

Bank Profitability and Macroeconomic Factors



BANCO DE PORTUGAL
EUROSYSTEM

Ricardo Martinho • Banco de Portugal

João Gouveia de Oliveira • Banco de Portugal & Nova SBE

Vitor Oliveira • Banco de Portugal

17 October 2017 | Lisbon

Conference on Financial Stability

*The views expressed are those of the authors and do not necessarily reflect those of the Banco de Portugal or the Eurosystem.

Outline

1

Motivation

2

Research Questions

3

Data – Sample and Analysis

4

Methodology

5

Literature Review and Expected Results

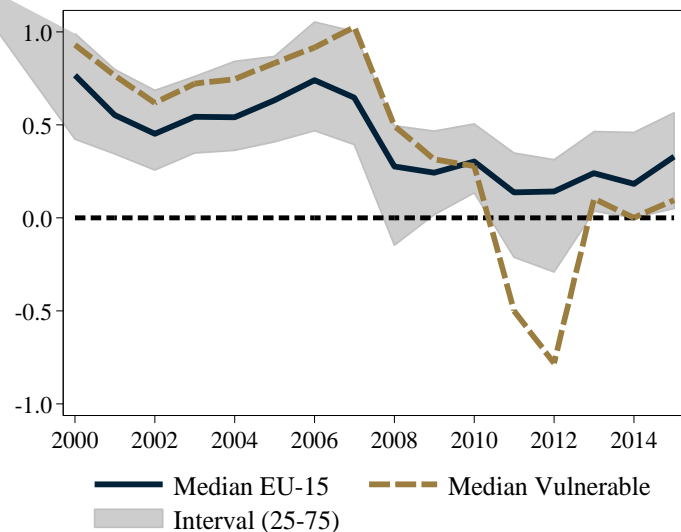
6

Results – Empirical model and Forecasting

7

Concluding Remarks

1. Motivation



Since 2000 European banks have experienced high earnings volatility both across time and between banks, culminating with a sharp decline in 2008, mainly in vulnerable countries (Ireland, Italy, Greece, Portugal and Spain).

Profitability generation is one of the few alternatives to deleveraging and increasing own funds via the raising of additional capital in financial markets.

2. Research Questions

- How does bank profitability respond to macroeconomic developments?
- Is there heterogeneity in that response?
- Can we expect a rebound of banking profitability in the near future?

3. Data Sample

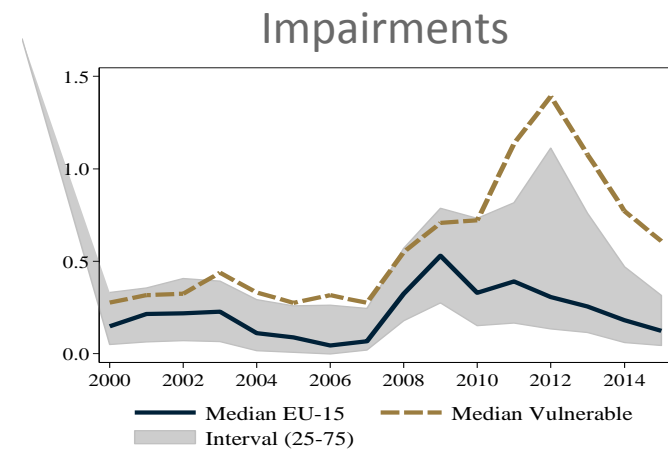
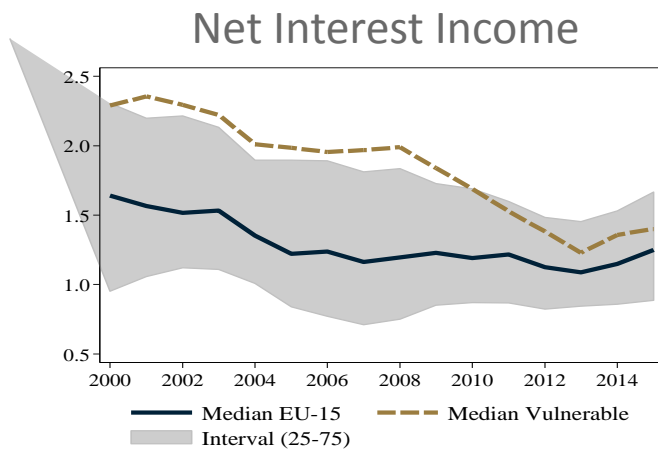
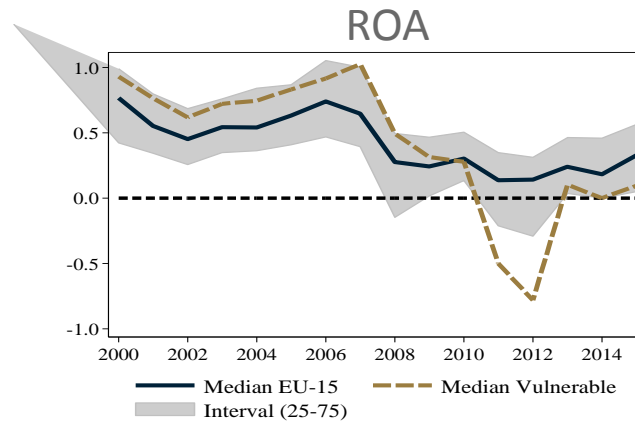
- A sample of 110 banks from the EU-15 Member States for the period between 2001-2015
- All data was collected from Bankscope, SNL, Eurostat, ECB and Bloomberg

Sample Significance			
Member State	% of banking system total assets	Member State	% of banking system total assets
Austria	86	Greece	100
Belgium	77	Luxembourg	NA
Denmark	83	Netherlands	90
Finland	83	Portugal	80
France	86	Spain	78
Ireland	76	Sweden	80
Italy	57	UK	45
Germany	51		

Notes: the table shows the percentage of the banking system represented by sample banks in each Member State using Moody's banking system outlook reports for 2012 and 2015.

3. Data – Analysis Bank

Profitability indicator and its components



4. Methodology

- Linear dynamic Model of ROA
- Least Squares Dummy Variable (LSDV) proposed in Bruno (2005)
- Estimated model:

$$Y_{it} = \alpha Y_{it-1} + \beta' X_{it} + \eta_i + \varepsilon_{it}$$

Y : ROA, impairments, net interest income, interest income, interest expenses and other income

X : explanatory variables: Macro and bank-specific controls

η : bank-specific effects

- Macro variables: GDP growth, money market rate, term premium country risk premium and credit growth
- Bank-specific indicators: leverage, size and retail ratio.

5. Literature Review and Expected Effects on ROA

Variables		Expected Effects
GDP Growth	+	Albertazzi and Gambacorta (2009), Beckman (2007), Kok, et al. (2015) and Mevis and Cheng (2015)
	0	Borio, et al. (2015) and Demirgüç-Kunt and Huizinga (1999).
Short-term interest rate	+	Borio, et al. (2015) and Demirgüç-Kunt and Huizinga (1999).
	-	Mevis and Cheng (2015)
Credit Growth	+	Kok, et al. (2015)

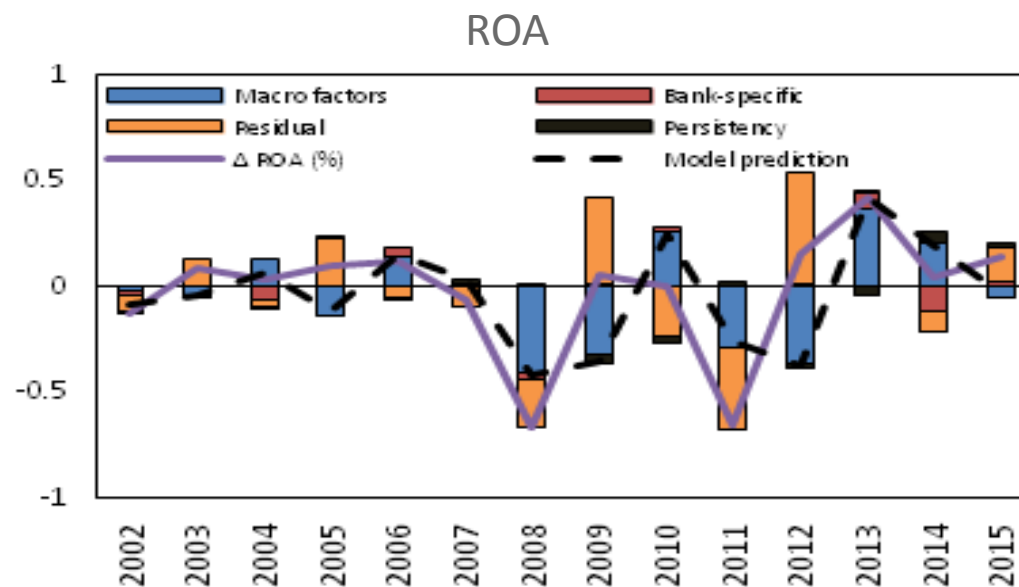
6. Results – Empirical Model

Estimation Results – Common coefficients model

	ROA	Impairments	NII	Interest income	Interest expenses
Lagged dependent	0.109 ***	0.048	0.652 ***	0.734 ***	0.682 ***
GDP growth	0.082 ***	-0.059 ***	-0.016 ***	0.075 ***	-0.150 ***
Money market rate	0.072 **	0.011	0.005	0.281 ***	0.075 ***
Term premium	0.106 *	0.029	-0.021	-0.096 *	0.281 ***
Country risk premium	-0.186 ***	0.214 ***	-0.021 ***	0.015	-0.096 *
Credit growth	0.005 ***	-0.004 **	0.000	-0.002	0.0149
Bank-Specific controls	Yes	Yes	Yes	Yes	Yes
Observations	1,377	1,377	1,367	1,349	1,355
Number of banks	110	110	110	110	110

6. Results – Empirical Model

Decomposition of the Average Change in Profitability (EU-15)



6. Results – Empirical Model

Estimation Results – ROA regressions on subsamples

	Non-Vulnerable Countries	Vulnerable Countries	Floating Interest Rate Countries	Fixed Interest Rate Countries
Lagged dependent	0.181 ***	0.043	0.119 ***	0.023
GDP growth	0.082 ***	0.077 *	0.086 ***	0.081 ***
Money market rate	0.059 **	0.005	0.087 **	0.093 **
Term premium	0.116 ***	0.069	0.100	0.224 ***
Country risk premium	-0.084	-0.186 ***	-0.177 ***	-0.182
Credit growth	0.003 **	0.029 ***	0.005 **	0.005
Bank-Specific controls	Yes	Yes	Yes	Yes
Observations	389	988	924	453
Number of banks	30	80	73	37

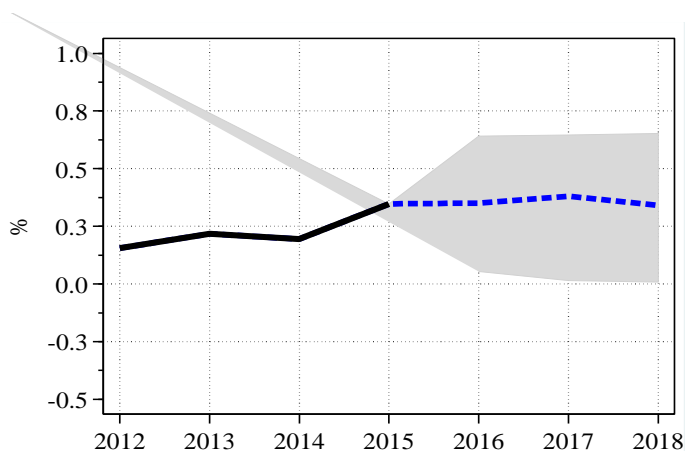
Vulnerable Countries: Ireland, Italy, Greece, Portugal and Spain

Fixed Interest Rate Countries: Belgium, France, Germany and Netherlands

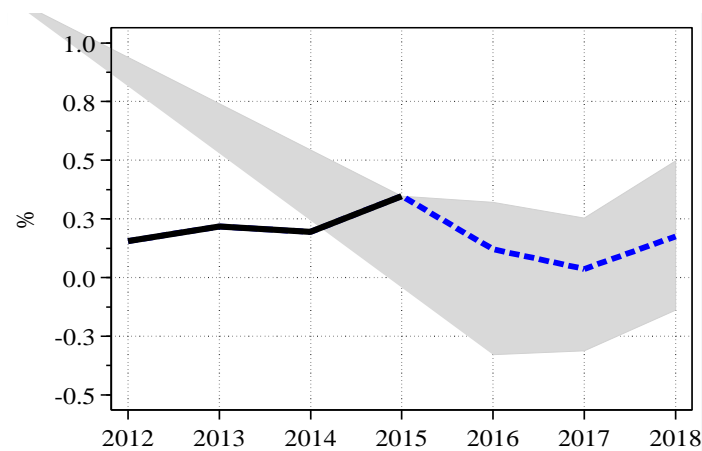
6. Results – Forecasting

Forecasts of euro area aggregate bank ROA under alternative macroeconomic scenarios

Variables	Baseline (EU)			Adverse Scenario (EU)		
	2016	2017	2018	2016	2017	2018
GDP Growth	2.0	2.1	1.7	-1.2	-1.3	0.7
Sovereign Debt Yields	1.5	1.7	1.7	2.2	2.5	2.4
Short Term Interest Rates	-0.1	0.0	0.0	0.3	0.3	0.1



(a) Baseline



(b) Adverse

Notes: solid line is the median of euro area banks observed ROA. Dashed blue line is the median of bank-level ROA projections. The shaded area is the 20-80 interquartile range for bank-level forecasts.

7. Concluding Remarks

- Macro factors explain a large fraction of the evolution of individual bank ROA in the EU.
- Under the ESRB's baseline scenario, we project that a 20% of banks in our sample will have negative profitability over the 2016-2018 period.
- Under the adverse scenario, we find that as many as 40% of the banks in our sample will, on average, be in the red during the reference period.

Ricardo Martinho <rjmartinho@bportugal.pt>
João Gouveia de Oliveira <jholiveira@bportugal.pt>
Vítor Oliveira <vmboliveira@bportugal.pt>