



Bucharest, October 26<sup>th</sup>, 2017

---

Bank efficiency and staff training policy – evidence  
from a survey of the Romanian banking sector

Florian Neagu, Angela Pîslaru, Matei Kubinschi

National Bank of Romania

---

The opinions expressed in this presentation are those of the author and do not necessarily reflect the views of the National Bank of Romania

---

# Presentation outline

---

- Motivation and objectives
- Main results of the Training Policy Survey conducted by the NBR
- Measuring bank efficiency - Impact of banking, macroeconomic and training policy indicators
- Results and conclusions

# 1. Motivation and main objectives

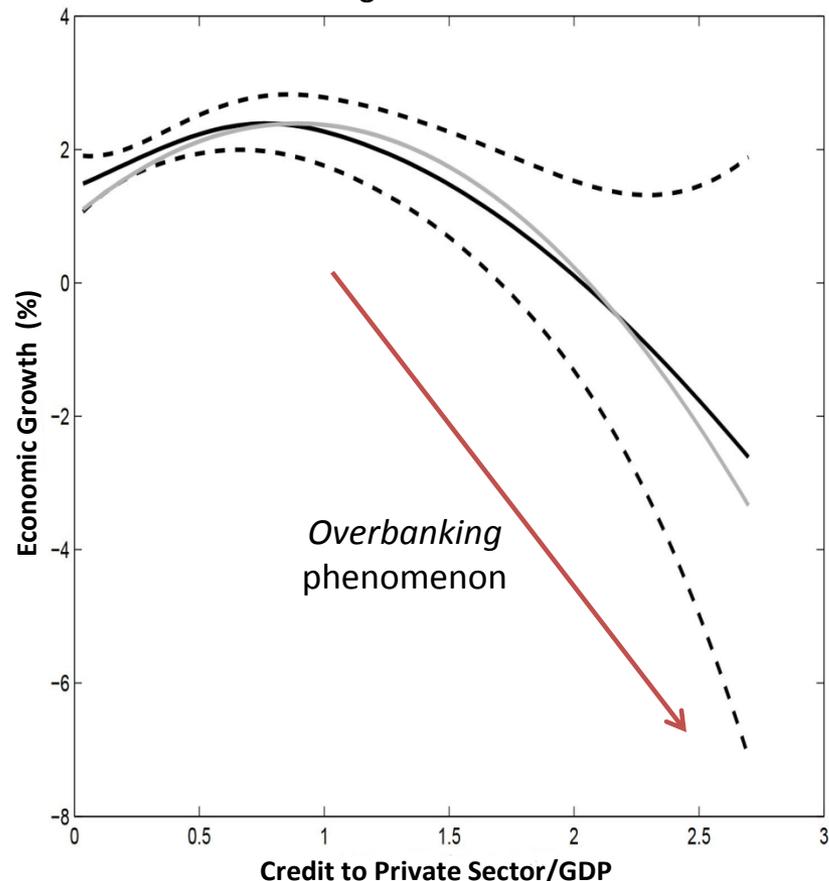
## → ASC Report – “Is Europe Overbanked?”

- European banking sector **size** ↔ **no** or **negative contribution** to economic growth
- Bank **bias** → excessively **volatile** credit creation
- Large universal banks → contribute more to **systemic risk** than small specialized banks
- **Distortion** in the allocation of **human capital**



**Policy proposals - structural reforms**

**Figure 1.** Relationship between credit to the private sector and economic growth

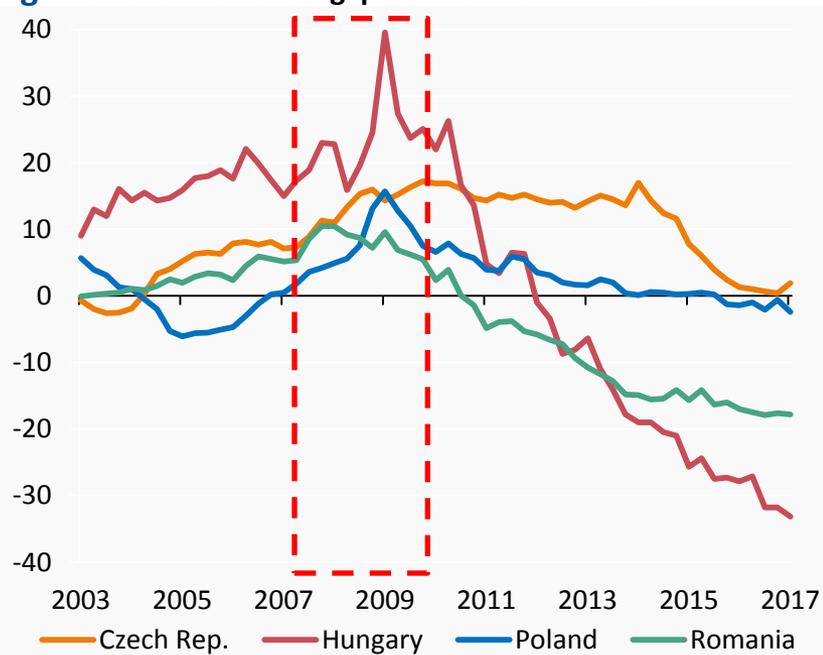


Source: ASC Report “Is Europe Overbanked?”, No. 4, 2014

# 1. Motivation and main objectives

- CEE region – low level of **financial intermediation** ↔ **rapid growth rate** after 2000
- **Fast expansion** of foreign branches of banking institutions ↔ **large margins** on HH and NFC credit
- High **demand** of personnel – **rapid wage** growth ↔ **highly qualified** human capital

**Figure 2.** Credit-to-GDP gaps from CEE countries



Source: BIS data

**Figure 3.** Wage growth in the financial sector



Source: Eurostat

# 1. Motivation and main objectives

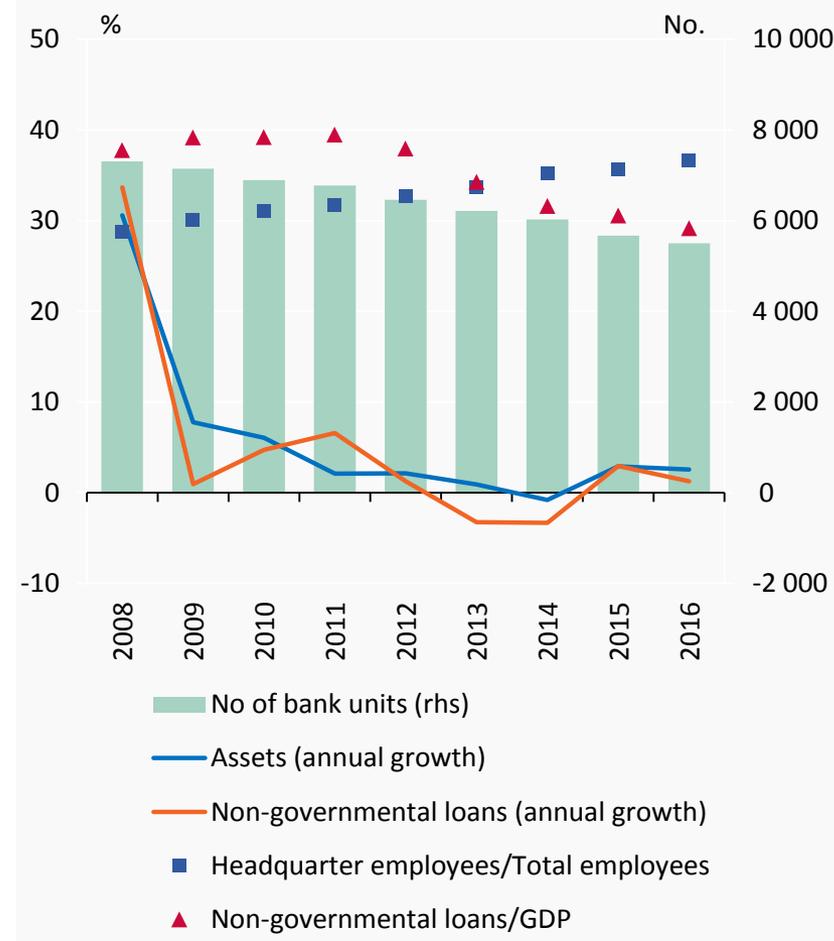
➔ **Romanian banking sector – rapid growth**  
of total indebtedness to GDP (from **19%** in 2000 to **60%** at the end of 2009)

➔ **Financial crisis** – significant drop in credit flow and a rise in NPL ratios ↔  
**restructuring** of the banking sector



- Decrease in number of **bank units** and **employees**
- **Mergers/acquisitions** in the banking sector
- Development of other cost-cutting methods → **digitisation** of banking services

Figure 4. Structural dynamics of the Romanian Banking sector



Source: NBR, NIS

# 1. Motivation and main objectives

➔ **Bank staff efficiency** in Romania - still **weak** against the background of low financial intermediation (one employee manages an average **EUR 1.7 million** against **EUR 15.1 million** EU-wide)

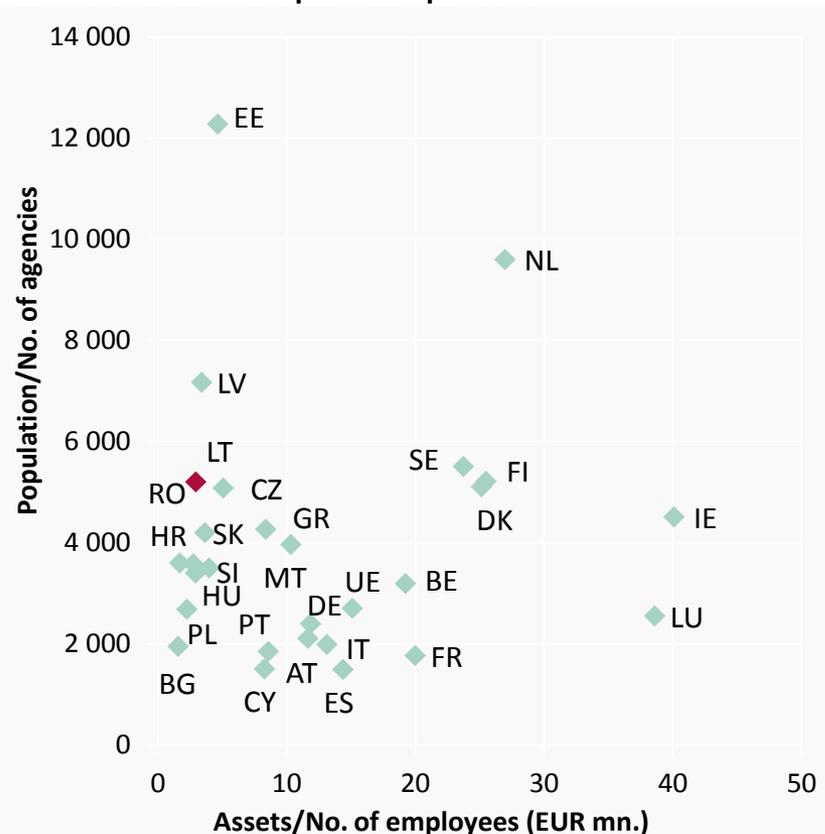
➔ A bank unit ↔ **3,600** inhabitants, compared with **2,700** in the EU:

- Medium density
- Focused on low-value assets
- Concentrated in the main cities

➔ **Staff costs to total expenses ratio - 47 percent** (compared to **52 percent** in the EU)

↔ positive impact on profitability

**Figure 5. Bank staff efficiency and customer attendance via bank branches – European comparisons**



Note: Data on Romania as of December 2016, other data as of December 2015.

Source: NBR Financial Stability Report

---

# Training Policy Survey conducted by the NBR

- main results -

---

## 2. Training Policy Survey conducted by the NBR

### → Training Policy Survey - 32 banks (98.6

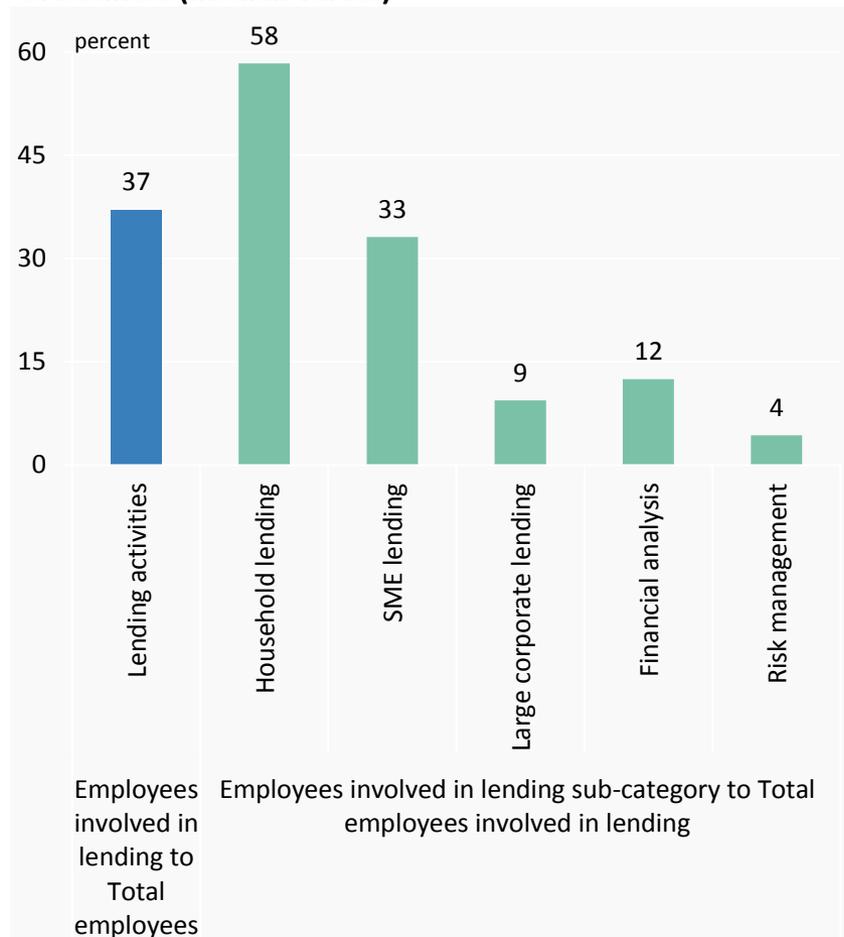
percent of total bank assets), assessing:

- employees' structure by line of business
- economic background or international Certification
- work experience
- wage and training policy

### → Main takeaways:

- Employees involved in **lending** – mostly Household (57%) and SMEs (34%)
- Financial Analysis and Risk Management – small number of employees
- Most employees have an **economic background** (73%) ↔ very low number of international certifications (<1%)

Figure 6. Breakdown of bank employees in Romania by line of business (median values)

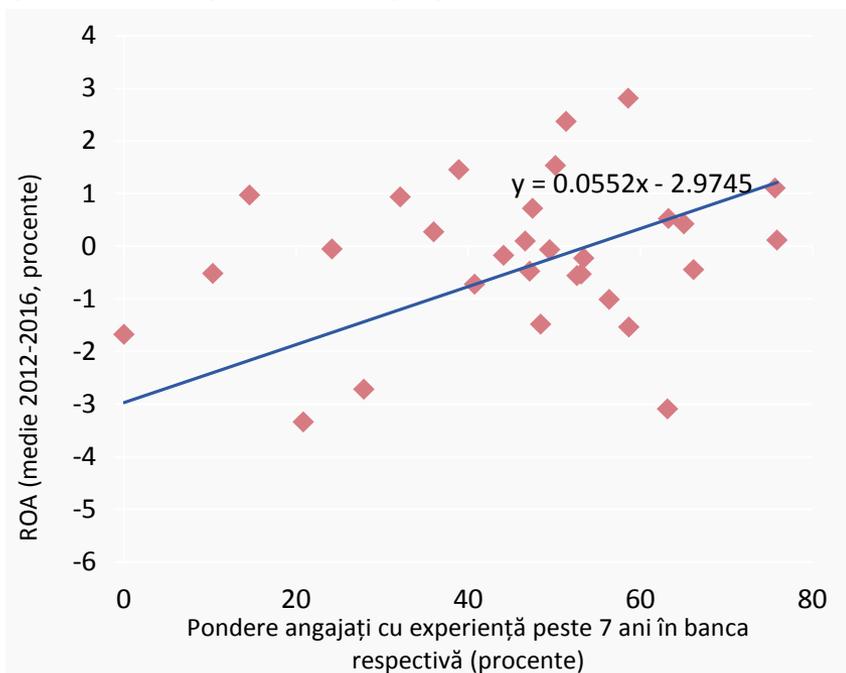


Source: NBR survey on the level of bank staff training, June 2016

## 2. Training Policy Survey conducted by the NBR

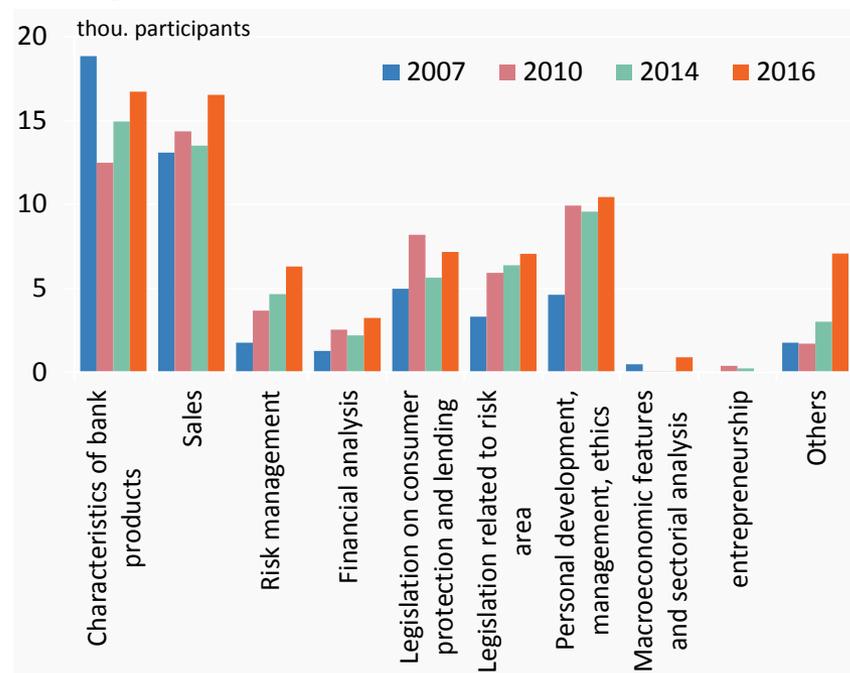
- ➔ **HR policy** – stimulate through financial rewards, promotions (74%) and training (58%)
- ➔ Focus mostly on bank products, sales, personal development or legal courses ↔ Constant and significant rise in **Risk management courses** between 2007-2016
- ➔ **Low importance** given to Financial Analysis and Macroeconomic and sectorial analysis

**Figure 7.** The relationship between profitability and the presence of experienced employees



Source: NBR survey on the level of bank staff training, June 2016

**Figure 8.** Types of courses offered to employees involved in lending



Source: NBR survey on the level of bank staff training, June 2016

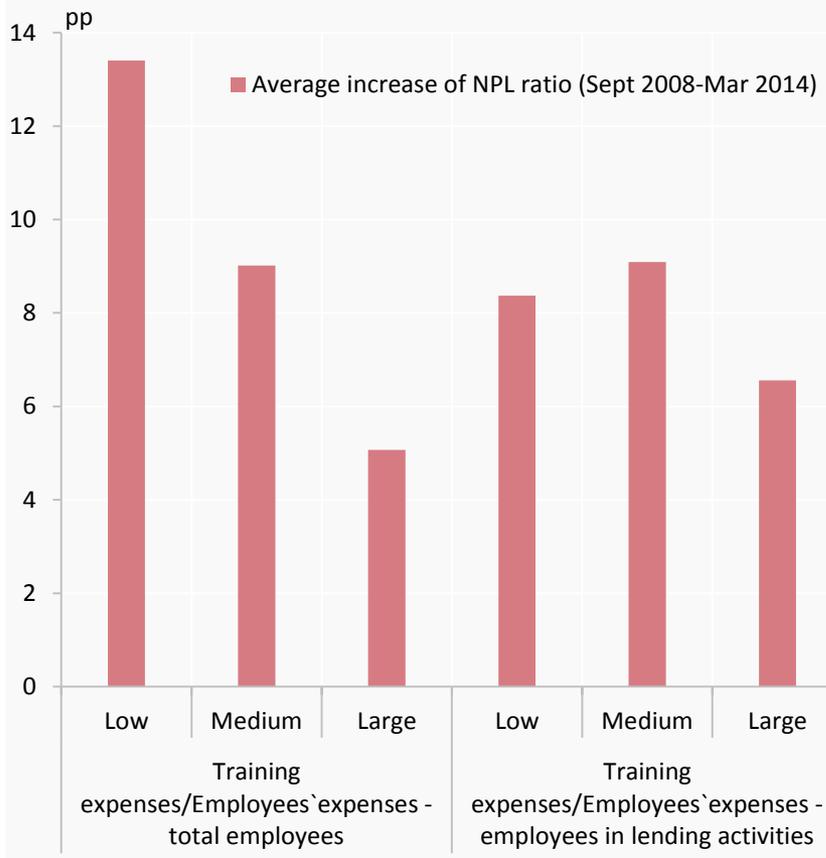
## 2. Training Policy Survey conducted by the NBR

- ➔ Most used method – **in-house training** provided by qualified personnel of the bank (more than 70% of respondents)
- ➔ Average annual training expenses per employee – relatively **low**, although **doubled in size** since 2007
- ➔ Enhancing **bank performance** – banks with **higher training costs** in the pre-crisis period ↔ lower increase in NPL ratios



Promoting a **risk management culture** and a higher **level and quality** of staff training – beneficial in the long term

**Figure 9.** The connection between the ratio of training expenses to staff costs in the pre-crisis period and the subsequent build-up of non-performing loans



Source: NBR survey on the level of bank staff training, June 2016

---

Measuring bank efficiency - impact of banking,  
macroeconomic and training policy indicators

---

# 3. Measuring banking sector efficiency

## Data Envelopment Approach (DEA)

- **Nonparametric** method used to empirically **measure productive efficiency** of decision making units (banks)
- Builds an *efficient frontier* based on empirical data and measures the “distance” of the other less efficient banks
- Formally – **linear programming**:

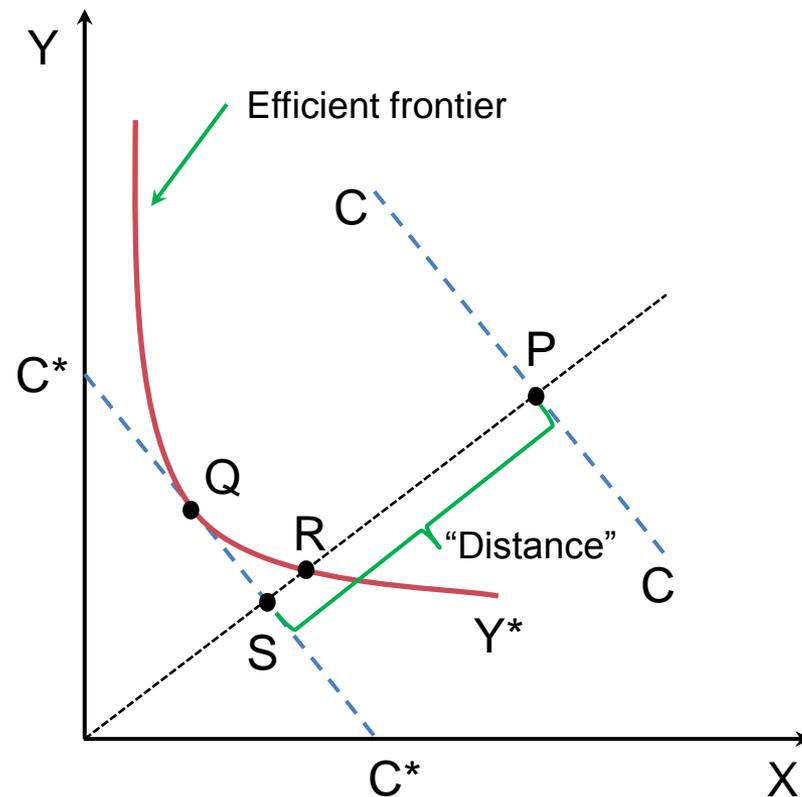
$$\min_{x,\lambda} C(y, w) = wx^*$$

subject to

$$X \geq X\lambda, \quad Y\lambda \geq y_0, \quad \lambda \geq 0$$

- *Cost efficiency* =  $C(y, w)/wx_0$

Figure 10. Schematic representation of cost efficiency



Source: Cooper et al. (2007)

### 3. Measuring banking sector efficiency

#### Advantages:

- Straightforward implementation
- Based on empirical (and not theoretical) functions
- Provides a relative ranking of efficiency between banks

#### Disadvantages:

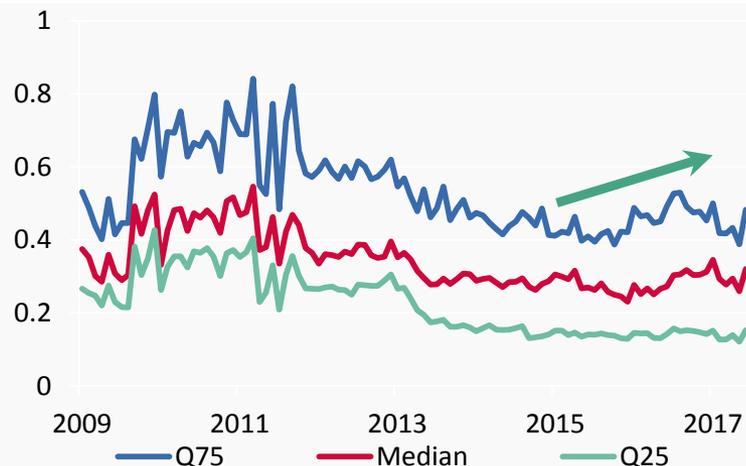
- Highly dependent on the dataset
- No. of inefficient banks increases with the expansion of the data set
- Inability to test for the best specification (expert judgement)

Figure 11. Balance sheet data used in the efficiency analysis

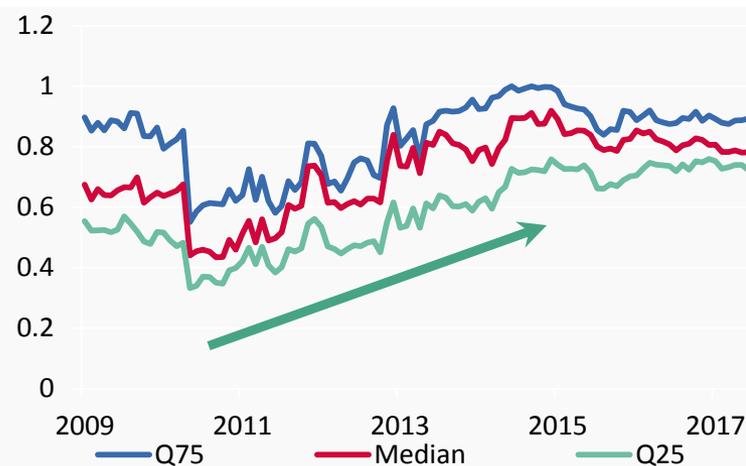


# 3. Measuring banking sector efficiency

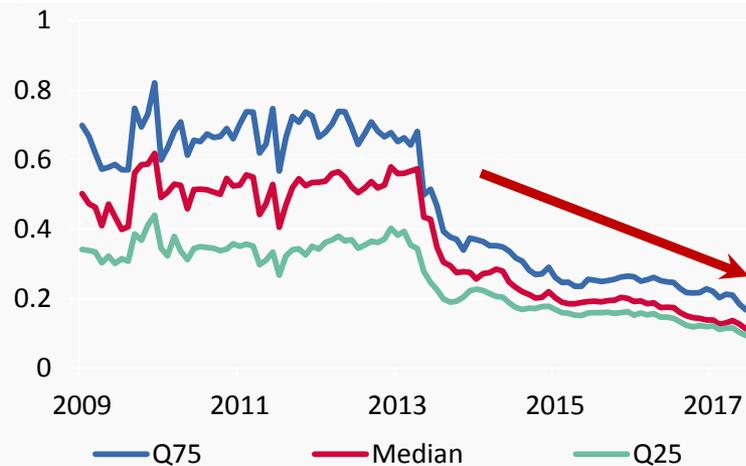
**Figure 11. Cost efficiency results (32 banks)**



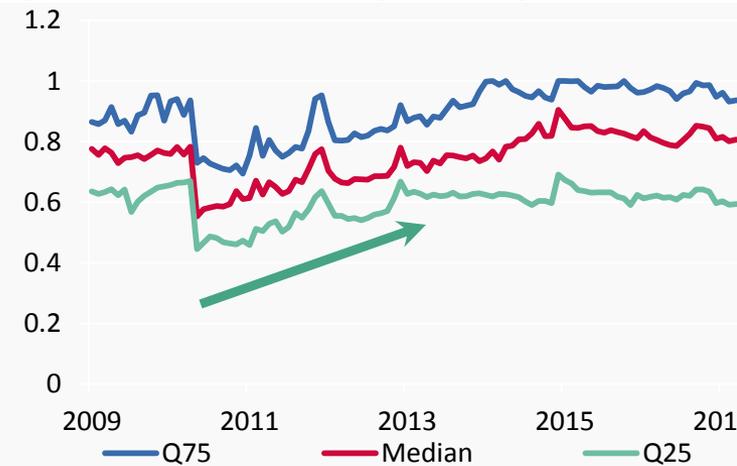
**Figure 12. Cost efficiency results (systemic banks)**



**Figure 13. Revenue efficiency results (32 banks)**



**Figure 14. Revenue efficiency results (systemic banks)**



Source: authors' estimation

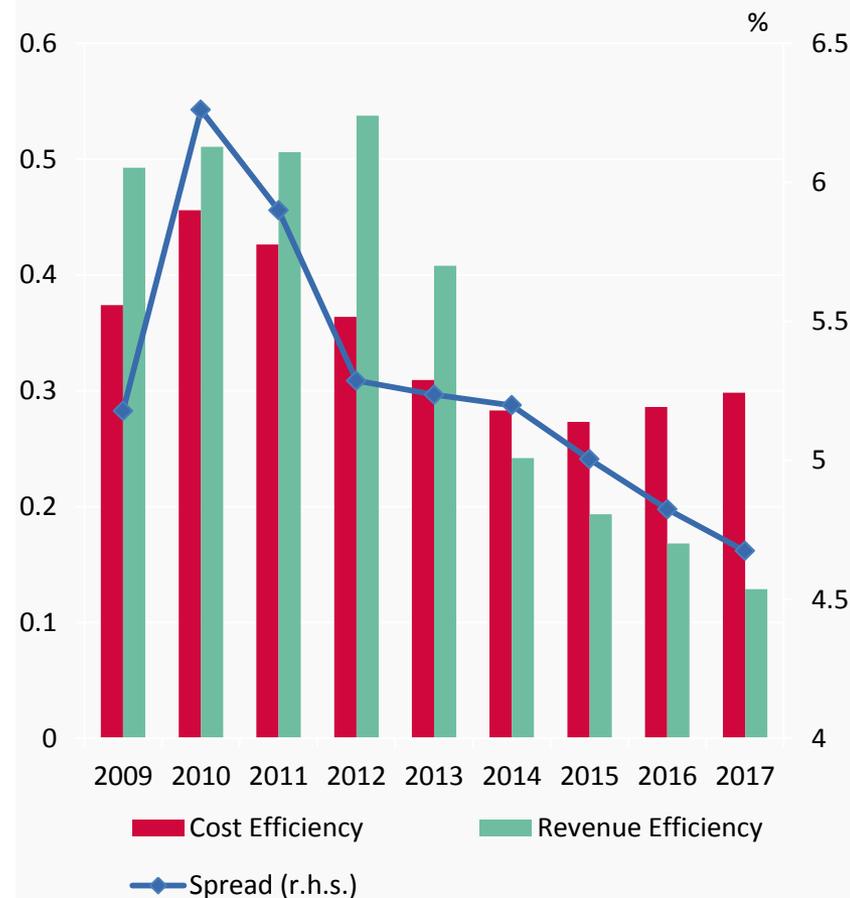
Source: authors' estimation

# 3. Measuring banking sector efficiency

## Uncovering the drivers of cost and revenue efficiency – a panel data approach

- Fundamental factors with impact on:
  - Cost efficiency
  - Revenue efficiency
  - Spreads between credits and deposits
- Panel OLS (Tobit and Fixed Effects) with:
  - **Banking sector indices** – Market share, LTD, Leverage, Diversification (Income from commissions to total loans), Bank Centralization (ratio of HQ employees to total employees), retail ratio (Household loans to total loans)
  - **Personnel indices** – Personnel expenditure to assets ratio, dummy variables for salary level, experience, training expenses (from the responses of banks to the NBR Survey)

Figure 15. Relationship between efficiency measures (Cost, Revenue and Spreads between credits and deposits)



Source: authors' estimation

# 3. Measuring banking sector efficiency

## Main results

- **Banks with higher leverage and LTD** register higher levels of cost and revenue efficiency
- **Higher market share** → higher revenue efficiency but lower cost efficiency (growing the size of the bank)
- **Centralization** (ratio of employees in headquarters to total employees) → more **expertise** in lending activities (higher revenue eff.), but generally implies **higher wages** (lower cost efficiency)
- Dummy variables for bank training → **experience** of staff (over 7 years) and **higher salary levels** in lending activities associated with **higher levels of efficiency**

**Table 1. Panel regressions results for efficiency indicators**

Variable	Cost Efficiency	Revenue Efficiency
	Coefficient (z-stat)	
Spread	0.002912 (1.546081)	0.002933* (1.773743)
LTD	0.044659*** (12.05758)	0.012493*** (24.05142)
Leverage	0.010054*** (3.713951)	0.00187*** (21.78645)
Market share	-0.612986*** (5.612125)	0.685626*** (-5.810449)
Bank Centralization	-0.117449*** (15.52635)	0.242536*** (-8.508734)
Retail Ratio	0.186712*** (3.50972)	0.069144*** (10.8704)
Training Exp. (dummy)	-0.097019*** (5.549102)	0.060041*** (-10.28977)
Experience (dummy)	0.111601*** (10.06138)	0.099027*** (13.00139)
Salary level (dummy)	0.185377*** (12.55472)	0.121298*** (22.07891)
No. of obs.	3264	3264

Note: \*\*\* denotes statistical significance at 1%, \*\* is at 5% and \* is at 10%

Source: authors' estimation

# 3. Measuring banking sector efficiency

## Main results

### ➔ Using spreads as an efficiency measure

- **Higher concentration** ➔ widening of spreads – lower efficiency of the banking sector
- **Higher Diversification** (income from commissions to core income) ➔ lower spreads, beneficial for financial intermediation
- **Retail ratio** ➔ concentrating lending to the retail sector – **higher margins** associated with increased spreads
- **Personnel expenses and wages of employees involved in the lending process** ➔ higher wages and overall expenses leads to a narrowing of spreads ➔ potentially signaling an **increase in overall banking activity efficiency**

Table 2. Panel regressions results for spreads

Variable	Spreads
	Coefficient (t-stat)
Concentration	36.1012*** (13.5269)
Diversification	-0.014603*** (-4.30108)
Leverage	0.061338*** (11.69719)
Personnel Exp.	-1.617040*** (-3.42232)
Retail Funding	-0.004818 (-1.009298)
Retail Ratio	0.062872*** (23.18418)
Salary (dummy)	0.337549*** (3.387895)
No. of obs.	3232

Note: \*\*\* denotes statistical significance at 1%, \*\* is at 5% and \* is at 10%

Source: authors' estimation

## 4. Conclusions

- **Rapid expansion** of the Romanian banking sector in the pre-crisis period → need for **optimization** and **efficient allocation** of both capital and human resources
- **Bank staff efficiency** in Romania → still weak – room to improve **through sustainable credit growth**, mainly focused on the NFC sector ↔ high financing potential
- **Training policy survey** → most employees involved in Household and SME lending, less in Financial Analysis and Risk Management; courses mostly focused on **Sales** and **Personal Development** ↔ **low importance** given to Financial Analysis and Macroeconomic and Sectorial Analysis
- **Enhancing bank performance** through high quality of human capital – banks with **higher training costs** in the pre-crisis period ↔ **lower increase in NPL ratios** by promoting a **risk management culture** and a **higher level and quality** of staff training
- **Cost and revenue efficiency** → decreased after the crisis, **upturn** seen in recent years through cost cutting, mergers/acquisitions and other restructuring measures
- **Panel and survey results** → **Higher level of staff experience** (over 7 years) and **higher salary levels in lending activities** associated with higher levels of efficiency

Thank you for your attention!