quality with a consequently higher capital ratio.

5. Transparency as a Key Feature

[31] The hypothesis tested are two: the first one deals with the attenuating effect on risk taking by banks participating in stress tests in the following quarters and the second one is that the bank's reduction in risk taking is due to the tight supervisory scrutiny by authorities. The "control" group corresponds to banks which did not take part in stress tests whereas the "treatment" group considers banks that took part to the stress test exercise.

[32] Mario Quagliarello interview for *"La Repubblica"*, Banche Finanza Vigilanza section, 15 March 2021

Compared to non-EU stress tests, the EU-Wide Stress Test exercise is the most transparent one.

This can be seen in the full-disclosure feature of the exercise, given that everything concerning Stress Tests is published in the Authorities websites.

In particular, as stated in article 32.2 of the EBA Regulation, the EBA shall disclose the bank-by-bank results on its website. Along with data, the EBA also releases a report on results highlighting the main insights conveyed by the exercise. Both banks and external individuals can appreciate this feature of EU-Wide Stress tests, since results can also be displayed through the so-called *interactive tool*, which allows the public to visualize data in a more intuitive manner.

Furthermore, the EBA publishes on the dedicated section of its website the Methodology and the related constraints banks should follow when implementing the exercise, as well as additional documents that might be useful for a proper performance of stress-testing.

To this aim, the EBA publishes a Methodological note, the relevant Excel files concerning the two scenarios and Templates to be used by banks.

Moreover, the EBA launches an open Q&A process during which banks can ask for clarifications; questions and answers are then published to ensure that all banks participating in the exercise can benefit from the same kind of support.

In this way the EBA enables banks to implement the test in a correct way, allowing for the creation of a level playing field and as well as the comparability of results.

Moreover, the EBA regularly publishes public consultations on various topics: among them, in 2020 it published one on possible future changes of the EU-Wide Stress Test exercise. EBA's aim was to collect comments and feedbacks from the public and draw conclusions on next steps to be taken. As stated by Jose Manuel Campa on the Discussion Paper on the Future Changes to EU-Wide Stress Test, *"The framework we are proposing today aims at making the EU-wide stress test more informative, flexible, and cost-effective […] It is the first time we embark on a comprehensive discussion on* *the future of EU stress testing and we are keen to receive feedback from a wide range of stakeholders"* [33].

Conclusion - EU-Wide Stress Tests as a tool to enhance Confidence in the EU Banking sector

EU-Wide Stress tests is a powerful tool at EU-level which enables supervisors to assess the resilience of banks to relevant shocks and identify potential vulnerabilities to be addressed. It combines the expertise of various Authorities, that closely cooperate in order to ensure the reliability of the exercise as well as a tight supervision of the banking sector, enhancing the transparency and consequently the confidence on the EU-Banking system as a whole.

The constrained bottom-up approach led to two major results: on the one hand it led to the development of a level playing field for banks and thus to a higher comparability of data; on the other hand, it required banks to improve their own internal risk measurement models and foster their risk management capabilities, developing a higher expertise in risk assessment and management.

Banks are in fact left with major space, since they can conduct the exercise relying on their models. However, they are subject to a common Methodology and to tight supervision by authorities which scrutinize data both ex ante and ex post, conducting a first assessment on bank's asset quality before the stress test exercise and ensuring that the projections submitted by banks are of high quality in terms of credibility and reliability.

EU-Wide Stress Test can also be appreciated since it consists in a "Learning by Doing" exercise, which Authorities are seeking to improve on a continuous basis both as a consequence of previous exercises and thanks to external feedback.

As proven by data collected and available in EBA and ECB Reports as well as from studies conducted, EU-Wide Stress Test is contributing to the creation of a resilient

[33] Discussion Paper on the future changes to the EU-wide stress test (EBA/DP/2020/01)

system, promoting transparency and, as a consequence, enhancing the overall confidence in the European Banking System.

"Ever since they were first used, stress tests have helped to make the banking sector more transparent. In Europe, disclosure has always been a key feature of the exercise. Transparency helps to foster market discipline in parallel with supervisory judgement."[34]

Bibliography and Sitography

- Stress Tests, European Central Bank Website, Supervisory practices, Tasks section. https://www.bankingsupervision.europa.eu/banking/tasks/stresstests/html/index.en.html

[34] Keynote speech by Andrea Enria, Chair of the Supervisory Board of the ECB at the European Systemic Risk Board (ESRB) Annual Conference. Frankfurt am Main, 26 September 2019.

- SREP, European Central Bank Website, Supervisory practices. https://www.bankingsupervision.europa.eu/banking/srep/html/index.en.html

- The future of stress testing – realism, relevance and resources. Keynote speech by Andrea Enria, Chair of the Supervisory Board of the ECB, at the European Systemic Risk Board (ESRB) Annual Conference, Frankfurt am Main, 26 September 2019 https://www.bankingsupervision.europa.eu/press/speeches/date/2019/html/ssm.sp190926~341f1e0cb6.en.html

- "The future of stress tests in the banking sector – approaches, governance and methodologies" Speech by Andrea Enria, Chair of the Supervisory Board of the ECB, 8th Annual Research Workshop organised by EBA. Paris, 27 November 2019. https://www.bankingsupervision.europa.eu/press/speeches/date/2019/html/ssm.sp191127~2f9bdabff9.en.html

- What we have learnt from EU-wide stress tests - Speech by Andrea Enria, Chairperson of the European Banking Authority (EBA). National Bank of Romania, 15 November 2018 https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2453936/8f25cbee-7c08-4eb5-88b3-021dd2f0ce25/2018%2011%2015%20-%20What%20we%20have%20learnt%20from%20EU-wide%20Stress%20Tests%20%28AE%20NBR%20seminar%29.pdf?

- Christoffer Kok, Carola Müller and Cosimo Pancaro: "The disciplining effect of supervisory scrutiny on banks' risk-taking: evidence from the EU-wide stress test". Macroprudential Bulletin, 29 October 2019. https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu201910_3~7da43c7c16.en.html#toc5
- "ECB 2018 stress test analysis shows improved capital basis of significant euro area banks". Press Release, ECB Media and Publications, 1 February 2019. https://www.bankingsupervision.europa.eu/press/pr/date/2019/html/ssm.pr190201~6114ab7593.en.html

- The ECB and Financial Stability - Speech by Luis de Guindos, Vice-President of the ECB, at the joint National Bank of Belgium/ Toulouse School of Economics / Solvay Brussels School of Economics and Management / European Central Bank colloquium. Brussels, 5 November 2018. https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181105.en.html

- Frequently asked questions on the 2018 EU-wide stress test. European Central Bank Website, Supervision Explained. https://www.bankingsupervision.europa.eu/about/ssmexplained/html/stress_test_2018_FAQ.en.html

- ESRB Policy, Stress Testing. https://www.esrb.europa.eu/mppa/stress/html/index.en.html

- *Stress Testing in Europe: A Primer*. Online seminar for the For the Florence School of Banking and Finance. Mario Quagliarello, Director of the Economic Analysis and Statistics Department, 27 February 2019. https://fbf.eui.eu/wp-content/uploads/2019/02/2019-02-27-M-Quagliariello-FBF-Online-Seminar-Stress-Testing-003.pdf
- The European Banking Authority at a glance https://www.eba.europa.eu/sites/default/documents/files/documents/10180/1401372/e8686db2-6390-4c52-ad06-bc8d24b7aeb5/EBA%20AT%20A%20GLANCE.pdf?retry=1

- EU-wide stress testing, Stress tests 2021 https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing

- 2021 EU-wide stress test: Frequently Asked Questions https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/EU-wide%20Stress%20Testing/2021/Launch%20of%20the%20ST/962563/2021%20EU-wide%20stress%20test%20-%20General%20FAQs.pdf

- 2021 EU-Wide Stress Test Methodological Note
  https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/EU-wide%20Stress%20Testing/2021/936417/2021%20EU-wide%20stress%20test%20-%20Methodological%20Note.pdf

- 2021 EU-Wide Stress Test Template Guidance
  https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/EU-wide%20Stress%20Testing/2021/936418/2021%20EU-wide%20stress%20test%20-%20DRAFT%20Template%20Guidance.pdf

- Discussion Paper on the future changes to the EU-wide stress test (EBA/DP/2020/01). EBA Website, News and Press section.
  https://www.eba.europa.eu/calendar/discussion-paper-future-changes-eu-wide-stress-test

- EU-wide stress testing 2018
  https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2018

- 2018 EU-WIDE STRESS TEST RESULTS 2 November 2018
  https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2419200/126521e6-613f-45e4-af84-cbd3b854afc5/2018-EU-wide-stress-test-Results.pdf?retry=1

- 2018 EU-WIDE STRESS TEST RESULTS, Interactive tool
  https://tools.eba.europa.eu/interactive-tools/2018/powerbi/ST18_visualisation_page.html

- 2018 EU-wide stress test: Frequently Asked Questions
  http://docs.dpaq.de/14068-faqs_on_2018_eu-wide_stress_test.pdf

- EU-wide stress testing 2016
  https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2016

- EU-wide stress testing 2014
  https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2014

- EU-wide stress testing 2014 – Press Release
  https://www.eba.europa.eu/eba-publishes-2014-eu-wide-stress-test-results

- EU-wide stress testing 2011
  https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-stress-testing/2011

- EU-wide stress testing 2011 – Summary Report
  https://www.eba.europa.eu/sites/default/documents/files/documents/10180/15935/54a9ec8e-3a44-449f-9a5f-e820cc2c2f0a/EBA_ST_2011_Summary_Report_v6.pdf?retry=1

- BCBS Research and publications. *Stress Testing Principles*, October 2018.
  https://www.bis.org/bcbs/publ/d450.pdf

- Basel Committee on Banking Supervision – Overview.
  https://www.bis.org/bcbs/index.htm

- Andrea Enria interview for "L'Echo": "Les banques peuvent espérer le meilleur, mais doivent se préparer au pire", 05 November 2020.
  https://www.lecho.be/entreprises/banques/andrea-enria-bce-les-banques-peuvent-esperer-le-meilleur-mais-doivent-se-preparer-au-pire/10263000

- Andrea Enria interview for "L'Echo": L'avertissement du shérif bancaire, 17 October 2020.
  https://www.lecho.be/les-marches/actu/general/l-avertissement-du-sherif-bancaire/10258461

- Mario Quagliarello interview for "La Repubblica": "Ma le banche europee hanno retto e in Italia è cresciuta la redditività", 15 March 2021.
  https://iusletter.com/wp-content/uploads/AffariFinanza15032021.pdf

- De Laroisière Report, Brussels, 25 February 2009 https://ec.europa.eu/economy_finance/publications/pages/publication14527_en.pdf

- European Banking Authority Regulation - REGULATION (EU) No 1093/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/78/EC https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R1093&qid=1614674630874

- Single Supervisory Mechanism Regulation - COUNCIL REGULATION (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R1024

- European Systemic Risk Board Regulation - REGULATION (EU) No 1092/2010 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 24 November 2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32010R1092&qid=1615201306447

- Capital Requirements Regulation - REGULATION (EU) No 575/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R0575

- Capital Requirements Directive - DIRECTIVE (EU) 2019/878 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 May 2019 amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding

companies, remuneration, supervisory measures and powers and capital conservation measures

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02013L0036-20201229