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

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Overview

1. Motivation and Literature
2. Aggregation Methodology
3. Data
4. Results
5. Conclusions
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, Môré, Mosthaf, 2018; Claessens et al, 2018

Different data types

- Bank statements, regular supervisory data:

- 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) \( \text{RoA}_{\text{Country}}(\text{Asset Class}) = \text{EIR}_{\text{Country}}(\text{Asset Class}) - \text{WACC}_{\text{Country}} - \text{CoR}_{\text{Country}}(\text{Asset Class}) \)

(2) \( \text{WACC}_{\text{Country}} = \text{CoE}_{\text{Country}} * w_{\text{Equity,country}} + \text{CoF}_{\text{Country}} * w_{\text{Funding,country}} \)

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

- 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.


- 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)

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

<table>
<thead>
<tr>
<th></th>
<th>2016 EBA Adverse</th>
<th>2018 EBA Adverse</th>
<th>2021 EBA Adverse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Euro area GDP&lt;sup&gt;1&lt;/sup&gt;</td>
<td>-2.3</td>
<td>-2.9</td>
<td>-3.6</td>
</tr>
<tr>
<td>Euro area unemployment&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1.5</td>
<td>1.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Euro area long-term rates&lt;sup&gt;2&lt;/sup&gt;</td>
<td>1.2</td>
<td>1.4</td>
<td>0.1</td>
</tr>
<tr>
<td>3-month EUR swap&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0.3</td>
<td>0.9</td>
<td>-0.2</td>
</tr>
<tr>
<td>Euro area stock prices&lt;sup&gt;3&lt;/sup&gt;</td>
<td>-26</td>
<td>-31</td>
<td>-50</td>
</tr>
</tbody>
</table>

**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)


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)

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)

Results – Switches in Portfolio Profitability

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

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.
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!
Results – Scenario Projections

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


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)

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

<table>
<thead>
<tr>
<th></th>
<th>Negative switches</th>
<th>Positive switches</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ST2016</strong></td>
<td>FIN 1 0</td>
<td>HH_CC 1 0</td>
</tr>
<tr>
<td></td>
<td>HH_HP 1 1</td>
<td>NFC 2 2</td>
</tr>
<tr>
<td></td>
<td>SOV 3 2</td>
<td></td>
</tr>
<tr>
<td><strong>ST2018</strong></td>
<td>FIN 4 0</td>
<td>HH_CC 0 1</td>
</tr>
<tr>
<td></td>
<td>HH_HP 2 0</td>
<td>NFC 1 2</td>
</tr>
<tr>
<td></td>
<td>SOV 3 0</td>
<td></td>
</tr>
<tr>
<td><strong>ST2021</strong></td>
<td>FIN 3 0</td>
<td>HH_CC 5 0</td>
</tr>
<tr>
<td></td>
<td>HH_HP 8 0</td>
<td>NFC 9 0</td>
</tr>
<tr>
<td></td>
<td>SOV 0 0</td>
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