



EUROPEAN CENTRAL BANK

EUROSYSTEM

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A portfolio perspective on euro area bank profitability using stress test data

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Overview

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- 4 Results
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Motivation and Literature

- Stress test data provide a unique opportunity to assess the profitability of euro area bank exposures under stress.
- We take a portfolio approach examining profitability at the euro area and the country level.
 - Which portfolios are generally unprofitable, and which have the highest chance of becoming unprofitable under stress and thereby may pose a financial stability risk?
 - How does profitability evolve under differing adverse scenarios and which role does the current pandemic play?
 - What are the drivers that make certain portfolios unprofitable, in particular in a downturn?

Motivation and Literature

Types of analyses

- Impact of macro and structural vars on bank profits or income components bank-by-bank:
Ho and Saunders, 1981; Flannery, 1981; Molyneux and Thornton, 1992; Albertazzi and Gambacorta, 2009; Covas, Rump, Zakrajsek, 2014; Claessens, Coleman and Donnelly, 2018
- Impact of macro and structural vars on profitability measures such as ROE/ROA at bank or aggregate level:
Athanasoglou, Brissimis, Delis, 2008; Albertazzi and Gambacorta, 2009; Goddard, Liu, Molyneux, Wilson, 2011; Coffinet and Lin, 2013; Andersson, Kok, Mirza, Mór , Mosthaf, 2018; Claessens et al, 2018

Different data types

- Bank statements, regular supervisory data:
- Athanasoglou et al, 2008, Albertazzi and Gambacorta, 2009; Coffinet and Lin, 2013; Covas et al, 2014
- Commercial data: Flannery, 1981; Molyneux and Thornton, 1992; Goddard et al, 2011; Claessens et al, 2018
- Stress test data: Andersson et al, 2018

- We aim to bridge various strands of the literature and to establish a portfolio view of bank profitability using stress test data.

Aggregation Methodology – Key Profitability Components

$$(1) RoA_{Country}(Asset\ Class) = EIR_{Country}(Asset\ Class) - WACC_{Country} - CoR_{Country}(Asset\ Class)$$

$$(2) WACC_{Country} = CoE_{Country} * w_{Equity, Country} + CoF_{Country} * w_{Funding, Country}$$

$$(3) CoR_{Country}(Asset\ Class) = \frac{GIF13 + GIF23 + GIF33/maturity}{Exposure(S1) + Exposure(S2) + Exposure(S3)}$$

- We consider the five largest asset classes: financial corporations (FIN), household consumer credit (HH-CC), household mortgages (HH-HP), non-financial corporations (NFC) and sovereigns (SOV).

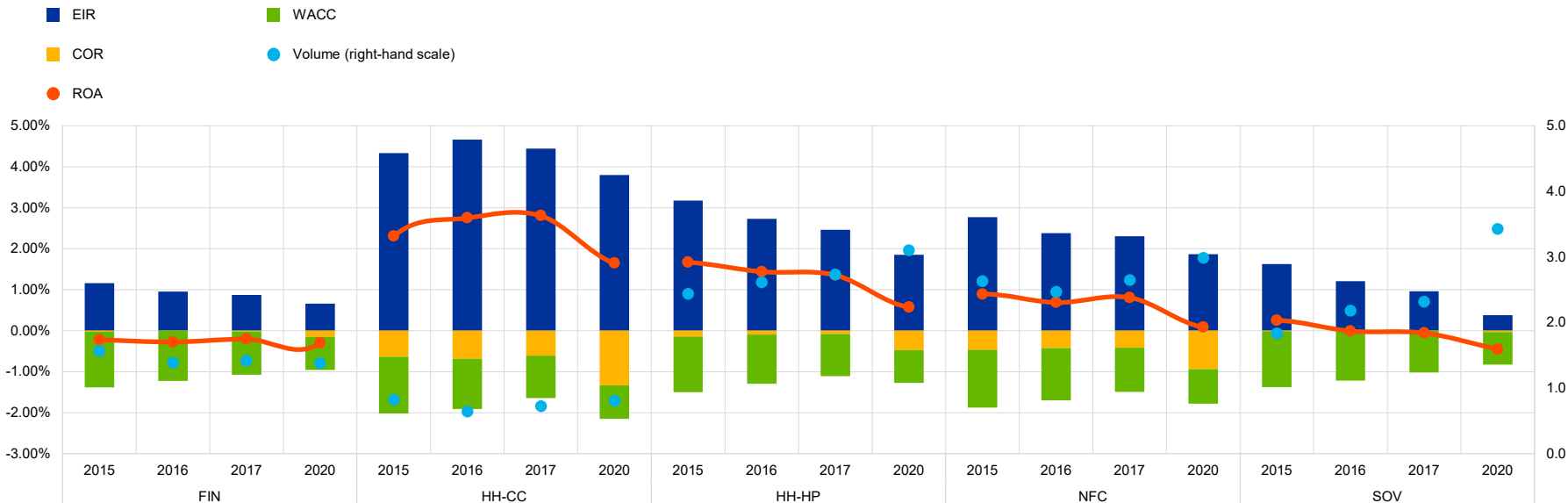
Notes: GIFxy stands for Gross Impairment Flows from Stage x to Stage y. Under IFRS9 standards Stage 1 are performing exposures, Stage 2 are “underperforming” exposures (after a significant increase in credit risk) and Stage 3 are non-performing exposures.

Data

- Data from the EU-wide stress test exercises in 2016, 2018 and 2021 as coordinated by the European Banking Authority and conducted together with the ECB and NCAs.
- Historical data for the years 2015, 2016, 2017 and 2020.
- Banks' bottom-up adverse scenario projections for key risk drivers and income/cost components for the years 2016-2018, 2018-2020 and 2021-2023, respectively.
- Based on common EBA Methodology with static balance sheet assumption.
- Consistent country and bank sample: 11 out of 19 EA countries with at least two participating banks, 61 banks out of 117 across all exercises.
- Other technical assumptions to ensure consistency across exercises.

Results – Historical Data

Figure 1: Euro area risk-adjusted ROA components by portfolio, 2015-2020
 (left-hand scale: percentages per annum; right-hand scale: € trillions per annum)



Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

Notes: COR: cost of risk; EIR: weighted-average effective interest rate; ROA: weighted-average risk-adjusted return on assets; WACC: weighted-average cost of capital. FIN: financial corporations; HH-CC: household consumer credit; HH-HP: household mortgages; NFC: non-financial corporations; SOV: sovereigns.

Results – Adverse Scenarios

Table 1 - Key variables of macroeconomic scenarios for the stress test exercises

| | 2016 EBA Adverse | 2018 EBA Adverse | 2021 EBA Adverse |
|--|------------------|------------------|------------------|
| Euro area GDP¹ | - 2.3 | - 2.9 | - 3.6 |
| Euro area unemployment² | 1.5 | 1.2 | 4.5 |
| Euro area long-term rates² | 1.2 | 1.4 | 0.1 |
| 3-month EUR swap² | 0.3 | 0.9 | - 0.2 |
| Euro area stock prices³ | - 26 | - 31 | - 50 |

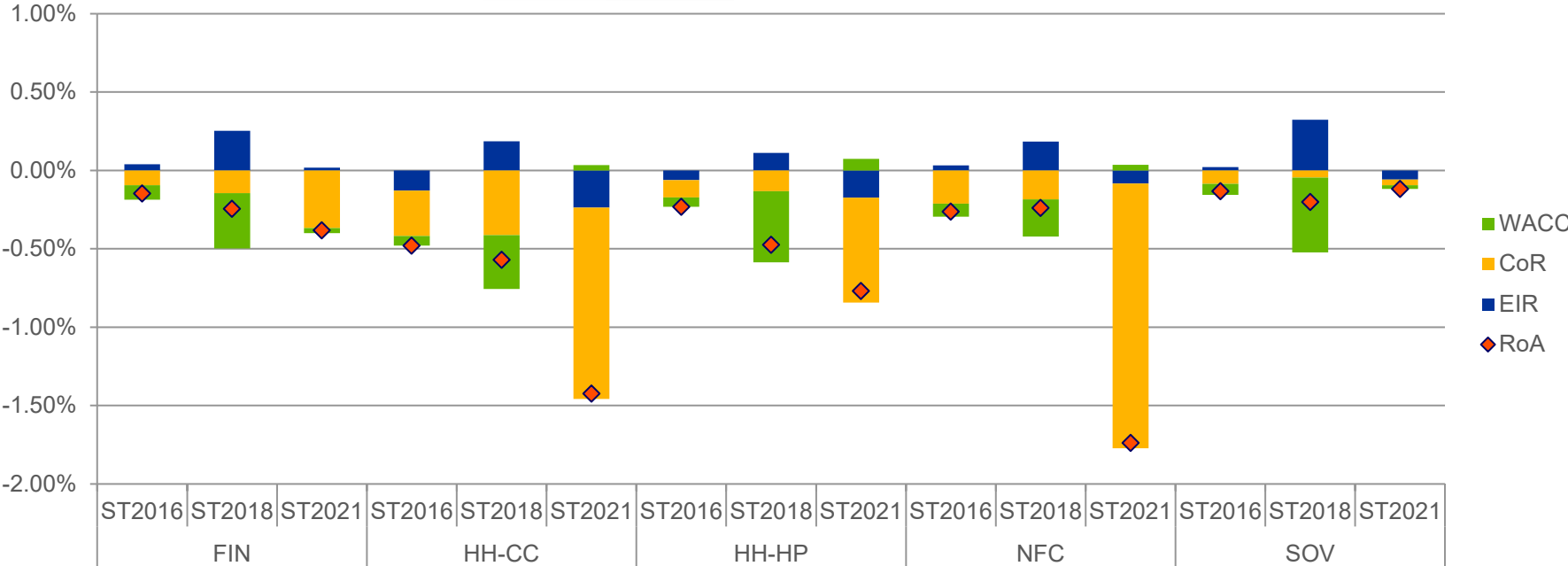
Notes: 1) Minimum cumulative growth from the starting point (p.p.)

2) Maximum deviation from starting point, p.p.

3) Maximum percentage deviation from the starting point level

Results – Scenario Projections

Figure 2: Peak-to-trough change in RoA projections by portfolio under three adverse scenarios (percentage point changes per annum)

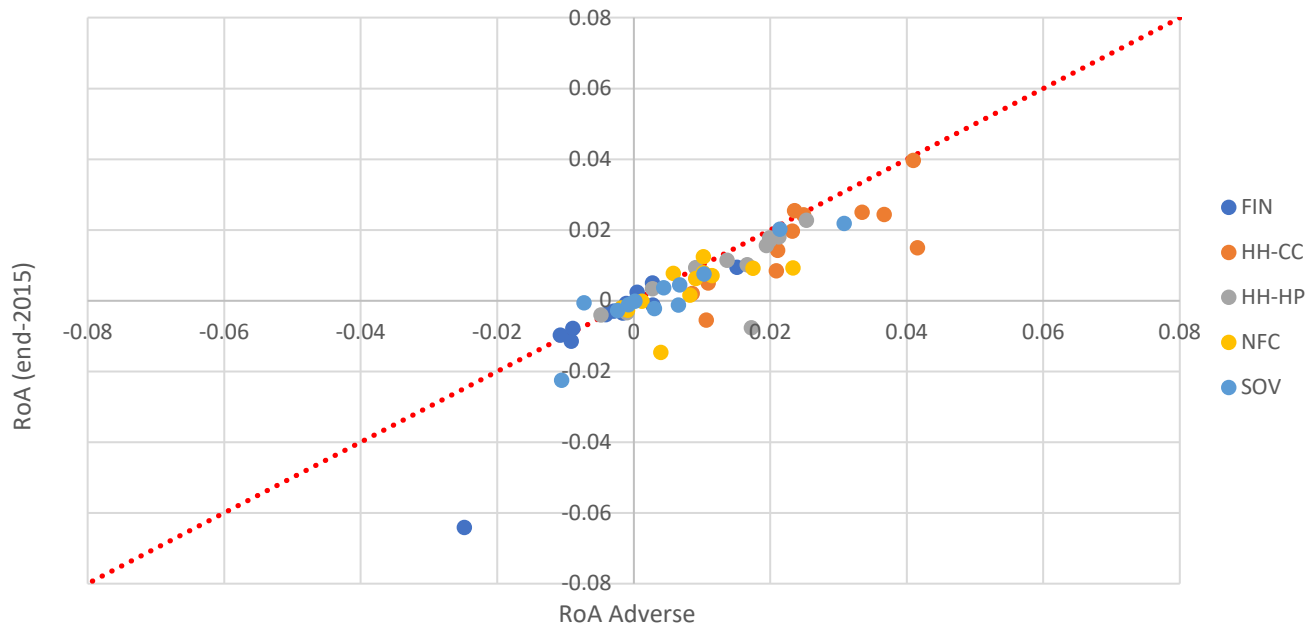


Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

Notes: COR: cost of risk; EIR: weighted-average effective interest rate; RoA: weighted-average risk-adjusted return on assets; WACC: weighted-average cost of capital. FIN: financial corporations; HH-CC: household consumer credit; HH-HP: household mortgages; NFC: non-financial corporations; SOV: sovereigns.

Results – Switches in Portfolio Profitability

Figure 3 a: Switches in portfolio profitability – 2016 exercise adverse scenario
(percentage point changes in RoA per annum)

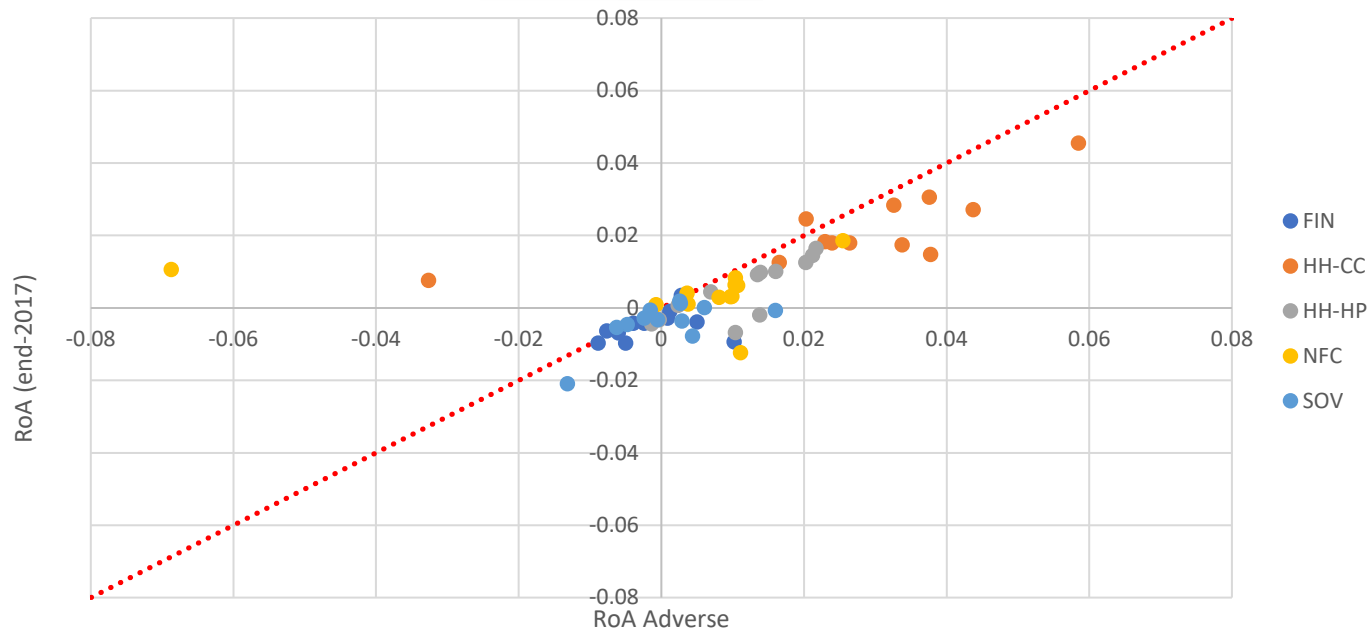


Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

Notes: COR: cost of risk; EIR: weighted-average effective interest rate; RoA: weighted-average risk-adjusted return on assets; WACC: weighted-average cost of capital. FIN: financial corporations; HH-CC: household consumer credit; HH-HP: household mortgages; NFC: non-financial corporations; SOV: sovereigns.

Results – Switches in Portfolio Profitability

Figure 3 b: Switches in portfolio profitability – 2018 exercise adverse scenario (percentage point changes in RoA per annum)

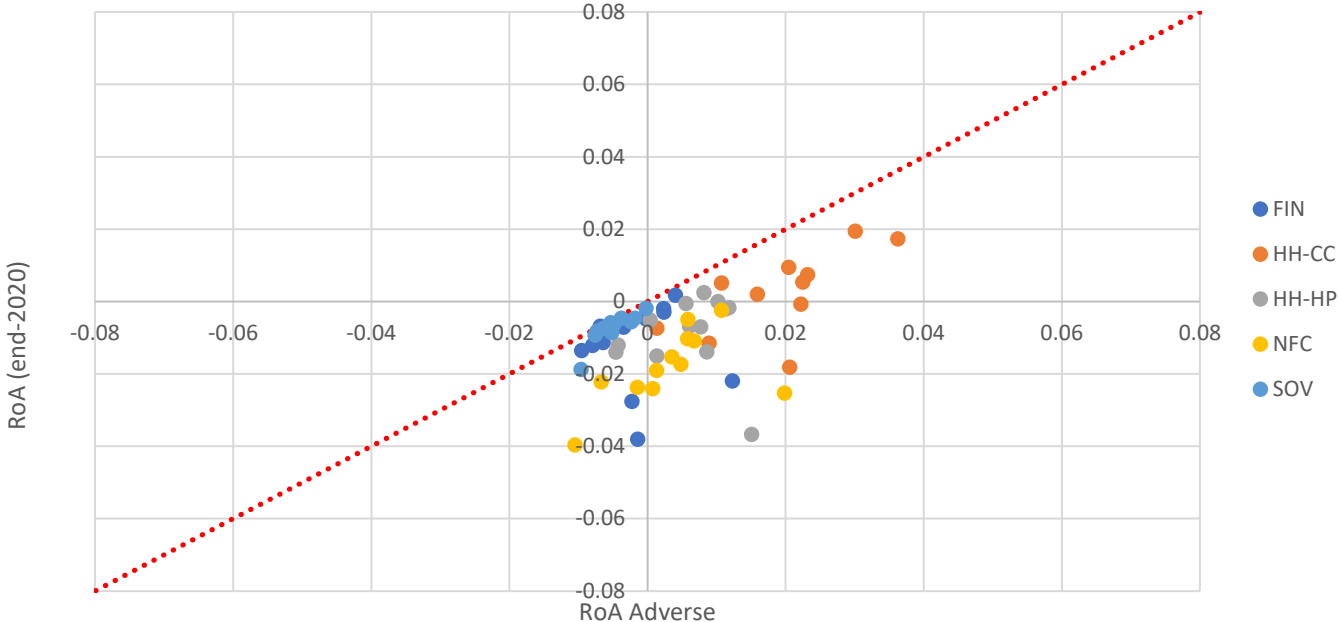


Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

Notes: COR: cost of risk; EIR: weighted-average effective interest rate; RoA: weighted-average risk-adjusted return on assets; WACC: weighted-average cost of capital. FIN: financial corporations; HH-CC: household consumer credit; HH-HP: household mortgages; NFC: non-financial corporations; SOV: sovereigns.

Results – Switches in Portfolio Profitability

Figure 3 c: Switches in portfolio profitability – 2021 exercise adverse scenario (percentage point changes in RoA per annum)



Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

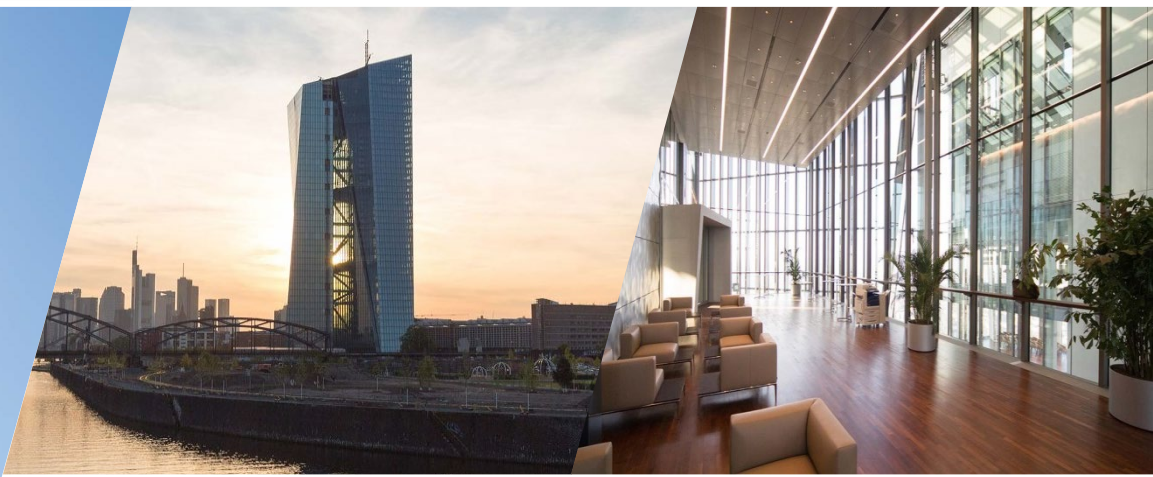
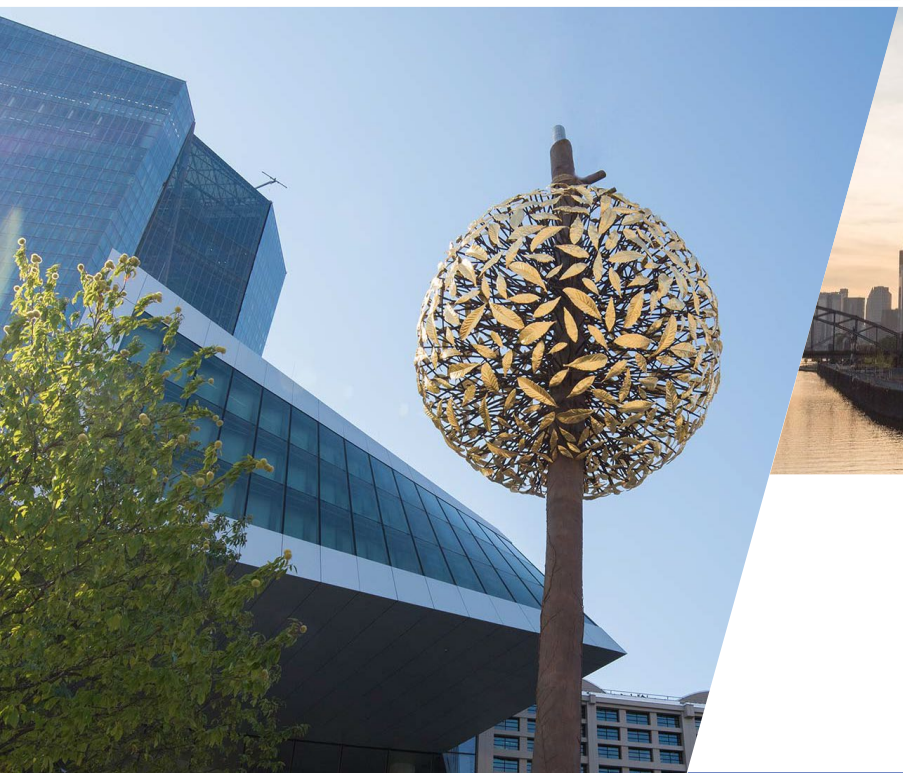
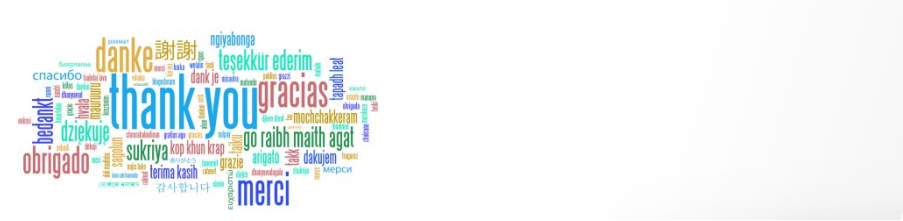
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Conclusions

- Bank profitability is low over the sample period with notable variation across portfolios and a significant drop in risk-adjusted returns at the outset of the pandemic.
- Under adverse macro-financial conditions as captured by the adverse stress test scenarios profitability deteriorates due to squeezed margins and higher cost of risk.
- A severe recession combined with low for long interest rates as assumed under the 2021 stress test adverse scenario yields the harshest impact causing almost half of all country-portfolio pairs to switch from profitable to loss making.

On-going work

- Assess the difference between using marginal (new business) versus average cost of funding.
- Regression analysis on how the probability of portfolio switches is driven by individual RoA components, macro-financial drivers and other structural indicators.

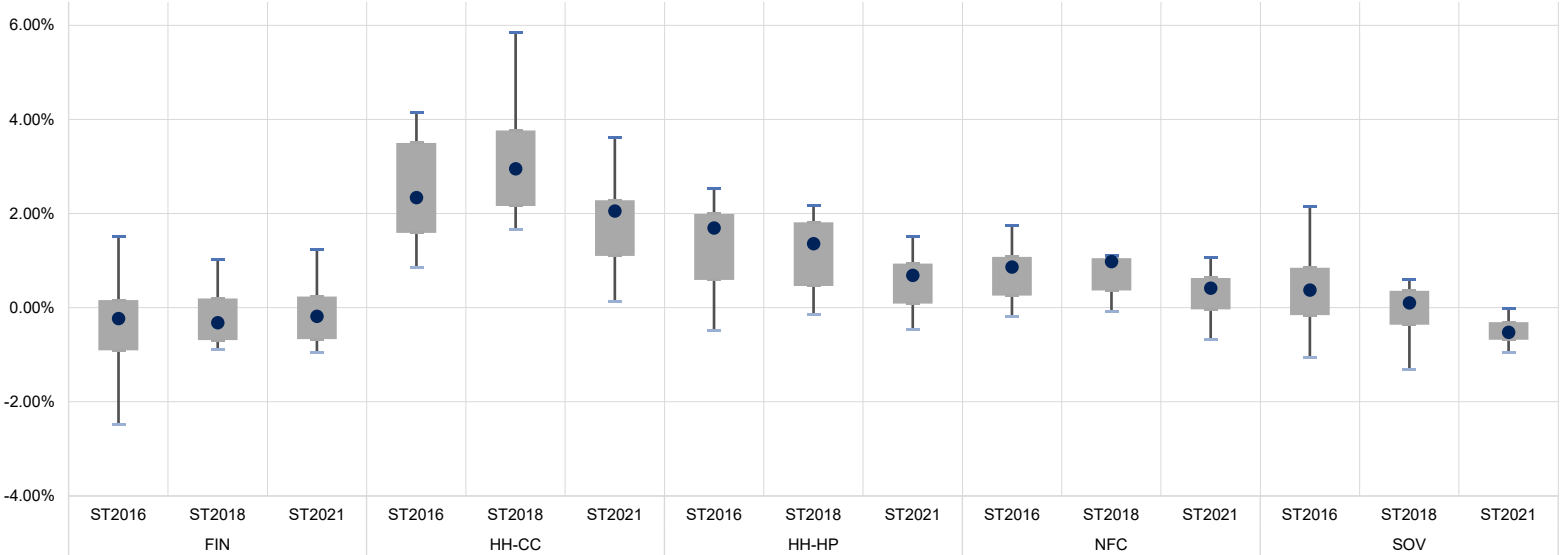


Many thanks for your attention!

Back-up

Results – Scenario Projections

Figure 4 a: Heterogeneity of profitability projections across country-portfolios – starting point (RoA in percentages per annum)

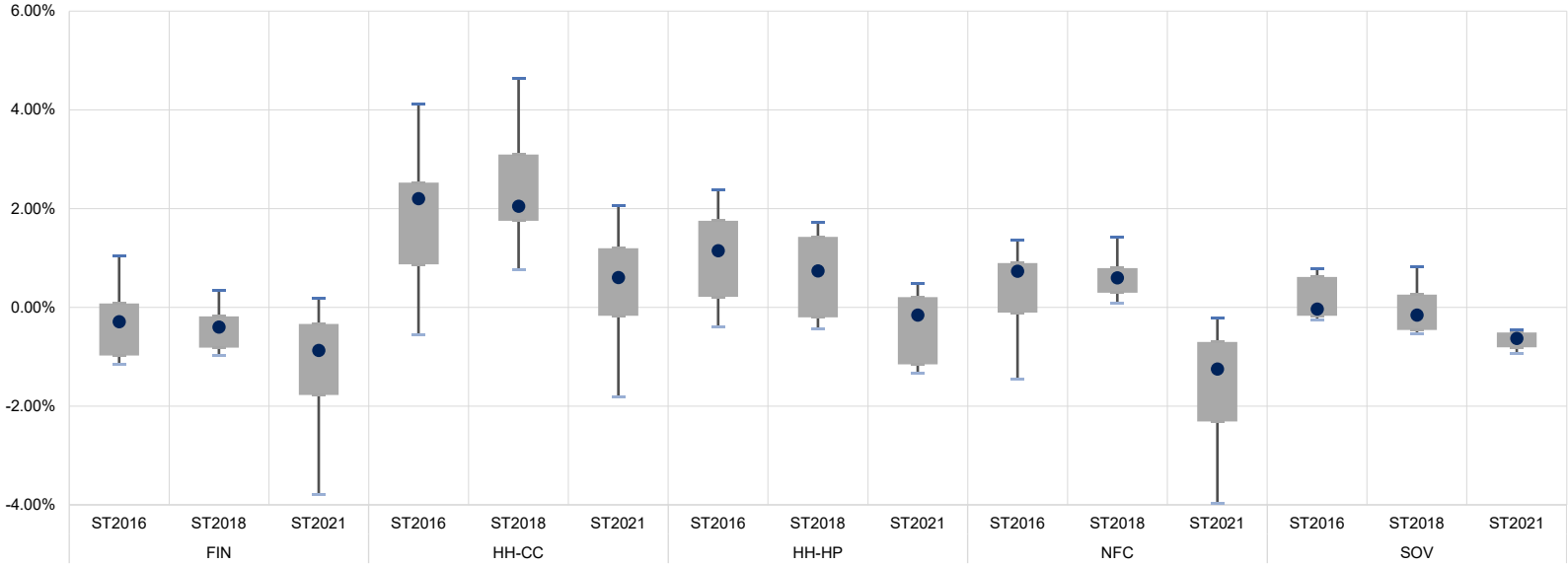


Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

Notes: COR: cost of risk; EIR: weighted-average effective interest rate; RoA: weighted-average risk-adjusted return on assets; WACC: weighted-average cost of capital. FIN: financial corporations; HH-CC: household consumer credit; HH-HP: household mortgages; NFC: non-financial corporations; SOV: sovereigns.

Results – Scenario Projections

Figure 4 b: Heterogeneity of profitability projections across country-portfolios – adverse scenarios (RoA in percentages per annum)



Sources: 2016, 2018 and 2021 EBA stress-test templates, Bloomberg Finance L.P. and ECB calculations.

Notes: COR: cost of risk; EIR: weighted-average effective interest rate; RoA: weighted-average risk-adjusted return on assets; WACC: weighted-average cost of capital. FIN: financial corporations; HH-CC: household consumer credit; HH-HP: household mortgages; NFC: non-financial corporations; SOV: sovereigns.

Results – Switches in Portfolio Profitability

Table 2 – Number of switches in portfolio profitability per exercise under the adverse scenario

| | | Negative switches | Positive switches |
|--------|-------|-------------------|-------------------|
| ST2016 | FIN | 1 | 0 |
| | HH_CC | 1 | 0 |
| | HH_HP | 1 | 1 |
| | NFC | 2 | 2 |
| | SOV | 3 | 2 |
| ST2018 | FIN | 4 | 0 |
| | HH_CC | 0 | 1 |
| | HH_HP | 2 | 0 |
| | NFC | 1 | 2 |
| | SOV | 3 | 0 |
| ST2021 | FIN | 3 | 0 |
| | HH_CC | 5 | 0 |
| | HH_HP | 8 | 0 |
| | NFC | 9 | 0 |
| | SOV | 0 | 0 |