

# Interest margins and efficiency

## The impact of the crisis across EU countries

Javier Villar Burke / Cristina T Plata García<sup>1</sup>

Madrid, 28 June 2017

### Executive summary

- **Multiple factors have influenced interest margins and administrative costs** such as prices effects, volume effects, the asset and liability mixes and the restructuring of the banking system.
- Expansionary monetary policy led to a decline in both interest revenues and interest expenses for retail activities. Consequently, **net interest income for the euro area as a whole has only marginally declined**. Therefore, the markets seem to have some automatic stabilisers which smoothen the impacts.
- However, **monetary transmission has been heterogeneous across countries and for lending and deposit rates** and led to a divergence between two groups of countries. In a number of peripheral countries, the interest margin for retail activities have significantly dropped (by up to 50%), while in a number of core countries net interest income have remained rather stable. This has been driven by structural macroeconomic and institutional differences, banking features (particularly the asset and liability mixes) and demand-side factors.
- The restructuring of the banking sector also impacted administrative expenses. **In most countries, staff expenses decreased; the evolution of general expenses is more mixed.**
- All these dynamics have been driven by three main factors: declining interest rates, funding scarcity and excessive leverage.
- According to the cost-to-income ratio, **bank efficiency has moderately improved particularly among the worst performing countries** (e.g. Germany, Denmark, Austria and Belgium) **so that a compression in the distribution of countries in terms of efficiency is observed.**
- We observe a **correlation between efficiency and interest margins** both in 2008 and in 2015.

### 1. Introduction

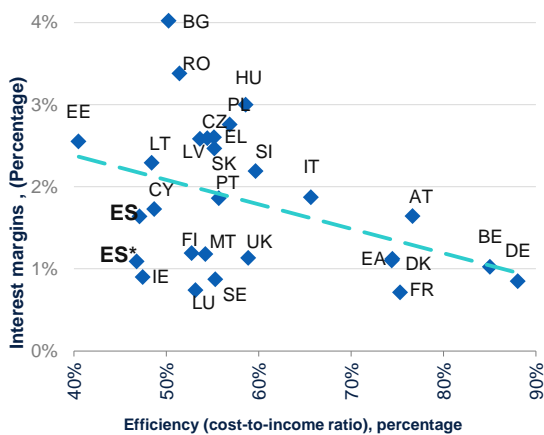
Before the international financial crisis, the European banking systems with better efficiency used to show higher interest margins (Figure 1)<sup>2</sup>. The crisis triggered a rationalisation and resizing of the banking sector. For instance, the number of credit institutions in the EU declined from 8,600 in 2008 to 6,500 in early 2017 (a reduction of almost 25%).

<sup>1</sup>We would like to thank Macarena Ruesta Baselga, José Félix Izquierdo, Jaime Zurita Ussia, Ana Rubio González, Santiago Fernández de Lis, Ana Pitarch Lorenzo and Rubén San Segundo Sánchez for their comments.

<sup>2</sup>A similar correlation is observed with respect to the overall profitability of banks as measured by the RoE and RoA, see Chart A1 in the Annex.

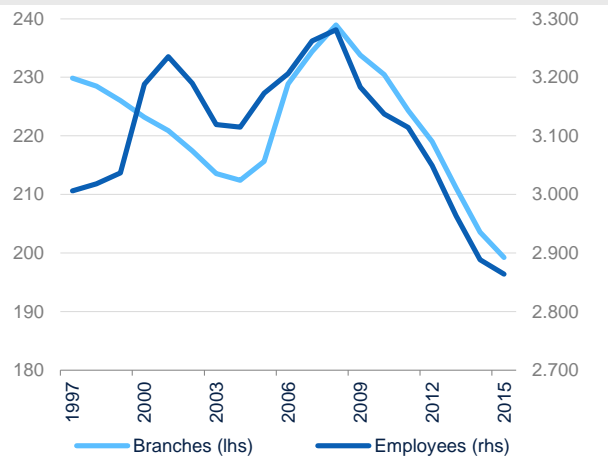
Similarly, branches were consolidated from a maximum of almost 240,000 in 2008 to less than 200,000 in 2015. Staffing was also rationalised with employees in the banking sector reduced from 3.3 million in 2008 to 2.9 million in 2015 (Figure 2).

**Figure 1. Efficiency and interest margins, 2008**



Note: Interest margin: net interest income over total assets. Analysis based on consolidated data. The Netherlands is considered an outlier (CTI = 186%) and excluded from the analysis. Data for Croatia are not available. For Spain, both consolidated (ES) and domestic business (ES\*) are included.  
Source: ECB and BBVA Research.

**Figure 2. Bank capacity: bank employees and branches, European Union, thousands**



Source: ECB and BBVA Research

The restructuring also affected the activities of many banks, who retrenched to their core businesses and core geographies<sup>3</sup>. Significant M&A operations, in many cases linked to the bailout of banks under financial stress, caused additional reductions of capacity to moderate duplicities and improve efficiency. **This note reviews whether this significant restructuring effort has affected the interest margins of the banking systems across the EU and whether the correlation between interest margins efficiency has been affected.** For this, we analyse first interest income (Section 2), then administrative costs (Section 3) and finally efficiency (Section 4).

## 2. Interest income

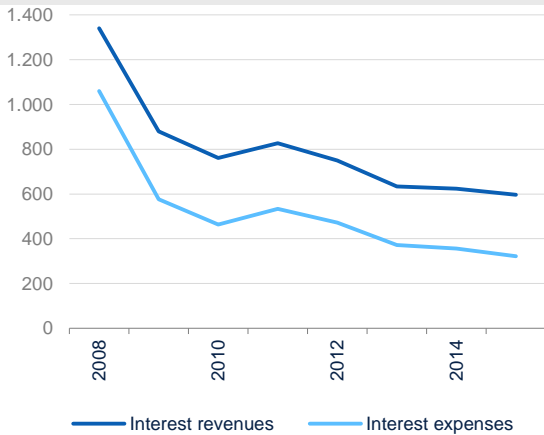
### 2.1. Interest revenues and expenses

With the outbreak of the crisis, **interest revenues plummeted by more than half**, mainly driven by the low rate environment<sup>4</sup>. For instance, for the euro area, interest income dropped from almost €1,400 billion in 2008 to less than €600 billion in 2015 (Figure 3). **Interest expenses also dropped.** The combined effect of this parallel reduction on revenues and expenses was a **limited decline in net interest income** from €300 billion to €250 billion (Figure 4).

3: See, for instance ECB (2017): *Financial integration in Europe*.

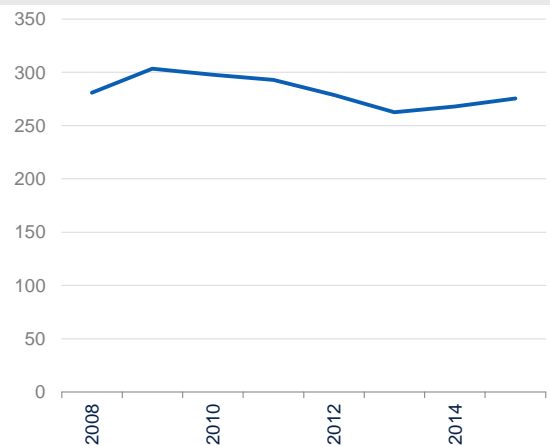
4: See Figure A5 in the Annex with the evolution of market rates and the policy rate.

**Figure 3.** Interest income components, euro area, € billion



Note: Data for IFRS+GAAP (FINREP) reporting banks.  
Source: ECB (consolidated banking data) and BBVA Research.

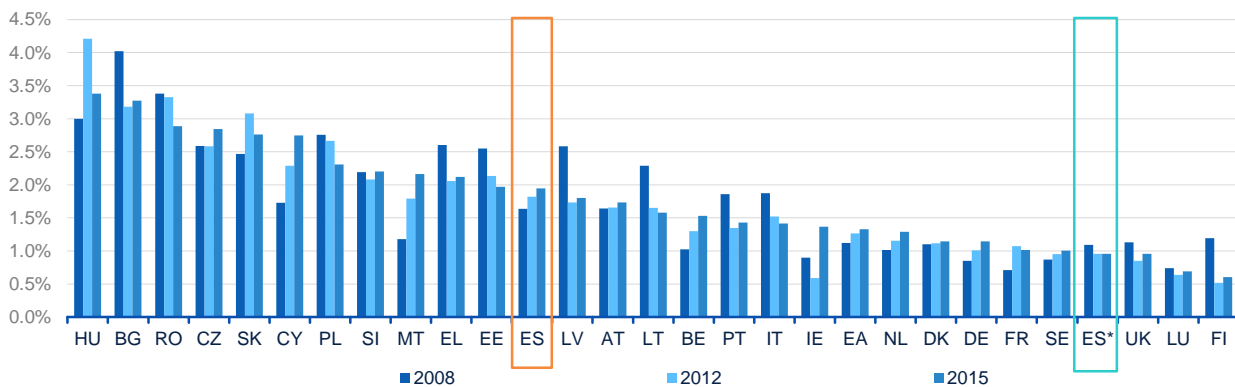
**Figure 4.** Net interest income, euro area, € billion



Note: Data for IFRS+GAAP (FINREP) reporting banks.  
Source: ECB (consolidated banking data) and BBVA Research.

The interest margin enables to compare EU countries (Figure 5). We observe a **very heterogeneous performance across countries**, from Hungary and Bulgaria, where the interest margin is above 3%, to the UK, Luxembourg and Finland, where it is below 1%. These differences are smaller within euro area countries (which share the same monetary policy), but still noticeable.

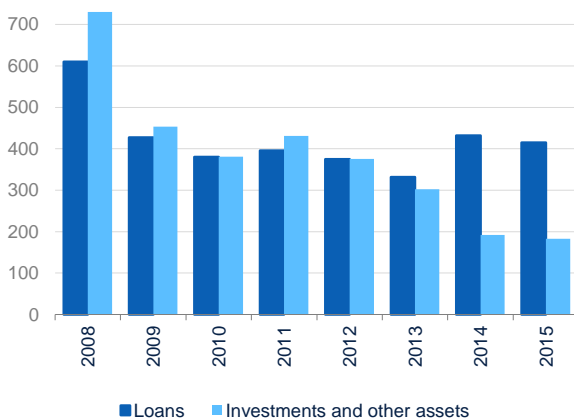
**Figure 5.** Interest margins, percentage



Note: Data for domestic banks and subsidiaries and branches of foreign banks. Data for all banks. For Spain, both consolidated (ES) and domestic business (ES\*) are included. Interest margin: net interest income over total assets. Data for Croatia are not available.  
Source: ECB (consolidated banking data), Banco de España and BBVA Research.

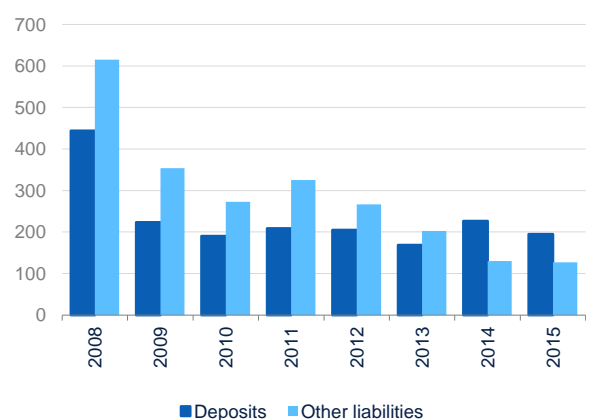
In terms of evolution, we also observe divergent paths. In some countries, the interest margin declined throughout the crisis (e.g. Bulgaria, Romania, Greece, Portugal, Italy and Finland), in other countries, it increased (e.g. Cyprus, Malta, Spain [consolidated], Belgium, the Netherlands and France). No clear pattern can be identified as both groups include core and peripheral countries, program countries as well as countries with high and low margins. In a few other countries, the interest margin has remained rather stable (e.g. Slovenia, Austria, Denmark and Luxembourg).

**Figure 6.** Interest income (revenues), euro area  
€ billion



Note: Data for domestic banks and subsidiaries and branches of foreign banks. Data include only IFRS (FINREP) reporting banks. Source: ECB (consolidated banking data) and BBVA Research.

**Figure 7.** Interest expenses, euro area,  
€ billion



Note: Data for domestic banks and subsidiaries and branches of foreign banks. Data include only IFRS (FINREP) reporting banks. Source: ECB (consolidated banking data) and BBVA Research.

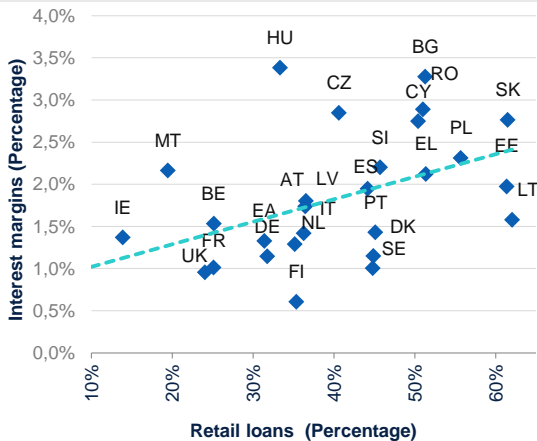
The components of interest revenues and expenses can help better understand what have driven the evolution of interest margins. In particular, it is relevant to look at the interest revenues generated by loans against the revenues generated by other assets and the expenses absorbed by deposits against the expenses absorbed by other liabilities. This analysis highlights a **significant shift in the structure of interest income**. Indeed, the interest revenues and expenses from loans and deposits were impacted by the initial shock of 2008-2009, but they remained rather resilient thereafter. On the other hand, we can observe a continuous decline in the interest revenues and expenses from other assets and liabilities (Figures 6 and 7). These shifts in interest income and expenses are pushing banks to rely on alternative sources of income, particularly commissions and fees.<sup>5</sup>

Moreover, the series for loans and deposits include not only retail loans and deposits<sup>6</sup>, but also non-retail loans and non-retail deposits (i.e. interbank loans and deposits, government loans and deposits, as well as loans and deposits from non-bank financial institutions). These two types of loans and deposits are very different from each other (for instance, retail loans have maturities of months or years, while interbank lending has maturities of a few days).

5: See, for instance, Kok, C., Mirza, H., Moré C. and Pancaro C. (2016): "Adapting bank business models: financial stability implications of greater reliance on fee and commission income". Financial Stability Review. November 2016. European Central Bank.

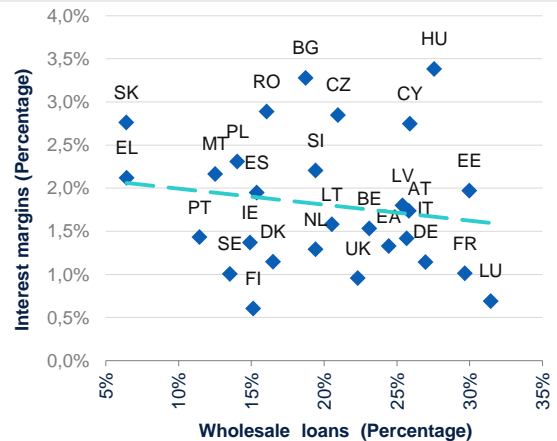
6: We consider retail loans and deposits the ones to/from households and non-financial corporations.

**Figure 8a.** Interest margins vs. proportion of retail loans, 2015



Note: Interest margin: net interest income over total assets. Data for Croatia are not available.  
Source: ECB and BBVA Research.

**Figure 8b.** Interest margins vs. proportion of non-retail loans, 2015



Note: Interest margin: net interest income over total assets. Data for Croatia are not available.  
Source: ECB and BBVA Research.

This is particularly relevant because countries have different asset and liability mixes (Figures A2 and A3 in the Annex). The capacity of the different categories of assets and liabilities to generate and absorb interest income is heterogeneous as suggested by their distributions against interest margins (Figures 8 and A4 in the Annex)<sup>7</sup>.

Therefore, the evolution of net interest income depends on a volume factor (i.e. how the volumes of individual items in the balance sheet and their mix have reacted to the crisis) and a price factor (i.e. how conventional and non-conventional monetary policy measures have transmitted to the interest rates applied to the various balance sheet items). In the next section, we perform an analysis of the differentiated effect of prices and volumes for the specific case of retail loans and deposits.<sup>8</sup>

## 2.2. Interest rates: the role of prices in driving interest income

On the wake of the financial crisis, central banks implemented an **accommodative monetary policy**, through a drop in the policy rates (see Figure A5 in the Annex) and non-conventional measures, with the goal of dragging retail (lending) rates down and reactivating the economy. Indeed, monetary accommodation impacted lending and deposit rates across the euro area (See Figures A6 and A7 in the Annex)<sup>9</sup>. While monetary policy is transmitted to both loans and deposits, **interactions between lending and deposit rates** cannot be discarded. For instance, when deposit rates hit the zero lower bound, they become confronted with downward rigidities and banks may refrain from transmitting monetary accommodation to bank lending rates to avoid a further deterioration in margins and profits<sup>10</sup>.

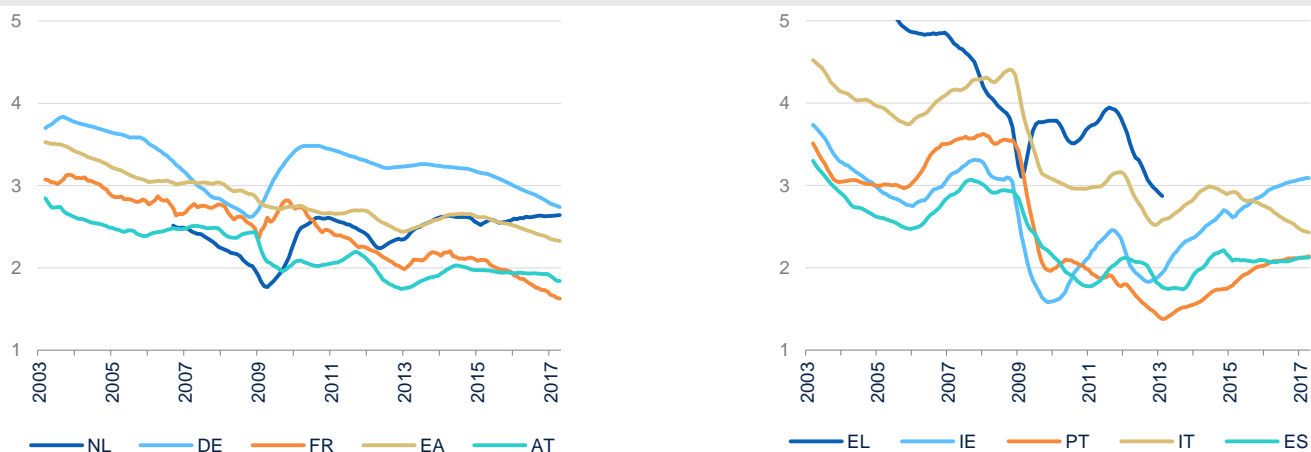
7: Some authors have pointed out a higher positive correlation between margins and retail activities than for other activities; see for instance Van Ewijk, S. E. and Arnold, I. J.M. (2014): "How bank business models drive interest margins: evidence from US bank-level data", *The European Journal of Finance*, 20:10, 850-873, London.

8: An assessment of the evolution of the asset and liability mixes is undertaken at a separate note (*Retail or not retail. Have European banks become more retail on the wake of the crisis*).

9: We do this on a domestic (non-consolidated basis). Note that the analyses in Sections 2.1, 3 and 4 are based on consolidated data.

10: See ECB (2017): "MFI lending rates: pass-through in the time of non-standard monetary policy". Economic Bulletin, Iss. 1/2017. p. 41.

**Figure 9.** Interest spread between lending and deposit rates, selection of euro area countries, percentage



Note: Lending and deposit rates are calculated as the sum of all loans and all deposits to/from non-financial corporations and households, based on outstanding volumes. The series have been smoothed through three-month moving averages. The spread is the difference between lending rates and deposit rates.  
Source: ECB and BBVA Research.

The spread between lending and deposit rates (i.e. the price effect without taking into account volumes), **has continuously contracted from 3.7% in 2003 to 2.3% in 2017** (euro area average). This represents a decline of almost 40% in the retail interest spread and explains the extensive debate about the low profitability of banks (and of financial institutions in general),<sup>11</sup> which can lead to increases in the prices for some services or can, if protracted for too long, put into risk the viability of some institutions.

**Despite the single monetary policy, the transmission has been more complete in some countries than in others or achieved with certain lags.** A series of idiosyncratic country factors limit the transmission of monetary policy and, therefore, influence the level of retail rates across countries and over time.<sup>12</sup> Consequently, significant differences in the level of interest rates for loans and deposits, and the spread between both, are observed across euro area countries.

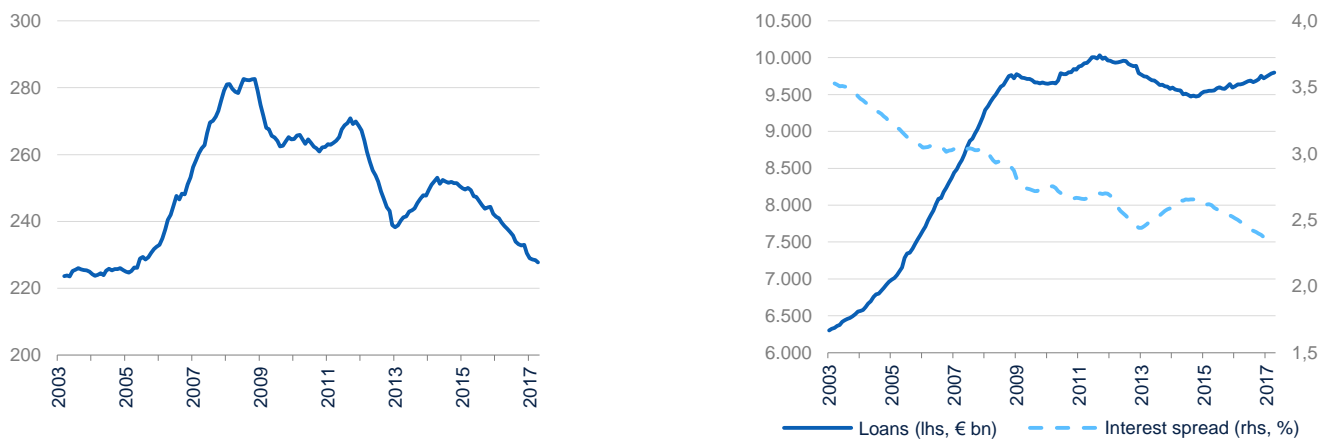
**In peripheral countries, the retail interest spreads were significantly squeezed** in the initial phases of the crisis, putting additional pressure on the already financially stressed banks. Indeed, the interest spread dropped below 2% in Ireland, Portugal and Spain while it remained close or above 3% in countries like Germany and Belgium. In Italy (from the periphery), although spreads remained relatively high, they decreased by more than 1.5 percentage points with respect to the levels observed prior to the crisis; a similar pattern is observed in Greece. On the other hand, in Austria, Luxembourg and the Netherlands, spreads were already relatively low and were not significantly impacted by the crisis, having even slightly increased. France appears as a special case as the retail interest spread has continuously decreased since the outbreak of the crisis to become one of the lowest ones across countries (Figure 9).

11: See, for instance, Joint Committee of the ESAs (2017): *Report on risks and vulnerabilities in the EU financial system. April 2017*; and EBA (2016): *Risk assessment report. December 2016*. For a review of factors driving bank profitability, see Kok, C., Moré C. and Pancaro C. (2015): "Bank profitability challenges in euro area banks: the role of cyclical and structural factors". *Financial Stability Review. May 2015*. European Central Bank, ECB (2015): *Financial Stability Review 2015*, Box 5; and Genay, H. and Podjasek, R. (2014): "What is the impact of a low interest rate environment on bank profitability?" *Chicago Fed Letter*, No 324, July 2014. and

12: These factors include structural macroeconomic and institutional features (for instance, the level of inflation, unemployment, country risk premium, the fiscal framework, enforcement procedures and so on) as well as banking features (sources of funding, the prevalence of ARMs and FRMs and the rate setting behaviour of banks, the product mix in banks' portfolios and the specific features of "similar" products in each bank, liquidity and capitalisation of banks, the level of competition and so on). Finally, demand-side factors such as the creditworthiness of borrowers, the existence of alternative funding sources and residential property prices also have an influence in lending and deposit rates and how monetary policy is transmitted. For further details on the determinants of interest rate, see Izquierdo de la Cruz, J.F. (2016): "Determinantes de los tipos de interés de las carteras de crédito en la Eurozona", *Working Paper 16/11*, June, BBVA Research.

For the euro area as a whole, the volume of loans has stagnated since the outbreak of the crisis. Therefore, as the decline in spreads were not compensated with an expansion in volumes, they translated into reductions in interest margins<sup>13</sup>. As a consequence, the **interest margin** generated by retail activities of euro area banks **decreased from €280 billion a year in 2008 to €230 billion a year in 2017** (Figure 10). We can identify two distinct patterns in the evolution of interest margins. **In a number of (mainly core) countries, interest margins have remained rather stable throughout the crisis**, although they might have slightly decreased in the last couple of years. This was the case in Germany, where banks were obtaining an interest margin of about €80 billion a year (Figure 11a) and also in Belgium and Austria (with interest margins stable around €7 or €6 billion a year). In the Netherlands, the interest margin generated by banks even increased over the crisis.<sup>14</sup>

**Figure 10** Interest margins for retail loans (lhs) and its components (volume and interest rate spread) (rhs), euro area



Source: ECB and BBVA Research.

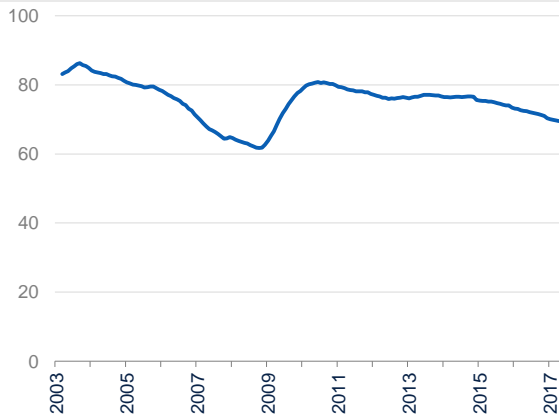
**In other (mainly peripheral) countries, interest margins plummeted.** This was the case in Spain, where interest margins dropped from €50 billion a year to less than €30 billion a year (Figure 11b) as well as in Italy, Ireland and Portugal. A common feature of these countries is the very high leverage achieved on the run up to the crisis. Indeed, Portugal and Italy had loan-to-deposit ratios above 150%, in Ireland and Spain they were above 200%.<sup>15</sup>

13: For the calculation of this margin, we assume that the total amount of loans is financed with deposits or other sources having a similar cost. Very high loan-to-deposit ratios indicate that, in the past, banks could easily find funding sources other than deposits at cheap rates. However, with the outbreak of the crisis, wholesale funding froze and became much more expensive. This led to a "deposit war" in some countries as reflected in deposit rates becoming (significantly) more expensive than market rates (see Figure A7 in the Annex).

14: For a comparative of countries, see Figure A8 in the Annex, where interest margins have been normalized to GDP.

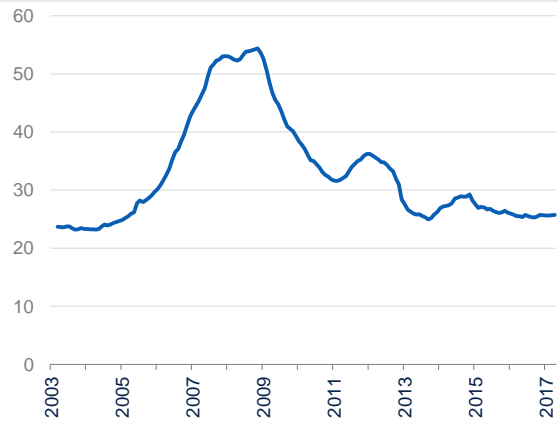
15: See note on *Retail or not retail. Have European banks become more retail on the wake of the crisis.*

**Figure 11a.** Interest margins, Germany, € billion, annual



Note: The interest margin refers to retail activities and is calculated as loan volumes multiplied by the loan-deposit spread.  
Source: ECB and BBVA Research

**Figure 11b.** Interest margins, Spain, € billion, annual



Note: The interest margin refers to retail activities and is calculated as loan volumes multiplied by the loan-deposit spread.  
Source: ECB and BBVA Research

### 3. Expenses

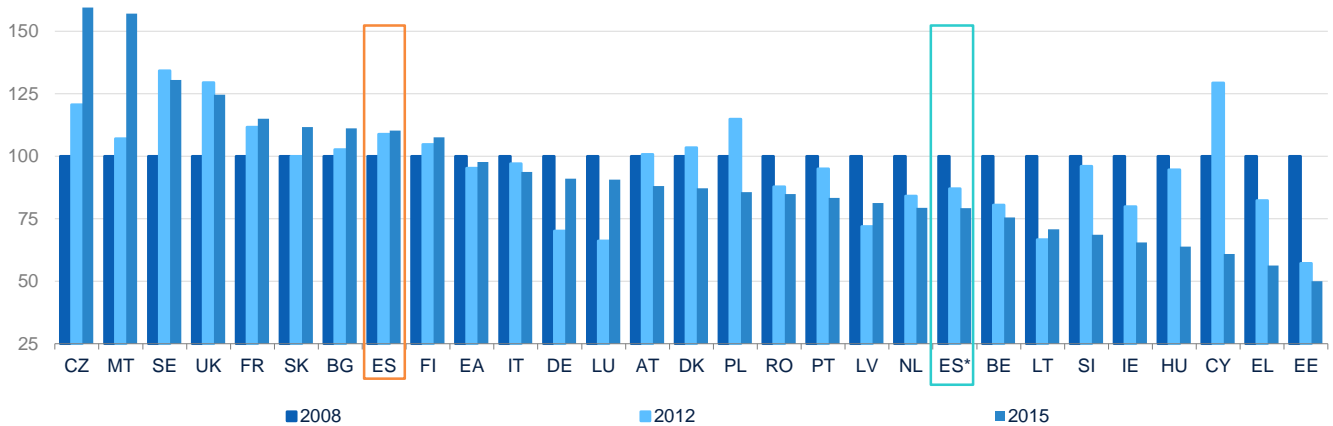
The profitability of a bank depends also on the administrative expenses incurred to generate income. Such administrative expenses include staff expenses and general administrative expenses (e.g. rent of buildings, depreciation of tangible assets, utility bills, fungible goods, marketing expenses and so on). Following the public bailouts triggered by the crisis, many banks were forced to restructure with the aim of regaining efficiency. Moreover, other banks implemented restructuring measures on a preventive fashion, to avoid the need of public support. Some of the restructuring was linked to a reduction in the overcapacity of banking. Restructuring measures entail, among other things, changing operating models, improving multichannel distribution capacities (e.g. via higher reliance on digital platforms) and improving IT systems. Efficiency gains are likely to be realised only in the longer term while the restructuring measures may generate additional costs in the short term.

In the euro area as a whole, **administrative costs slightly declined between 2008 and 2011**, for both staff expenses and general administrative expenses (Figure A9 in the Annex). However, **this trend reversed thereafter**. Besides the cost-saving efforts implemented by banks during the crisis (e.g. consolidation of companies, closure of branches and reduction in headcount), the level of activity (turnover) also influences incurred costs; in other words, the increases in costs, particularly the ones in 2015, may be linked to a reactivation of economic (and bank) activity.<sup>16</sup>

16: Depending on the product mix, these increases in costs may or may not be translated into worse efficiency indicators.



**Figure 12.** Staff expenses, Index: 2008 = 100



Note: Analysis based on consolidated banking data for domestic banks and subsidiaries and branches of foreign banks. Data include only FINREP (IFRS+GAAP) reporting banks. For Spain, both consolidated (ES) and domestic business (ES\*) are included. Data for Lithuania and Czech Republic are for 2014.  
Source: ECB and BBVA Research

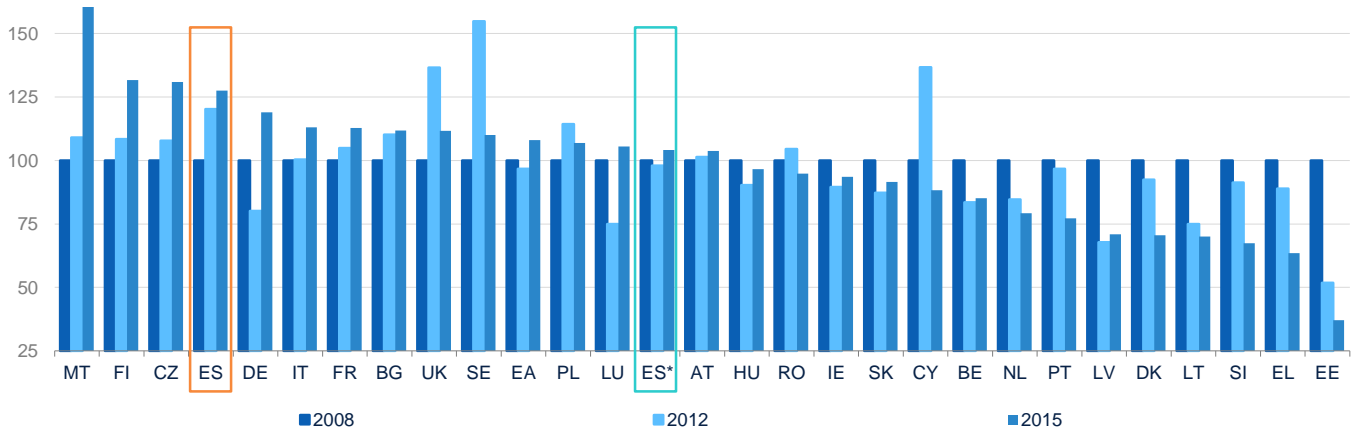
**Staff expenses represent about 50% of administrative expenses on average for the euro area, but some differences across countries can be observed** (see Figure A10 in the Annex). In countries like Sweden, Estonia, Denmark and the Netherlands, staff expenses tend to be proportionally larger, representing up to 60% of administrative costs; while in countries like Ireland, Germany, Hungary and Bulgaria, general administrative expenses and depreciation represent the largest chunk of administrative costs. **This depends, to a certain extent, on historical structural issues** such as how dense the network of branches in each country is and how it has evolved over the crisis; in other words, whether banks tend to favour the proximity to the customer with many small branches scattered throughout the territory or whether they prefer to concentrate their services in a smaller number of larger branches. **This, in turn, can be driven by** a number of (external) factors such as the **density of population**, the **level of competition** in the area and labour law. The recent **digitalisation of financial services** also exert an influence over administrative expenses.

**In a majority of EU countries, staff expenses decreased over the crisis**; however, in a few others, staff cost increased, sometimes significantly (Figure 12). For instance, banks in Greece and Estonia almost halved their staff expenses between 2008 and 2015 and banks in Cyprus, Hungary, Slovenia, Lithuania, Belgium, Spain (domestic) and the Netherlands decreased their staff cost by between 20% and 40%. In a few cases (e.g. Germany, Luxembourg and Latvia), the initial reduction in staff cost was partially reversed. Finally, in some countries (e.g. France, the UK and Sweden), staff expenses increased substantially or even exploded (i.e. in the Czech Republic and in Malta, staff expenses increased by more than 50%)<sup>17,18</sup>

17: Data for some small countries with a large presence of international groups should be interpreted with caution. M&A operation or the transformation of subsidiaries into branches (or vice versa) may have a statistical effect not necessarily reflecting the actual evolution in costs.

18: Note that expenses linked to layoffs and early retirement of staff are, in general, not computed under staff expenses; however, some specific cases may entail a different accounting treatment of such costs.

**Figure 13.** General administrative expenses, Index: 2008 =100



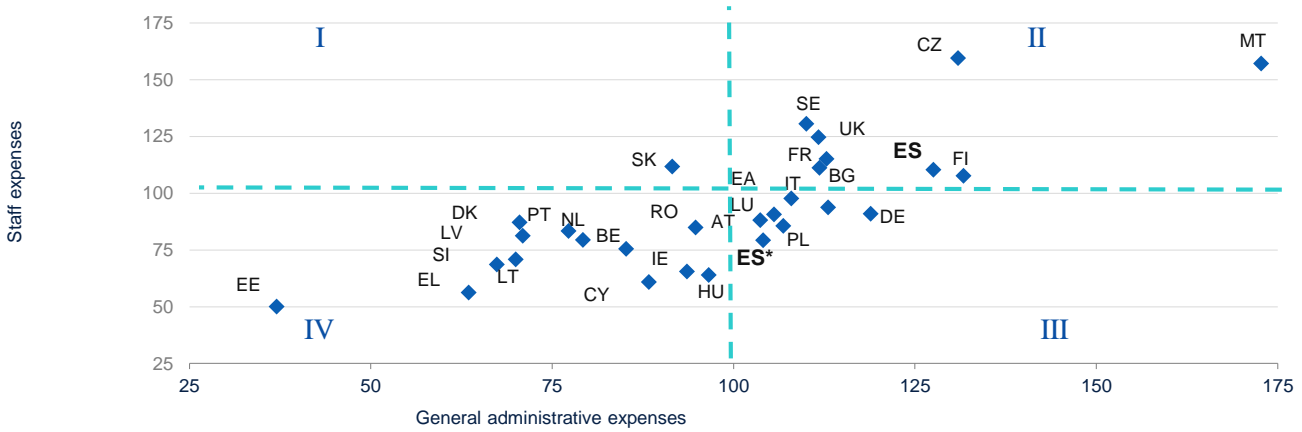
Note: Analysis based on consolidated banking data for domestic banks and subsidiaries and branches of foreign banks. Data include only FINREP (IFRS+GAAP) reporting banks. For Spain, both consolidated (ES) and domestic business (ES\*) are included. Data for Lithuania and Czech Republic are for 2014.  
Source: ECB and BBVA Research

**The evolution of general expenses is more mixed** (Figure 13). **In half of the countries, the outbreak of the crisis led to a rationalisation of general expenses** with the largest reductions in costs observed in the countries more impacted by the crisis (e.g. Portugal, Latvia, Slovenia and Greece). These countries requested, or were about to request, assistance from their EU partners and were required to implement an adjustment program, which included a restructuring and rationalisation of their banking systems<sup>19</sup>. Banks in Lithuania and Estonia also show significant improvements in their general administrative expenses probably linked to the preparations and adoption of the euro<sup>20,21</sup>. **In the other half of countries, we can observe an increase in general administrative expenses throughout the crisis** (particularly in Malta, Finland, the Czech Republic, Spain -although not for the domestic business- and Germany). Finally, it is also important to highlight **a few countries where general administrative costs increased in the middle of the crisis but were afterwards contained** (e.g. in UK, Sweden and Cyprus). Some of these temporary increases in cost may be explained by the transitional effects driven by the process of restructuring of the banking systems. For instance, closing a branch may entail a penalty if the lease is terminated earlier than what was initially foreseen in the contract.

All in all, in a large number of countries, banks decreased both staff and general administrative costs (Figure 14, Quadrant IV); however, we can also see some countries where staff expenses were contained but not general costs<sup>22</sup> (Figure 14, Quadrant III), or the other way around (only in Slovakia). In a number of countries, both staff and general administrative costs increased after the crisis, which seems to indicate that the restructuring of the banking system in these countries were not accompanied by cost-cutting measures.

19: Slovenia, although it did eventually not apply for external support, implemented a series of preventive measures.  
20: Estonia adopted the euro in 2011 and Lithuania in 2015. Latvia also adopted the euro after the outbreak of the crisis, in 2014.  
21: Note that over 80% of banking assets in the three Baltic countries corresponds to subsidiaries and branches of European banking groups. Potential statistical effects in the data should not be discarded.  
22: In some cases, dismissed staff was subsequently hired as a consultant. Consulting expenses are recorded under general administrative costs.

**Figure 14.** Evolution of administrative expenses between 2008 and 2015, Index: 2008 =100

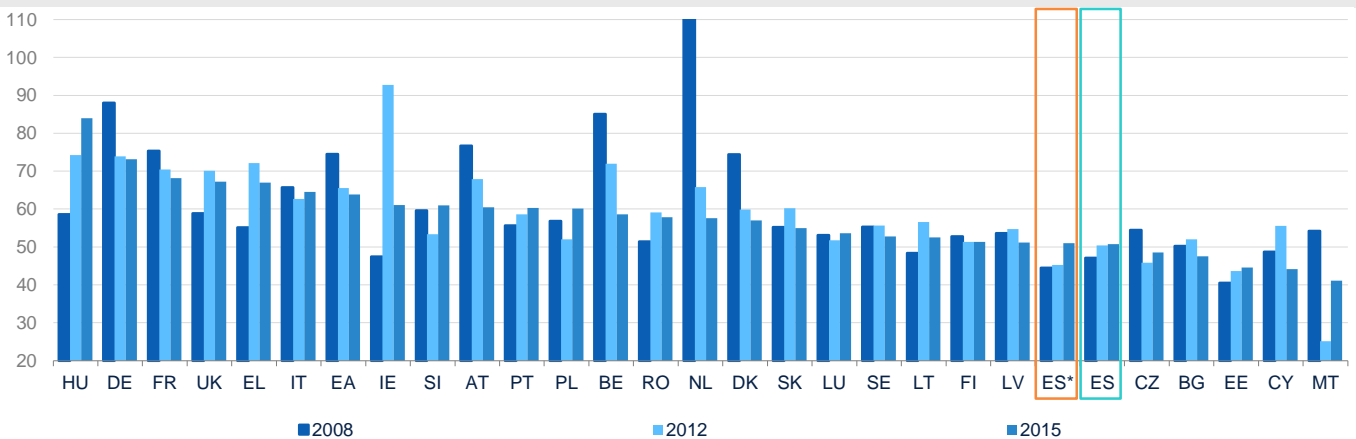


Note: Analysis based on consolidated banking data for domestic banks and subsidiaries and branches of foreign banks. Data include only FINREP (IFRS+GAAP) reporting banks. Data for Lithuania and Czech Republic are for 2014. For Spain, both consolidated (ES) and domestic business (ES\*) are included.  
Source: ECB and BBVA Research

## 4. Efficiency

The **cost-to-income ratio** summarises the efficiency of banks by gathering both the effects of the economic environment on operating revenues and expenses<sup>23</sup> and the administrative costs incurred to undertake the activities of the bank. According to this indicator, **banks' efficiency has moderately improved throughout the crisis at aggregate euro area level**. Indeed, while in 2008, euro area banks had to incur in 75 euros of costs to generate 100 euros of income, in 2015 they were able to generate 100 euros of income with only 64 euros of costs (Figure 15).

**Figure 15.** Cost-to-income ratio, percentage



Note: Analysis based on domestic assets (non-consolidated). For Spain, both consolidated (ES) and domestic business (ES\*) are included.  
Source: ECB and BBVA Research

**Across individual countries, banking systems have very different levels of efficiency. Most EU large countries with a long banking tradition (e.g. Germany, France, the UK and Italy) operate with very low efficiency** despite some improvements during the crisis (cost-to-income ratios of around 70% in 2015). The inefficiency of these banking

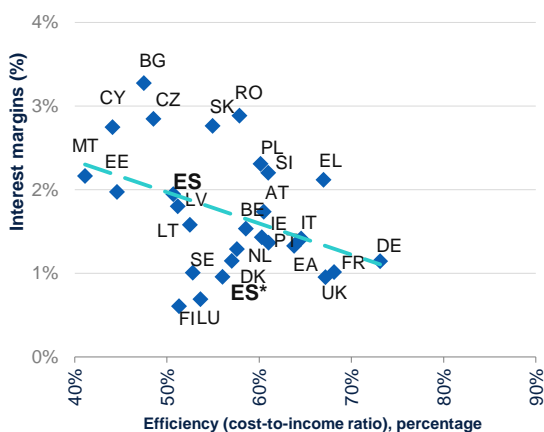
23: Operating income includes interest income, commissions and fees income and other operating income.

systems was somehow **concealed under their large size and compensated with high leverage**<sup>24</sup>. Moreover, these banks tend to have significant investment activities (see Figures A2 and A3 in the Annex), which generate income in a much more volatile fashion than retail activities. The investment component also explains the significant movements observed in countries like Ireland, Belgium, Austria, the Netherlands and Malta, although these countries show better efficiency levels. **High levels of efficiency** (cost-to-income ratio around or below 50%) **are observed in the financial centres of Cyprus and Malta, in Nordic countries** (Sweden and Finland), **in some small countries with banks oriented mainly to retail activities** (Estonia, Bulgaria, Latvia and Lithuania) **and in Spain** (which has a large banking system but oriented mainly to retail activities).<sup>25</sup>

## 5. Conclusions

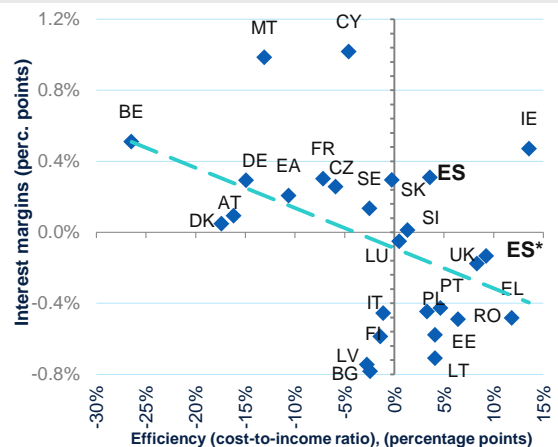
Throughout this note, we have seen that **multiple factors have influenced interest margins and administrative costs** such as prices effects, volume effects, the asset and liability mixes, restructuring of the banking system. Three important drivers have been declining interest rates, funding scarcity and excessive leverage. All in all, **we observe a compression in the distribution of countries in terms of their efficiency**, as the ones with the lowest efficiency (e.g. Germany, Denmark, Austria, France and Belgium) have significantly improved their cost-to-income ratios. **The positive correlation between efficiency and better interest margins seems to be quite robust** not only because it remains in 2015 but also because it even holds for the evolution between 2008 and 2015 (Figure 16). Moreover, over the crisis, improvements in efficiency (lower CTI ratios) tended to lead to higher interest margins while reductions in efficiency (higher CTI ratios) tended to be accompanied with a deterioration in interest margins.

**Figure 16a.** Efficiency and interest margins 2015



Note: Interest margin: net interest income over total assets. Analysis based on consolidated data. Outliers are excluded from the analysis: the Netherlands, with a CTI of 186% in 2008; and Hungary, with a CTI of 83% and an interest margin of 3.4% in 2015. Data for Croatia are not available. Source: ECB and BBVA Research.

**Figure 16b.** Efficiency and interest margins, increase 2008-2015, annual



24: See also the negative correlation between interest margins and the proportion of wholesale loans (Figure 8b).

25: The level of NPLs and how much they are covered with loan loss reserves is another factor than can drag income generation.

## DISCLAIMER

This document has been prepared by BBVA Research Department, it is provided for information purposes only and expresses data, opinions or estimations regarding the date of issue of the report, prepared by BBVA or obtained from or based on sources we consider to be reliable, and have not been independently verified by BBVA. Therefore, BBVA offers no warranty, either express or implicit, regarding its accuracy, integrity or correctness.

Estimations this document may contain have been undertaken according to generally accepted methodologies and should be considered as forecasts or projections. Results obtained in the past, either positive or negative, are no guarantee of future performance.

This document and its contents are subject to changes without prior notice depending on variables such as the economic context or market fluctuations. BBVA is not responsible for updating these contents or for giving notice of such changes.

BBVA accepts no liability for any loss, direct or indirect, that may result from the use of this document or its contents.

This document and its contents do not constitute an offer, invitation or solicitation to purchase, divest or enter into any interest in financial assets or instruments. Neither shall this document nor its contents form the basis of any contract, commitment or decision of any kind.

In regard to investment in financial assets related to economic variables this document may cover, readers should be aware that under no circumstances should they base their investment decisions in the information contained in this document. Those persons or entities offering investment products to these potential investors are legally required to provide the information needed for them to take an appropriate investment decision.

The content of this document is protected by intellectual property laws. It is forbidden its reproduction, transformation, distribution, public communication, making available, extraction, reuse, forwarding or use of any nature by any means or process, except in cases where it is legally permitted or expressly authorized by BBVA.