



**BUSINESS  
SCHOOL**

# **VLERICK POLICY PAPER SERIES**

**No. 6, JULY 2016**

**THE PERFORMANCE OF LARGE EU BANKS IN THE WAKE  
OF THE FINANCIAL CRISIS**

**MARION DUPIRE  
FREDDY VAN DEN SPIEGEL**

**THE PERFORMANCE OF LARGE EU  
BANKS IN THE WAKE OF THE  
FINANCIAL CRISIS**



## Content

---

- ✓ What is bank performance about?
- ✓ Identifying 50 top EU banks
- ✓ Performance since 2006
- ✓ Ranking banks
- ✓ The link with bank size

This paper attempts to provide an overview of the performance of 50 large EU banks in the wake of the financial crisis. Several questions are addressed for this purpose:

**What is bank performance about?** While it is quite easy to take a list of indicators, rank banks on this basis and identify best and worst performers, a more difficult normative question is actually to define what bank performance is really about. Many different dimensions of performance can indeed be considered. Is a bank performing well when it makes its customers happier? When it is more profitable? When its stock price is higher? When it takes less risk? Furthermore, when a bank performs well on one of these dimensions, does it mean that it performs well on the others? Therefore assessing the performance of banks in aggregate terms is quite challenging.

**What are the top 50 banks that best represent EU banking activity?** The European banking industry is quite diverse and complex. Building a relevant sample of 50 banks is a real challenge for different reasons: some countries should not be over- or under-represented; it is not always easy to delineate the thresholds of the banking industry, some entities have a banking activity while they are not banks; some banks were merged or founded after the crisis and should be analysed differently as the banks which survived after the crisis... We propose a rigorous selection of a sample of 50 banks that allows to derive relevant conclusions.

**How did banks' performance evolve since before the crisis?** We identify 4 key dimensions of bank performance which are profitability, risk, stock price evolution and customer confidence. We measure these dimensions based on different KPIs. Profitability is measured by the return on assets (ROA), the return on equity (ROE) and the cost-income ratio (CIR). Risk is captured by the loan-to-deposit ratio. Stock price evolution is measured based on end-of-year stock prices. Customer confidence is evaluated based on the growth rate of deposits. The results indicate that, since 2006, EU banks' profitability has decreased drastically but is relatively stable since 2011. Risk-taking is constantly declining since 2006. Customer confidence fell sharply between 2006 to 2009, is now relatively stable but still far from recovering its pre-crisis level. Stock prices fell down dramatically between 2006 and 2008 but are slowly increasing again since 2011.

**Who are the best and worst performers in the wake of the crisis?** Based on our sample of 50 large European banks, we aggregate all KPIs and identify best and worst performers for year 2014. It appears that large EU banks do not perform totally well or totally bad on each and every dimension of performance. As an illustration, our top 1 bank, based on aggregated KPIs, is the Swedish *Svenska Handelsbanken*: for this bank all performance indicators appear as relatively better than the rest of the sample, except one aspect: the risk indicator. On the other hand, the *Royal Bank of Scotland* is among the 10 banks with the worst performance while its risk level is actually lower than the average risk for the 10 best performers.

**Is there a link between bank size and performance?** Finally, we investigate the link between bank size and performance indicators. Our results suggest that the biggest banks in our sample are less profitable, but also less risky and have a better stock price evolution since before the crisis than the smallest banks in our sample.

## What is bank performance about?

How to assess the performance of a bank? Before moving into the assessment of EU banks, we provide a review of existing Key Performance Indicators (KPI) in the banking sector. Reviewing both academic and non-academic literature, we identify a list of relevant KPIs which can reasonably be used to measure the performance of large banks in the European Union. The performance of a bank has to be assessed across different dimensions. More specifically, 4 dimensions are identified: profitability, risk, stock price evolution and customer confidence. Specific indicators are used as proxies for each dimension. Profitability, stock value and customer confidence are considered as positive elements of performance, while risk is a negative element.

In this section, we review what key indicators can be used as proxies for these dimensions. Each dimension is reviewed hereafter in a separate paragraph. Other types of KPIs are also discussed.

We base our review on several recent publications from different stakeholders including think-tank research, bank research, academic research and public authority research. Firstly, the Centre for European Policy Studies (CEPS) publishes a Banking Business Models Monitor. With this research, Ayadi and De Groen provide an assessment of banks performance across different business models. We refer to this research as "CEPS Monitor". Secondly, we use typical input from an investment bank analytics which regularly produces reports on the performance of EU Banks. We refer to these publications as "Bank Analytics". Thirdly, we review the indicators used in the Vlerick research performed by André Thibeault and Thomas Matthys on the future of the Belgian banking sector, in collaboration with KPMG. This research programme consists in a series of three reports (2012, 2013 and 2014) focusing on the Belgian banking industry. The authors notably investigate what KPIs are most relevant given the recent changes of the banking environment in Europe. We refer to this research as "Vlerick-KPMG". Fourthly, we use insights provided by the European Central Bank (2010) on the measurement of bank performance.

Table 1 summarizes all different indicators that are used in the mentioned studies. The table gives a overview on which measurement techniques are more or less used and from which type of stakeholders (think tanks, banks, academia, authorities).

**Table 1:** Review of KPIs used in existing research from various stakeholders

	<b>Profitability</b>	<b>Risk</b>	<b>Stock value</b>	<b>Customer confidence</b>	<b>Other KPIs</b>
<b>CEPS Monitor</b> <i>(think tank research)</i>	ROA ROE CIR	Z-score RWA % non-trading assets CDS spread Stock volatility Tier-1 capital ratio % tangible assets NSFR			
<b>Bank Analytics</b> <i>(bank research)</i>	ROA ROE CIR Net Interest Margin	Loan loss ratio NPL ratio RWA/assets RWA/loans			
<b>Vlerick-KPMG</b> <b>(2012, 2013, 2014)</b> <i>(academic research)</i>	CIR ROE ROA AY <sup>1</sup> and PM <sup>2</sup>	Leverage <sup>3</sup> Loan-to-Deposit ratio Liquidity and capital ratios Standard deviation of ROE		Customer focus # of clients	IT integration

<sup>1</sup> Total revenue / total assets

<sup>2</sup> Net profit / total revenue

<sup>3</sup> Total assets / equity

	<b>Profitability</b>	<b>Risk</b>	<b>Stock value</b>	<b>Customer confidence</b>	<b>Other KPIs</b>
<b>ECB report</b> <i>(public authority research)</i>	ROE RAROC	Leverage Loan-to-deposit ratio Share of short-term funding Maturity profile Earnings volatility	Dividend Discount Models (DDM) Multi-stage Discounted Cash-Flow (DCF)	Growth rate of deposits Growth rate of loans	Quality of assets Quality of banks capital Sustainability of earnings Intangible assets

## Profitability

Profitability is the most obvious dimension of bank performance. Profitability reflects the capacity of the bank to generate revenues out of shareholders' equity (return on equity), it can further be decomposed into operational performance (how much revenue is generated out of the available assets) and efficiency (how much revenue is generated out of the incurred costs).

Several profitability indicators are proposed in the existing literature. ROE is the classic performance measure but reflects only a part of the profitability story and more advanced profitability measures are also needed. ROE is most frequently analysed together with the Return on Assets (ROA), and the Cost-to-Income Ratio (CIR). ROE can also be broken down into ROA and Leverage. In Vlerick-KPMG (2012), ROA is further split into Asset Yield (AY) and Profit Margin (PM). Research from the ECB also emphasizes what complementary approaches to ROE should be used: earnings, efficiency, risk-taking and leverage are identified as the main drivers of banks' profitability. One important limit of ROE is that it is not risk-sensitive, another is that it fails to take into account long-term effects. To properly assess the performance of a bank, the ECB recommends to analyse not only ROE but also risk-adjusted types of indicators such as RAROC, the quality of assets, the funding capacity and the risk associated to the production of value. Bank Analytics also exploits the Net Interest Margin.

In this research, we use ROE, ROA and CIR as indicators of profitability. As we can see on Table 1, these indicators indeed arise as the most frequently used: ROE appears in all of the mentioned studies, ROA and CIR in 3 out of the 4 mentioned studies, while other profitability indicators (Net Interest Margin, Asset Yield, Profit Margin and RAROC) are used in only one study.

## Risk

There is a theoretical link between risk and profitability in the long term: if a banks takes too much risk, it is likely to harm its long-term profitability. As a consequence, good profitability at one point in time may not be associated to good profitability in the long-term because of risky behaviour. This is why it is important to consider not only profitability but also risk when assessing the banks' performance. In contrast with indicators of profitability, risk is a negative indicator of performance: better performing firms take less risk, and conversely.

A very diverse set of indicators are used in the existing research to proxy for risk. Z-score<sup>4</sup>, Risk-Weighted Assets (RWA), the percentage of non-trading assets, CDS spread, stock returns volatility, Tier-1 capital ratio, the percentage of tangible assets and the Net Stable Funding Ratio (NSFR) are used in the CEPS Monitor; Loan Loss ratio, Non-Performing Loan ratio (NPL) and RWA ratios are used in Bank Analytics. Loan-to-Deposit, liquidity and capital ratios arise in the Vlerick-KPMG survey. In Vlerick-KPMG (2012), a risk-return trade-off is evaluated with a plot of the standard deviation of the ROE (x-axis) to average ROE (y-axis). The ECB emphasises that in the wake of the crisis, market participants are

---

<sup>4</sup> Z-score is an indicator of the risk of failure or the distance to default. The details of its computation are provided in Appendix II of the CEPS monitor (2014).

now likely to take a closer look and the liquidity and funding structure of banks. This includes measures such as loan-to-deposit ratio, share of short-term funding and maturities profile.

Following the logic of taking the most frequently used indicator of risk, one of the indicators that appear the most in existing studies is the loan-to-deposit ratio. Because of data availability issues, the present paper will only use the loan-to-deposit ratio as risk indicator. For further research it would be interesting to extend the measurement of risk with other indicators including leverage, risk-weighted assets and volatility of revenues (proxied by stock volatility in the CEPS monitor, earnings volatility in the ECB report).

The relevance of using the loan-to-deposit ratio is particularly emphasized in the Vlerick-KPMG 2013 survey on banks' KPIs. The survey investigates what KPIs are most relevant given the recent changes of the banking environment in Europe based on interviews with C-level executives of 15 financial institutions that are active on the Belgian market. As argued by the authors, the loan-to-deposit ratio is a central indicator of *reshaping the business portfolio to fit assets and risk appetite*, mentioned in 21% of the interviews. Nevertheless we acknowledge that this ratio also presents important limits and will be complemented in further research.

## Stock value

One of the important recommendations of the ECB report on the measurement of bank performance (2010) was that a good performance assessment framework should incorporate forward-looking indicators. A forward-looking approach is indeed necessary given the fact that most profitability and risk indicators assess performance at one point in time. One reason is that, especially after a crisis, banks initiate many actions (e.g. restructuring) to recover a position where they generate long term value. While these actions are likely to harm ROE in the short-term, they are also likely to generate better performance in the long-term. Conversely, some banks may decide to cut staff expenses in times of a crisis, which temporarily improves efficiency ratios but can be unprofitable in the long-run, given the importance of banking capital in the banking industry. Therefore, a forward-looking approach is a necessary condition to the proper assessment of bank performance, and especially in times of crisis when banks often need to reduce their short-term profitability at the benefit of long-term performance.

One forward-looking indicator of a firm's performance is the evolution of its stock price. According to the theory of financial markets' efficiency, stock prices indeed account for the anticipation of the financial market on the future activity of the firm. When the stock price increases, it can be interpreted as the market anticipating that the firm is going to improve its performance, and conversely. In the present study, we use the stock price evolution between 2006 (before the crisis) and 2013 as a proxy for how the markets perceives the future performance of the bank compared to the past.

## Customer confidence

In the ECB report, one KPI that is further recommended is customer confidence. Relevant proxies notably include the growth rate of deposits and loans. Customer confidence is a very relevant KPI since it focuses on a rather non-financial, intangible performance, which is a very important component of the banking business. As emphasized in ECB (2010), the

banking sector is indeed a knowledge-intensive industry, characterized by a very high level of complexity, in which intangibles are therefore an important driver of performance.

The more efficient a bank will be at handling these non financial aspects, the more it is likely to gain customer confidence. In the present research, we therefore account for non-financial performance of banks by looking at customer confidence as proxied by the growth rate of deposits. An increase in total deposits of a bank is thus considered as increased customer confidence in the credit institution. Another argument in support of the use of customer confidence as a key performance indicator is the growing importance of customer centricity in banks' business models.

### Choice of relevant KPIs – Summary and discussion

In order to identify which KPIs are relevant to the purpose of this research, we need to define which aspect of banks' performance is most relevant. Indeed, as explained in ECB (2010), various stakeholders may emphasise on different aspects of performance and, when looking at ways of measuring banks, analysts should identify the specific performance aspects that meet their needs.

This research aims at assessing the performance of the biggest European banks in the wake of the financial crisis. We therefore need to take into account banks performance in its different dimensions. The indicators that we use here also need to be measurable on a systematic and objective basis, which notably excludes qualitative indicators.

In summary, we will focus on the following indicators:

- (1) Profitability: Return on Equity, Return on Assets, Cost-to-Income ratio
- (2) Risk: loan-to-deposit ratio
- (3) Stock price evolution, compared to 2006
- (4) Customer confidence: growth rate of deposits

## Identifying 50 top EU banks

### Sample selection

We select 50 top EU banks as of year 2014, based on their total assets recorded in Bankscope for that year. We also apply several additional selection criteria, as summarized in Table 2.

**Table 2:** Sample selection

Selection criteria	Number of observations	
	included	excluded
All Bankscope universe in year 2014	20,708	
Only at C2 consolidation level ( <i>statement of a mother bank integrating the statements of its controlled subsidiaries or branches with an unconsolidated companion</i> )	2,406	18,302
Only active banks ( <i>as opposed to bankruptcy, dissolved, in liquidation, inactive, unknown</i> )	2,388	18
Only EU15 countries	633	1,755
Exclude non-banking entities:		
<ul style="list-style-type: none"> <li><i>Include:</i> Bank Holding &amp; Holding Companies, Commercial Banks, Cooperative Banks, Investment Banks, Islamic Banks, Private Banking &amp; Asset Management Company, Real Estate and Mortgage Banks, Savings Banks</li> </ul>	511	
<ul style="list-style-type: none"> <li><i>Exclude:</i> Central Banks, Clearing Institution &amp; Custody, Finance companies (credit card, factoring &amp; leasing), Group Finance Companies, Investment &amp; Trust Corporations, Micro-Financing Institutions, Other non banking credit institutions, Securities Firm, Specialized governmental Credit Institution</li> </ul>		122
Rank firms by their total assets (all converted in \$) and select the first 50 banks, applying the following rules:	50	
<ul style="list-style-type: none"> <li>Delete when the statement unit is thousands (instead of millions)</li> </ul>		28
<ul style="list-style-type: none"> <li>When 2 banks belong to the same group, keep the holding entity only</li> </ul>		35
<ul style="list-style-type: none"> <li>Maximum of 5 banks per country</li> </ul>		40
<ul style="list-style-type: none"> <li>Annual reports should be available back until 2006</li> </ul>		9
<ul style="list-style-type: none"> <li>The bank is listed in an EU country but is not an EU bank</li> </ul>		1
<ul style="list-style-type: none"> <li>The bank uses different accounting standards than IFRS</li> </ul>		1
<ul style="list-style-type: none"> <li>The bank should not be merged or founded after 2006</li> </ul>		11

### Sample description

As we can see on Table 2, extracting all the banks recorded in Bankscope for year 2014 lead to a total of 20,708 observations. After filtering out on consolidation level and status, we had 2,388 banks. Then, we restricted our sample to only include banks from EU15 countries. The reason for this is that we want to make sure that some countries are not over- or under- represented in our sample. Given that we limit our number of observations to 50, accounting for all banks in EU27 would lead to a very high heterogeneity in the number of observations per country. For that same reason, we also restrict our sample to have no more than 5 banks per country, otherwise we would indeed end up with over-represented countries such as the UK or France. All other selection criteria were applied in order to have a sample that accurately represents the landscape of large EU banks and that provide sufficient data availability to make relevant statistical analyses. Appendix 1 provides the full list of banks included in the analysis.

Figures 1 to 3 provide a description of the sample.

**Figure 1:**

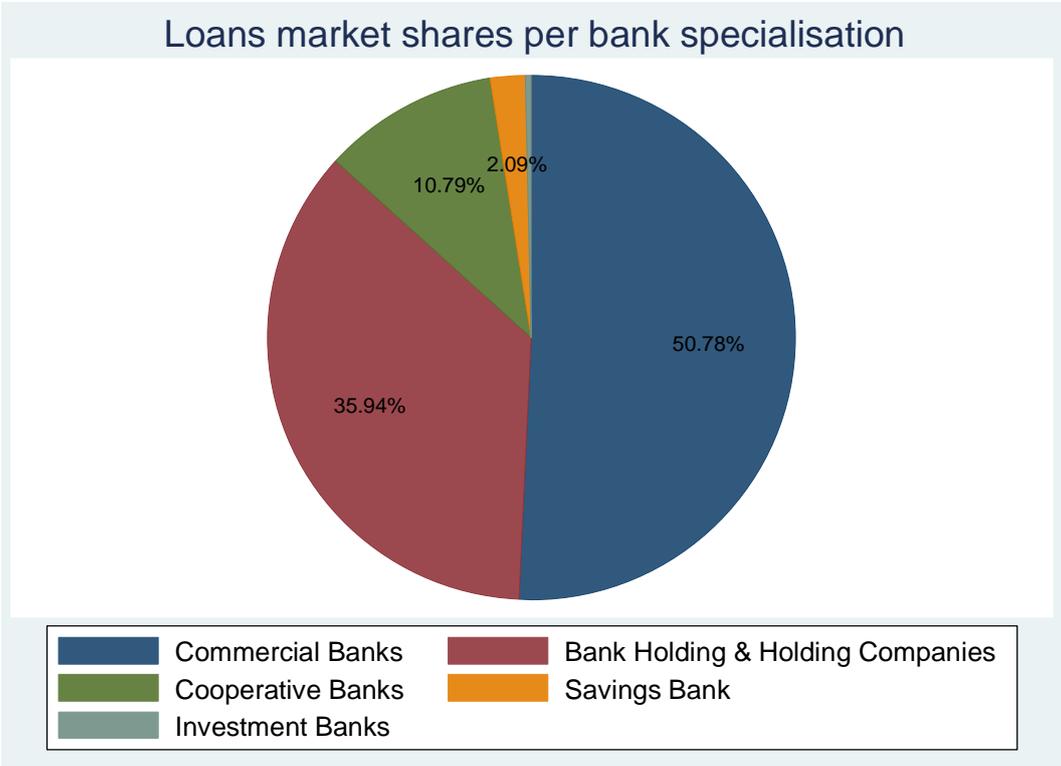
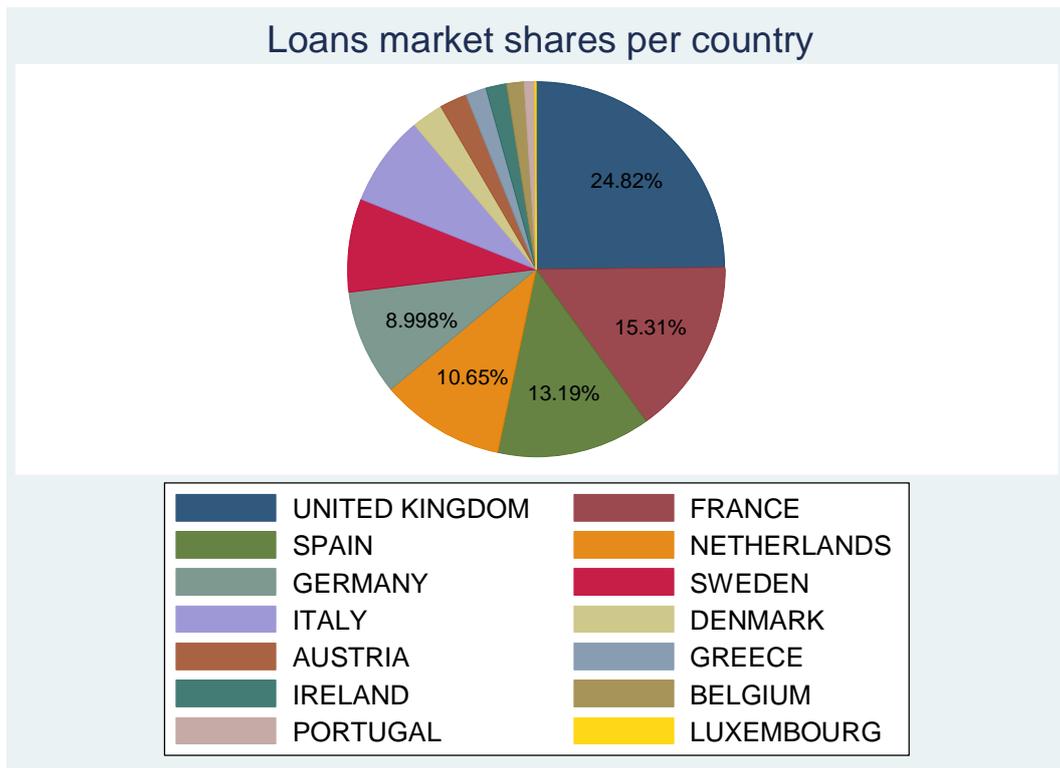
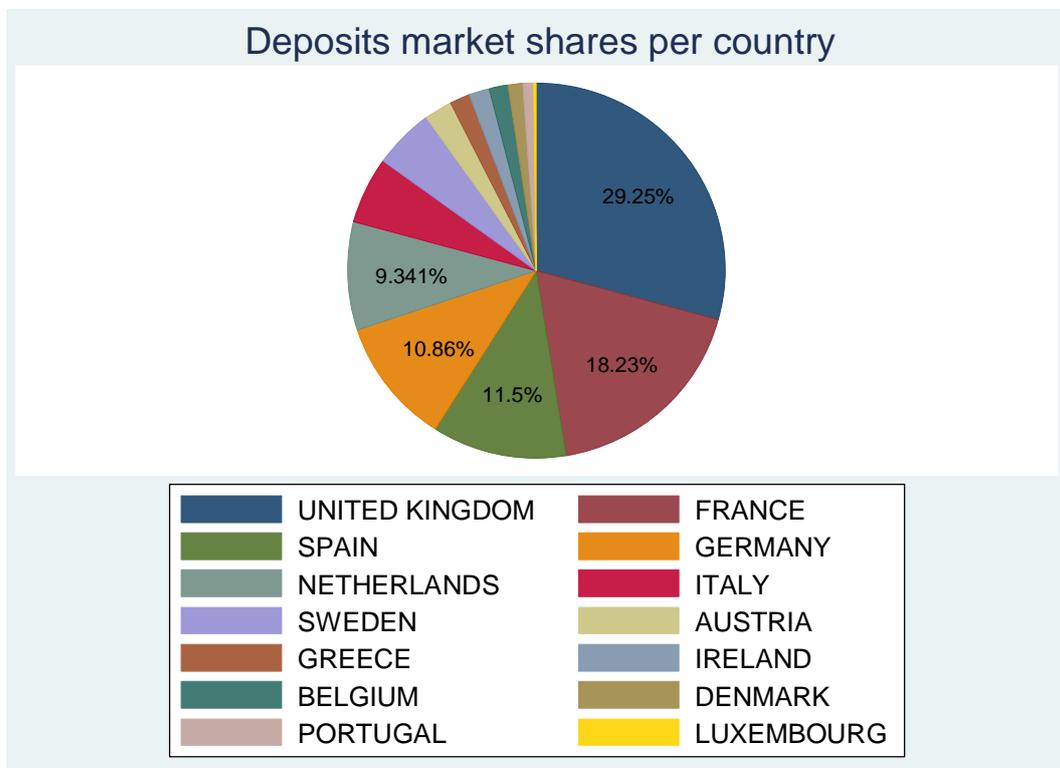


Figure 1 reports the loans market share per bank specialisation. We do not report here the same figure for deposits market shares because it is very similar. The figure shows that a vast majority of the banking activity analysed in this paper is captured by commercial banks and bank holding & holding companies. Cooperative, savings and investment banks represent a small fraction of our sample.

**Figure 2:**



**Figure 3:**



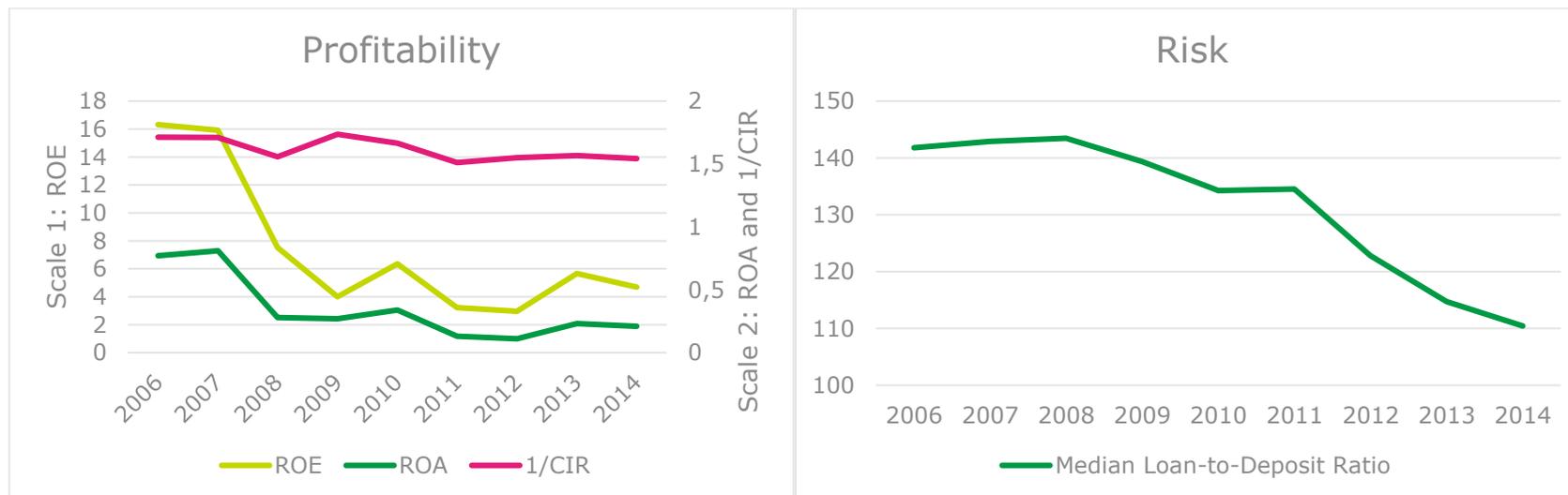
Figures 2 and 3 describes how the banking activity of our sample is shared across EU countries. Here we report both the loans' and deposits' market shares, since they differ significantly from one another. Nevertheless, in both figures the majority of the activity is captured by three countries: UK, France and Spain. Germany, Netherlands, Italy and Sweden also take an important part of the cake, while Austria, Greece, Ireland, Belgium, Denmark, Portugal and Luxembourg have much smaller market shares.

## Performance since 2006

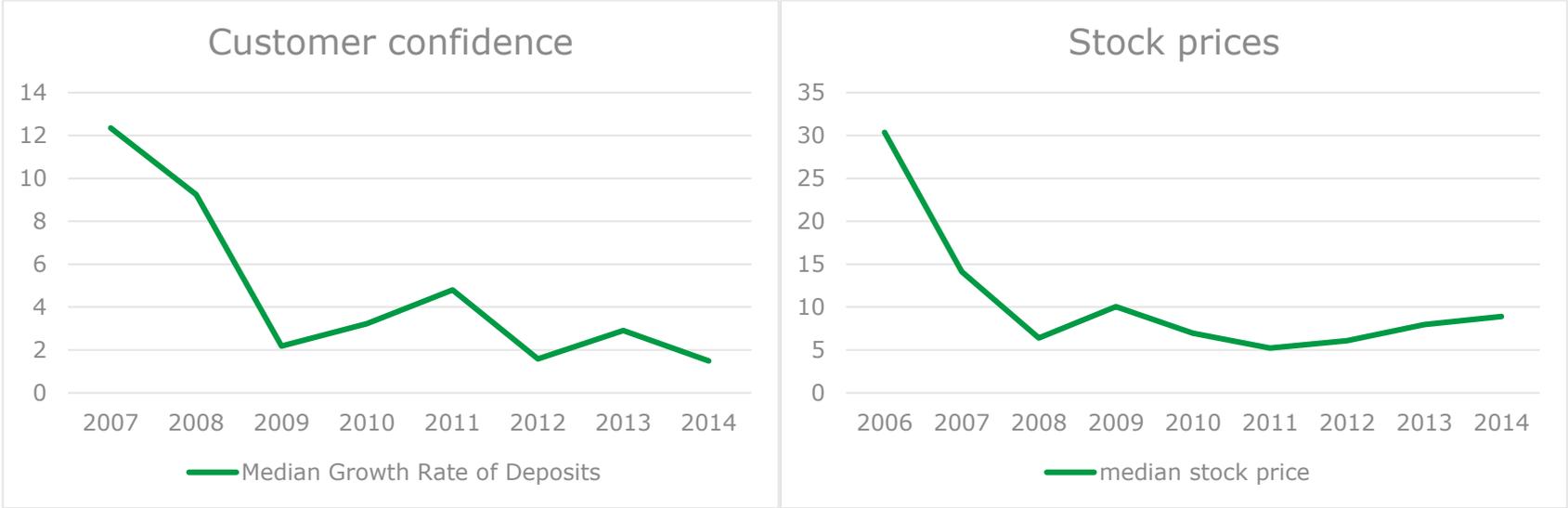
Table 3 provides an overview of the evolution of banks' performance since 2006 across all the Key Performance Indicators identified earlier in the paper. For more details on the definition of each variable, please refer to Appendix 2. As we can observe, All three indicators of profitability (ROE, ROA and CIR) indicates a clear decline since 2006. The situation appears as relatively more stable since 2009 but it is still fluctuating and far from the pre-crisis profitability levels. On the other hand, risk has been declining continuously since 2006. Overall the combination of profitability and risk evolution could actually signal that, in the post-crisis period, banks are moving progressively towards a more long-term approach with lower levels of short-term profitability combined with less risk-taking.

Nevertheless, the customer confidence has still not recovered, our results suggest that it fell dramatically with the crisis and never picked itself up again. In contrast, stock prices are starting to recover slowly, after a sharp decrease in 2008. This suggests that, although customers still do not manifest any significant gain of trust, financial markets seem to have positive expectations for the future of banks.

**Table 3 (1): KPI evolution since 2006**



**Table 3 (2):** KPI evolution since 2006



## Ranking banks

### Method

We rescale each KPI in order to get a value, over the whole sample, that is between 0 and 1, based on the following formula:

$$rescaled\_KPI_{i,j} = \frac{KPI_{i,j} - min_j}{max_j - min_j}$$

Where  $i$  indexes the observation (one observation per bank) and  $j$  indexes the KPI (successively ROE, ROA, CIR...etc.);  $KPI_{i,j}$  is the value of  $KPI_j$  for bank  $i$ ;  $min_j$  is the minimum value for  $KPI_j$  over the whole sample, and  $max_j$  is the maximum value of  $KPI_j$  over the whole sample;  $rescaled\_KPI_{i,j}$  is the rescaled value of  $KPI_j$  such that the all values of rescaled KPIs are equal to a number between 0 and 1, 1 referring to the bank with the highest value for  $KPI_j$  in the sample and 0 to the bank with the lowest value.

Once KPIs are all rescaled between 0 and 1, we first compute the average profitability score by simply computing the average between rescaled values for ROA, ROE and CIR. Then, we compute an average score as the mean value over the 4 indicators: of rescaled profitability, rescaled risk (loan-to-deposit, treated as a negative indicator of performance), rescaled stock evolution and rescaled deposits growth, such as:

$$score_i = \frac{rescaled\ profitability_i + rescaled\ risk_i + rescaled\ stock\ evolution_i + rescaled\ deposits\ growth_i}{4}$$

where:

$$rescaled\ profitability_i = \frac{rescaled\ ROA_i + rescaled\ ROE_i + (1 - rescaled\ CIR_i)}{3}$$

and:

$$rescaled\ risk_i = 1 - rescaled\ loan\_to\_deposit_i$$

For some observations, the *stock price evolution* is unavailable either because the bank is not listed, or because of missing data. When this is the case, we simply exclude *stock price evolution* from the numerator and divide the sum of KPIs by 3 instead of 4.

For each bank, we obtain a score between 0 and 1, representing the aggregate performance across the four investigated dimensions, being profitability, risk, stock price evolution and customer confidence (deposits growth). Given the scaling scheme described above, a high score (close or equal to 1) corresponds to better performance and a low score (close or equal to 0) corresponds to poorer performance. To obtain a ranking of banks, we simply rank those scores in descending order such that top performers are ranked first and bad performers are ranked last.

## Descriptive statistics

Before moving to the lists of top and worst performers, this section presents some descriptive statistics on the different variables used in the analysis. Table 4 provides the means, medians, standard deviations, minimum and maximum values for each variable in years 2014, compared to year 2013. In this table, the variables are not yet rescaled between 0 and 1.

**Table 4:** Descriptive statistics 2014 compared to 2013

<b>Year 2014</b>	Obs	Mean	Median	St. Dev.	Min.	Max.
ROA	50	0,13	0,21	0,66	-2,8	0,95
ROE	50	2,04	4,70	14,92	-88	14,93
Cost to Income Ratio (%)	49	65,82	64,83	18,89	40,92	135,92
Loan to Deposit Ratio (%)	50	126,59	110,43	47,66	40,10	265,83
Stock price evolution (since 2006) (%)	36	-60,87	-67,32	35,52	-99,70	77,10
Growth rate of deposits (%)	50	3,04	1,49	7,10	-14,50	25,01

<b>Year 2013</b>	Obs	Mean	Median	St. Dev.	Min.	Max.
ROA	50	0,25	0,23	0,93	-1,74	4,43
ROE	50	4,78	5,66	20,22	-69	81,89
Cost to Income Ratio (%)	49	67,75	63,82	17,33	45,19	119,44
Loan to Deposit Ratio (%)	50	130,60	114,72	55,94	36,13	380,08
Stock price evolution (since 2006) (%)	36	-61,85	-66,48	31,92	-99,78	52,66
Growth rate of deposits (%)	50	3,21	2,90	14,36	-55,09	50,68

First, when we compare means and medians, we observe that the sample is pulled by some extreme values. Median ROA & ROE for 2014 are twice bigger than their means, indicating the presence of small values pulling the means down. This observation looks quite specific to year 2014, compared to year 2013 where we do not observe such a big difference between means and medians. In 2014 other means also seem to be pulled by worst performers, except the deposits' growth variable, where the median is much smaller than the mean suggesting that average customer confidence is pulled up by best performers. It is also interesting to notice that in general the observed values for each variable are spread over a rather wide scale, for example the stock price evolution since before the crisis go

from -99% to +52% in 2014. This heterogeneity provides a good base for the statistical analysis.

### Best and worst performers

Table 5 provides the list of best and worst performing banks based on the identified KPIs, using the ranking method described above. Panel A of Table 5 presents the list of banks with the best performance score, while Panel B provides the results for worst performing banks. When we compare the average KPIs between both panels, we consistently observe that best performers (Panel A) have lower cost-income ratio, lower loan-to-deposit ratio, and higher ROA, higher ROE, higher stock evolution, higher deposits growth than worst performers (Panel B).

Top 10 performers include 2 Swedish banks and 2 French banks. Remarkably, 3 of the bottom 10 are Italian, 2 are from the UK and 2 others from Greece.

The first bank in our ranking appears to be Svenska Handelsbanken although this bank does not show a very good performance in terms of risk. Its loan-to-deposit ratio is indeed quite high, even higher than the average loan-to-deposit for worst performers. This result may suggest that the bank shows good short-term performance at the expense of the long-run with a higher level of risk-taking. Similarly, the Royal Bank of Scotland appears in the bottom 10 while its risk level is actually better than the average of the top 10.

It is also interesting to observe that in some cases, one indicator is pulling the position of a bank in the top performers, while its other indicators are actually not that impressive. As an illustration, BNP Paribas appears in the top 10, while only the customer confidence element really overperforms. Reversely, Medio Banca appears in the bottom 10 while only the risk indicator really underperforms compared to its peers.

As we can see from Table 5, it does not seem to be the case that banks perform the same way on all KPIs. Most frequently, banks show good performance on some dimensions and less good performance on some others. This result emphasizes the importance of considering the performance of banks very carefully, depending on the performance indicators that are selected. Our list of best and worst performing banks therefore has to be handled with caution, top performing banks may show poor performance on some dimensions and banks with overall lower performance may actually perform very well on some KPIs. The most important result that we can get from this table is that bank performance is multi-dimensional and the notions of "best performing bank" or "worst performing bank" in aggregate terms is actually not very relevant since each dimension should rather be considered separately.

**Table 5:** List of banks with highest and lowest performance for year 2014

Panel A: list of the 10 banks with the highest aggregate performance

<b>NAME</b>	<b>Country</b>	<b>ROA</b>	<b>ROE</b>	<b>CIR (%)</b>	<b>L/D (%)</b>	<b>Stock evolution (%)</b>	<b>Deposits' growth (%)</b>
Svenska Handelsbanken	SWEDEN	0,57	12,75	45,22	174,54	77,10	25,01
Banque et Caisse d'Epargne de l'Etat Luxembourg	LUXEMBOURG	0,67	6,98	46,69	73,05		0,92
La Banque Postale	FRANCE	0,34	7,10	82,36	40,10		1,23
Banco Bilbao Vizcaya Argentaria SA	SPAIN	0,51	6,41	50,95	111,94		8,00
SNS Bank N.V.	NETHERLANDS	0,21	5,45	52,23	114,34		5,25
BNP Paribas	FRANCE	0,03	0,55	67,72	102,93	-28,33	16,17
BAWAG P.S.K. AG	AUSTRIA	0,95	12,93	54,40	103,05		-3,99
DZ Bank AG	GERMANY	0,55	13,36	49,90	124,61		-2,02
KBC Bank NV	BELGIUM	0,70	11,46	57,62	95,30	-49,95	6,30
Skandinaviska Enskilda Banken AB	SWEDEN	0,75	14,93	47,18	136,56	-54,23	12,12
<b>Average</b>		<b>0,53</b>	<b>9,19</b>	<b>55,43</b>	<b>107,64</b>	<b>-13,85</b>	<b>6,90</b>

Panel B: List of the 10 banks with the lowest performance

<b>NAME</b>	<b>Country</b>	<b>ROA</b>	<b>ROE</b>	<b>CIR (%)</b>	<b>L/D (%)</b>	<b>Stock evolution (%)</b>	<b>Deposits' growth (%)</b>
Credit Suisse International	UNITED KINGDOM	-0,19	-4,06	135,92	158,46	-70,58	-11,11
Banca Monte dei Paschi di Siena SpA	ITALY	-2,80	-88,01	72,38	160,49	-90,42	6,49
Royal Bank of Scotland Group Plc	UNITED KINGDOM	-0,26	-4,54	89,34	94,34	-80,21	-14,50
Permanent TSB Plc	IRELAND	-0,28	-4,37	126,30	146,76	-99,70	7,09
Piraeus Bank SA	GREECE	-2,18	-24,86	61,08	104,45	-96,27	0,82
Unione di Banche Italiane Scpa	ITALY	-0,57	-6,53	65,29	185,32	-71,37	2,17
Danske Bank A/S	DENMARK	0,12	2,57	55,10	207,53	-33,31	-3,20
Mediobanca SpA	ITALY	0,64	6,20	40,92	208,59	-62,14	0,41
Alpha Bank AE	GREECE	-0,45	-4,10	64,83	116,31	-97,96	2,17
Banco Comercial Português	PORTUGAL	-0,15	-2,82	56,26	107,80	-97,65	1,76
<b>Average</b>		<b>-0,61</b>	<b>-13,05</b>	<b>76,74</b>	<b>149,01</b>	<b>-79,96</b>	<b>-0,79</b>

**Table 6:** The link with bank size, t-tests of difference in means  
 Comparison of the average size (total assets) of worst and best performers

<i>Banks ranked in...</i>	<b>(1)</b> <b>Worst performers</b>	<b>(2)</b> <b>Best performers</b>	<b>(1)-(2)</b> <b>Difference in means</b>	<b>p-value</b>	<b>level of significance</b>
Aggregate performance	355.276,40	517.338,10	-162.061,70	0,285	
Profitability	512.743,20	271.536,90	392.140	0,168	*
Risk	202.806	1.217.939	-1.015.133	0,011	***
Stock price evolution	251.726,10	864.056,10	-612.330,00	0,038	***
Customer confidence	701.037,60	460.887,80	240.149,80	0,234	

\*, \*\* and \*\*\* stand for 20%, 10% and 5% levels of significance

## The link with bank size

Table 6 provides the results of t-test of difference in means between subsamples of best and worst performers. More specifically, we investigate whether the average size of best performers is significantly higher (or lower) than worst performers.

In this table, in contrast to Table 5, we consider separately each KPI and compute separate rankings for each indicator. Indeed, as we saw in the analysis of Table 5, it seems that banks do not generally perform totally good or totally bad on each and every KPI. Most of the time, a bank performs well on some KPIs and less well on some others. Given this observation, we use alternative identification of best and worst performance, where each KPI is considered independently.

In the first row of the table, best and worst performers are identified based on the aggregate scoring technique used in Table 5. The second row scores banks on profitability only (ROE, ROA and CIR), the last 3 rows score banks on risk, stock evolution since 2006, and customer confidence (proxied by deposits' growth).

On the first row, we observe that the size difference between worst and best performers is not significant. As a consequence we can not draw any conclusion from the test based on aggregate performance. Nevertheless, when we rank banks on disaggregate KPIs, significant differences appear between worst and best performers. Interestingly, these differences do not always go in the same direction depending on which dimension of performance is considered.

More specifically, it appears that the least profitable banks are bigger in size (positive difference in the mean total assets between worst and best performers). Simultaneously, bigger banks are also associated to less risk-taking and better stock price evolution since before the crisis (negative differences). Finally, size seems unrelated with customer confidence.

In sum, when we use aggregated KPIs to assess performance, our results suggest that bank size is not related to performance. However, disaggregating KPIs actually raises evidence that on the one hand bigger banks are actually less risky and had better stock price evolution, but on the other hand they are less profitable. Again, these results suggest that the performance of EU banks have to be studied under its different dimensions independently.

## Appendix 1: List of banks

	Name	Country	Total assets \$ 2014
1	HSBC Holdings Plc	UNITED KINGDOM	2.634.139,00
2	BNP Paribas	FRANCE	2.522.470,49
3	Barclays Plc	UNITED KINGDOM	2.119.410,07
4	Deutsche Bank AG	GERMANY	2.074.423,88
5	Crédit Agricole S.A.	FRANCE	1.929.192,61
6	Royal Bank of Scotland Group Plc (The)	UNITED KINGDOM	1.640.023,45
7	Société Générale SA	FRANCE	1.588.163,12
8	Banco Santander SA	SPAIN	1.537.326,65
9	Lloyds Banking Group Plc	UNITED KINGDOM	1.334.315,63
10	ING Groep NV	NETHERLANDS	1.205.361,14
11	UniCredit SpA	ITALY	1.024.908,31
12	Cooperatieve Centrale Raiffeisen-Boerenleenbank B.A-Rabobank Nederland	NETHERLANDS	826.861,70
13	Nordea Bank AB (publ)	SWEDEN	812.604,08
14	Banco Bilbao Vizcaya Argentaria SA	SPAIN	767.199,20
15	Commerzbank AG	GERMANY	676.956,40
16	Danske Bank A/S	DENMARK	564.089,11
17	Credit Suisse International	UNITED KINGDOM	548.137,00
18	DZ Bank AG-Deutsche Zentral-Genossenschaftsbank	GERMANY	488.700,97
19	Svenska Handelsbanken	SWEDEN	364.071,55
20	Skandinaviska Enskilda Banken AB	SWEDEN	341.396,21
21	Swedbank AB	SWEDEN	274.189,82
22	La Banque Postale	FRANCE	258.393,83
23	KBC Bank NV	BELGIUM	256.302,04
24	Erste Group Bank AG	AUSTRIA	238.299,13
25	Banca Monte dei Paschi di Siena SpA-Gruppo Monte dei Paschi di Siena	ITALY	222.707,29
26	Banco de Sabadell SA	SPAIN	198.307,63
27	Banco Popular Espanol SA	SPAIN	196.014,32
28	Deutsche Postbank AG	GERMANY	188.717,97
29	Raiffeisen Zentralbank Oesterreich AG - RZB	AUSTRIA	175.948,76
30	Le Crédit Lyonnais (LCL) SA	FRANCE	166.881,14
31	Bank of Ireland-Governor and Company of the Bank of Ireland	IRELAND	157.581,64
32	Unione di Banche Italiane Scpa-UBI Banca	ITALY	147.853,58
33	National Bank of Greece SA	GREECE	140.177,24
34	Allied Irish Banks plc	IRELAND	130.454,04
35	WGZ-Bank AG Westdeutsche Genossenschafts-Zentralbank	GERMANY	115.179,07
36	Delta Lloyd NV-Delta Lloyd Group	NETHERLANDS	109.237,58
37	Piraeus Bank SA	GREECE	108.401,11
38	Mediobanca SpA-MEDIOBANCA - Banca di Credito Finanziario Società per Azioni	ITALY	96.236,00
39	Banco Comercial Português, SA-Millennium bcp	PORTUGAL	92.704,87
40	Alpha Bank AE	GREECE	88.546,80
41	Jyske Bank A/S (Group)	DENMARK	88.489,40
42	SNS Bank N.V.	NETHERLANDS	82.747,36
43	Banca popolare dell'Emilia Romagna	ITALY	73.634,82
44	Catalunya Banc SA	SPAIN	63.679,74
45	AXA Bank Europe SA/NV	BELGIUM	51.768,85
46	Banco BPI SA	PORTUGAL	51.753,06
47	Banque et Caisse d'Epargne de l'Etat Luxembourg	LUXEMBOURG	50.031,56
48	Länsförsäkringar AB	SWEDEN	46.006,38
49	Permanent TSB Plc	IRELAND	44.064,59
50	Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Aktiengesellschaft-BAWAG P.S.K. AG	AUSTRIA	42.067,50

## Appendix 2: Variable definition

---

ROE	Income after taxes / equity
ROA	Income after taxes / assets
CIR	Operational cost / operational income <i>(indicator of banks efficiency in generating revenues)</i>
Loan-to-Deposit ratio	Banks total loans / total deposits <i>(liquidity indicator)</i>
Stock Price Evolution since 2006	Comparison of the stock price level at the end of 2013 to the stock price level at the end of 2006, expressed as a growth rate
Growth Rate of Deposits	Comparison of the level of total deposits at the end of 2013, compare to the level of total deposits at the end of the previous year, expressed as a growth rate

---

## References

Ayadi, R. and De Groen, W.P., 2014. Banking Business Models Monitor 2014 – Europe. Centre for European Policy Studies.

ECB, 2010. Beyond RoE: How to measure bank performance , Appendix to the report on EU banking structures, European Union and Eurozone business news.

Thibeault, A., Defranq, C., Vantieghem, J., 2012. A scorecard for Bank Performance: The Belgian Banking Industry.

Thibeault, A., Matthys, T., 2013. The future of the Belgian banking industry.

Thibeault, A., Matthys, T., Rogiers, E., 2014. Corporate expectations towards banks in Belgium.



BRUSSELS - GHENT - LEUVEN - ST. PETERSBURG  
VLERICK BUSINESS SCHOOL - THE BUSINESS SCHOOL OF GHENT UNIVERSITY AND KU LEUVEN  
STICHTING VAN OPENBAAR NUT - PUBLIC UTILITY FOUNDATION - VAT BE 0424 244 049  
HQ: REEP 1 - 9000 GHENT - BELGIUM - T + 32 9 210 97 11  
INFO@VLERICK.COM - WWW.VLERICK.COM