Have European banks actually changed since the start of the crisis?

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IN-DEPTH ANALYSIS

Have European banks actually changed since the start of the crisis?

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Abstract

This paper documents trends in key bank variables over the 2003-2013 period for the set of banks that the ECB directly supervises as of January 30, 2015. This time period enables us to see how the crisis has affected the banks, and also how they have changed since the crisis. A range of variables is considered that together provide a picture to what extent banks have been moving in the direction of better performance and greater stability. These variables include indices of banks’ overall business model, size, off-balance sheet exposures, and internationalization. In addition, we consider several variables that inform about banks’ asset portfolios, funding strategies and capitalization. The identified trends provide a mixed picture of whether banks have been moving in the right direction since the start of the crisis.
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LIST OF ABBREVIATIONS

ECB European Central Bank
G-SIB Global Systemically Important Bank
GDP Gross domestic product
ROA Return on Assets
SSM Single Supervisory Mechanism

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EXECUTIVE SUMMARY

This briefing paper documents broad trends regarding Eurozone banking market performance and structure during 2003-2013, spanning the systemic banking crisis of 2007-2009 and the sovereign debt crisis of 2010-2012. The main focus of this briefing paper is on the 123 banks that are directly supervised by the European Central Bank (ECB) as the single supervisor in the Single Supervisory Mechanism (SSM). Our main data source for bank-level information is Bankscope compiled by Bureau Van Dijk. This data source allows us to analyse banking trends over a relatively long time period, which includes several pre-crisis years.

We consider a range of variables related to bank profitability, activity mix, size, off-balance sheet exposure, balance sheet composition, and loan impairment. Our main objective is to see whether the observed trends are consistent with the objective of improved financial stability.

From the data, we identify several positive trends:

- Following the crisis, directly supervised banks have increased their funding through customer deposits, and they have reduced the share of loans in total assets. Both of these developments contribute to more stable banks.
- After the crisis, G-SIBs in the Eurozone have adopted less risky activity mixes focusing more on traditional banking activities, thereby becoming more like the average directly supervised bank.
- The crisis did not cause a retrenchment of international banking in the Eurozone, which suggests that the benefits of international bank integration can still be reaped.

In addition, there are several trends that raise potential supervisory concerns:

- The average directly supervised bank return on assets is still negative in 2013, and hence needs to improve materially in following years to guarantee bank stability.
- Average bank size of directly supervised banks, measured as total assets relative to GDP, has declined only slightly after reaching a peak in 2007. This means that many banks remain too-big-to-fail, and that the need to bail out banks experiencing distress in the future cannot be excluded.
- After reaching a low point in 2008, the largest banks among the directly supervised banks have materially expanded their ratio of off-balance sheet items to total assets, possibly with a view to arbitrage capital requirements and thereby increasing bank risk.
- Directly supervised banks have increased their investments in government securities relative to total assets after the crisis, exposing them more to sovereign risk. Banks are encouraged to invest in government debt due to an inappropriately low zero risk weighting of sovereign debt.
- Directly supervised banks have materially increased the ratio of regulatory total capital to risk-weighted assets after the crisis. The leverage ratio, computed as the ratio of bank equity to total assets, instead increased only slightly after the crisis, which suggests that effective bank capitalization has improved only little.
- The ratio of non-performing loans to total loans of directly supervised banks has reached a very high level in 2013, which implies that the effects of the crisis are far from over. The pattern of provisioning for loan losses over the 2003-2013 period shows a tendency for banks to be overly optimistic regarding loan quality during high-growth years.

Addressing these concerns may require a combination of new regulation and appropriate enforcement of already existing regulation. An example of new regulation that could be useful to reduce concentrations of sovereign debts in bank portfolios would be to stipulate that banks can only benefit from the zero risk-weighting of sovereign exposures in calculating risk-weighted assets, if they hold Eurozone sovereign debts in a fixed proportion, say reflecting each country’s share in overall Eurozone GDP. A reduction of banks’ ability to effectively reduce bank capitalization through off-balance sheet exposures instead is potentially achieved by paying more supervisory attention to the way that banks calculate the exposure values associated with their off-balance sheet items, as inputs into the calculation of the overall on-balance and off-balance risk-weighted assets. Supervisors should further insist on adequate provisioning for future loan losses also before a next economic downturn materializes.
1. INTRODUCTION

Banks in the Eurozone have undergone a systemic banking crisis in the years 2007-2009 giving rise to a recession with a negative Eurozone GDP growth of -4.5% in 2009. Subsequently, Eurozone banks experienced a sovereign debt crisis during 2010-2012, with negative growth rates of -0.8% and -0.5% in 2012 and 2013, respectively. This paper documents broad trends regarding Eurozone banking market performance and structure during 2003-2013, spanning the systemic banking and sovereign debt crises. We find that the negative effects of the overall crisis on bank performance are far from over. More generally, the identified trends provide a mixed picture of whether banks have been moving in the right direction of increased financial stability since the start of the crisis.

The main focus of this paper is on the 123 banks that are directly supervised by the European Central Banks as the single supervisor in the Single Supervisory Mechanism (SSM) as of January 30, 2015. Table 1 in Annex I provides a breakdown of these directly supervised banks by Eurozone country. We construct arithmetic averages of key variables for these banks. These arithmetic averages inform us about the average bank as directly supervised by the ECB. The directly supervised banks represented 80.9% of total Eurozone banking assets at the end of 2013.

In addition, we separately consider a smaller set of 9 directly supervised banks that are identified as Global Systemically Important Banks (G-SIBs) by the Financial Stability Board (see Financial Stability Board, 2013). Table 2 in Annex I lists the names of these Eurozone G-SIBs, and it provides information on their assets relative to national GDP. We examine the group of G-SIBs separately, as these very large banks tend to differ from other banks in terms of overall business models and performance, and hence potentially have developed differently since the start of the crisis. The 9 G-SIBs together represent 39.3% of total Eurozone banking assets in 2013. Reflecting the large size of the G-SIBs, arithmetic average variables for this group of banks closely correspond to overall Eurozone banking market averages.

Our main data source for bank-level information is Bankscope compiled by Bureau Van Dijk. We match significant banks directly supervised by the ECB under SSM with the Bankscope financial statement database. This allows us to analyse banking trends over a relatively long time period, which includes several pre-crisis years. The data from Bankscope also allows us to make a distinction between the overall sample of banks supervised by the ECB (the SSM sample) and the largest banks supervised by the ECB (the G-SIB sample).

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1 For a narrative of the recent crisis, see the Liikanen Report (2012).
2 For the criteria for determining the significance supervised banks, see ECB (2015b). For the list of significant supervised entities, see ECB (2015c).
3 We calculate this figure by dividing the total assets of directly supervised banks from the Bankscope database by the total assets of all Eurozone banks from the ECB Consolidated Banking Data.
4 In some instances, we cannot match the bank group name with Bankscope data (or Bankscope includes only a few observations for the group). In these cases, we instead use data for one of the supervised entities of that group matched by country of establishment and the size of the entity. A similar approach is followed by some papers to present sizes of those groups, see for example European Parliament briefing paper (2014).
5 Banking statistics available from the ECB instead are available only from 2007, and they are at the aggregate level. See ECB (2014), and ECB (2015a).
6 We use consolidated statements from the Bankscope database if available, and drop any statements leading to data inconsistencies (these pertain to banks that change from unconsolidated to consolidated statements during the sample period). Out of 123 supervised groups, we are able to match 121 to Bankscope data, excluding only Deutsche Bank Ltd (Malta) and Barclays Italy PLC (Italy) that are two relatively small banks. In particular, Deutsche Bank (Malta) Ltd. has Euro 2.8 billion in assets in 2013, while the ECB classifies Barclays Italy PLC’s as being in the Euro 30-50 billion group (see European Parliament briefing paper, 2014). This means that the total size of these two banks is less than 0.2% of total banking assets of Eurozone banks of Euro 26.79 trillion Euro in 2013.
In this briefing paper, we consider a range of variables related to bank profitability, activity mix, size, off-balance sheet exposure, balance sheet composition, and loan impairment. The trends in these variables reflect macroeconomic and bank policy influences, as well as decisions taken by the banks themselves. We do not attempt to offer full explanations of these trends, but rather aim to see whether the observed trends are consistent with the objective of improved financial stability.

Some of the observed trends can be labelled positive, as they suggest a better functioning of the Eurozone banking market and improved bank stability after the crisis. Several other trends, however, raise potential supervisory concerns for the ECB as the relevant supervisor, as they imply insufficient change in the direction of improved bank stability. Trends that can be labelled positive are:

- Following the crisis, SSM banks have increased their funding through customer deposits, and they have reduced the share of loans in total assets. Both of these developments contribute to more stable banks.
- After the crisis, G-SIBs in the Eurozone have adopted less risky activities mixes focusing more on traditional banking activities, thereby becoming more like the average SSM bank.
- The crisis did not cause a retrenchment of international banking in the Eurozone, which suggests that the benefits of international bank integration can still be reaped.

Trends that raise supervisory concerns are:

- The average SSM bank return on assets is still negative in 2013, and hence needs to improve materially in following years to guarantee bank stability.
- Average SSM bank size, measured as total assets relative to GDP, has declined only slightly after reaching a peak in 2007. This means that many banks remain too-big-to-fail, and that the need to bail out banks experiencing distress in the future cannot be excluded.
- After reaching a low point in 2008, G-SIBs in the Eurozone have materially expanded their ratio of off-balance sheet items to total assets, possibly with a view to arbitrage capital requirements and thereby increasing bank risk.
- SSM banks have increased their investments in government securities relative to total assets after the crisis, exposing them more to sovereign risk. Banks are encouraged to invest in government debt due to an inappropriately low zero risk weighting of sovereign debt.
- SSM banks have materially increased the ratio of regulatory total capital to risk-weighted assets after the crisis. The leverage ratio, computed as the ratio of bank equity to total assets, instead increased only slightly after the crisis, which suggests that effective bank capitalization has improved only little.
- The ratio of non-performing loans to total loans of SSM banks has reached a very high level in 2013, which implies that the effects of the crisis are far from over. The pattern of reserving for loan losses over the 2003-2013 period shows a tendency for banks to be overly optimistic regarding loan quality during high-growth years.

The years 2003-2013 precede the date of November 4, 2014 when the ECB assumed responsibility for the euro area banking sector. The ECB thus cannot be held accountable for the banking trends as described in this briefing paper. Rather, the ECB should aim to implement an overall supervisory framework serving to alleviate the concerns addressed above.

Addressing these concerns may require a combination of new regulation and appropriate enforcement of already existing regulation. An example of new regulation that could be useful to reduce concentrations of sovereign debts in bank portfolios would be to stipulate that banks can only benefit from the zero risk-
weighting of sovereign exposures in calculating risk-weighted assets if they hold Eurozone sovereign debts in a fixed proportion, say reflecting each country’s share in overall Eurozone GDP. A reduction of banks’ ability to effectively reduce bank capitalization through off-balance sheet exposures instead is potentially achieved by paying more supervisory attention to the way that banks calculate the exposure values associated with their off-balance sheet items, as inputs into the calculation of the overall on-balance and off-balance risk-weighted assets. Supervisors should further insist on adequate reserving for future loan losses also before a next economic downturn materializes.

Section 2 documents trends in bank performance; section 3 describes trends related to bank business models, size, off-balance sheet exposures, and internationalization; section 4 describes trends regarding asset composition, liability composition, and capitalization; and section 5 relates trends in loan impairment and loan loss reserving. Section 6 concludes.

2. PERFORMANCE

This section examines the development of banks’ return on assets (ROA), which is defined as net income over total assets. In addition, we consider the net interest margin, defined as net interest revenue over earning assets, and overhead over total assets, which is a measure of banks’ non-interest costs. The return on assets positively reflects the net interest margin, while it negatively reflects overhead over total assets.

Figure 1 shows that the return on assets for the average SSM bank has been adversely affected by the financial crisis, and that it has been negative during 2011-2013 (the return on assets was -0.13% in 2013). This implies that the negative impact of the crisis was far from over in 2013. At some point, after most of the losses associated with the crisis have been taken, the average bank ROA has to become significantly positive again, perhaps at a lower level than before the crisis.\(^7\)

Figure 1: Return on assets

[Graph showing return on assets for SSM banks and G-SIBs from 2003 to 2013.]

Source: Bankscope and authors’ own calculations.

In the figure, the average G-SIB ROA is relatively less responsive to the overall economic and financial cycle, as it was below the average SSM bank ROA until 2008, and above it afterwards. This possibly reflects that G-SIBs are less risky due to better asset and activity diversification. Alternatively, the

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\(^7\) The after-crisis ROA may turn out to be lower than before the crisis, for instance on account of a stronger focus on interest-generating activities (see below). Conversely, higher capitalization rates (see below) may work in the direction of a higher ROA. Demirguc-Kunt and Huizinga (1999) find that higher bank capitalization rates are associated with higher bank ROAs, perhaps because of lower expected bank failure costs for the bank themselves and for bank customers.
relatively good profitability of the G-SIBS during the crisis may be due to the relatively strong public support that G-SIBs received on account of their too-big-to-fail status. In the future, however, bailout support for banks in distress is less likely to be provided to banks of any size, as intended by the Bank Recovery and Resolution Directive, which took effect on January 1, 2015. Thus, the biggest Eurozone banks on a stand-alone basis need to improve their ROA more after 2013 than is reflected in the figure.

Figure 2 shows that the average SSM bank net interest margin has declined in steps from 2.07% in 2003 to 1.45% in 2013, in part reflecting a decline in inflation during the period. The average G-SIB net interest margin was relatively low before the crisis, suggesting that pre-crisis G-SIBs only succeeded in growing rapidly by attracting relatively expensive funding and achieving relatively low returns on their loans and other investments. After 2007, the average G-SIB net interest margin has been very close to the overall average SSM bank net interest margin, in part reflecting that the funding and asset allocation models of the biggest banks have become more like the overall SSM average.

Figure 2: Net interest margin

![Net interest margin graph](image)

Source: Bankscope and authors’ own calculations.

Figure 3 in turn shows that the average SSM bank ratio of overhead to assets has declined from 2.3% in 2003 to 1.39% in 2013, as banks have turned to less labour-intensive banking technologies. The average G-SIB ratio of overhead to assets also declined from 2003 to 2008, but it has been rising since then. This suggests that pressures to keep down labour costs at the largest banks have gradually subsided after the depth of the crisis. This is a potential threat to improved profitability of the largest banks, and hence to financial stability.

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8 Demirguc-Kunt and Huizinga (1999) show that net interest margins are positively related to the inflation rate.
KEY FINDINGS

- The average SSM bank ROA is still negative in 2013, and hence needs to improve materially in following years to guarantee bank stability. The G-SIBs have achieved relatively high ROAs since the crisis, possibly reflecting public support on account of their too-big-to-fail status during the crisis.

3. STRUCTURAL ISSUES

In this section, we consider trends in structural indicators related to banks’ activity mix, size, off-balance sheet exposure, and the degree of internationalization of Eurozone banking markets.

3.1 Focus of activities

In Figure 4 we consider the ratio of non-interest income to total operating income as an index of banks’ activity mix; total operating income includes net interest income as well as non-interest income from trading activities and fee income. The average SSM bank ratio of non-interest income to total income dropped in 2008 in part reflecting trading losses, and subsequently rose back to levels comparable to pre-crisis levels. The average SSM bank thus does not appear to have materially changed its overall business model on account of the crisis.

The average G-SIB ratio of non-interest income to total income similarly dropped from 57.24% in 2007 to 35.38% in 2008. Subsequently, the G-SIB non-interest income ratio has risen only slightly, which suggests that it will remain permanently lower after the crisis. This by itself indicates that the G-SIBs have chosen to adopt a less risky overall business model after the crisis, as evidence in Demirguc-Kunt and Huizinga (2010) shows that bank risk is positively related to the ratio of non-interest income to total operating income.
Figure 4: Non-interest income over operating income

Trading income, as indicated, is part of a bank’s non-interest income. Figure 5 focuses on the ratio of a bank’s trading income to total operating income. The figure shows that average trading income over total operating income turned negative in 2008 for the average SSM bank as well as for the average G-SIB. Otherwise, the trends in trading income relative to total operating income in Figure 5 are very similar to the trends in non-interest income relative to total operating income in Figure 4. In particular, the average G-SIB appears to have permanently scaled back its focus on generating trading income after the crisis. Nonetheless, the average G-SIB ratio of trading income to total operating income remained significant at 6.41% in 2013. Following suggestions in the Liikanen Report (2012) on reforming the structure of the EU banking sector, the European Commission (2014) proposes a ban on proprietary trading for the largest 30 or so European banks, which would include the G-SIBs, to reduce the risk of bank failure. Our data suggests that Eurozone G-SIBs will still need to reduce their trading activities significantly in case the proposed ban on proprietary trading is enacted.

3.2 Bank size, off-balance sheet exposure, and internationalization

Banks with a high assets to GDP ratio are systemically important, and potentially a threat to overall financial stability. In line with this, Laeven, Ratnovski, and Tong (2014) find that large banks contribute
more to systemic risk (especially if they are lowly capitalized and have a large share of non-interest income in total operating income). Figure 6 shows that the average SSM bank assets-to-GDP ratio rose sharply from 27.4% in 2003 to 36.94% in 2007, and has declined relatively little since then to reach 29.36% in 2013.

The decline in bank size relative to GDP after 2007 has private benefits to bank shareholders as suggested by evidence in Bertay, Huizinga, and Demirguc-Kunt (2013), indicating that bank ROA, and also return on equity, are negatively related to bank size relative to GDP. Consistent with this, Demirguc-Kunt and Huizinga (2013) find that bank valuation in the stock market is negatively related to bank size. The Bank Recovery and Resolution Directive, which is now in force, makes it less likely that large banks will receive public bailouts in a crisis on account of their too-big-to-fail status, and hence should make a decline in bank size more privately beneficial than before.

Evidence in favour of shareholder benefits of smaller bank size relative to GDP begs the question why many banks have so massively increased in size in the years leading up to the crisis. A potential answer to this question is that executive compensation tended to be positively related to total bank assets. This suggests that it will be important to monitor executive compensation schemes to ensure that these do not bias executive incentives towards making banks bigger.

Eurozone G-SIBs show a qualitatively similar pattern of rising assets-to-GDP ratios from 2003 to 2007, and an overall decline after 2007. The decline in the assets-to-GDP ratio of the largest banks, however, has been relatively small. Potential reasons for this relatively minor downsizing of the G-SIBs are that their managers are still rewarded for maintaining large bank size, and that the future intended regime of bail-ins rather than bailouts for the largest banks is not taken to be fully credible (so that the G-SIBs still count on receiving public bailouts if they experience distress). This suggests that the problem of too-big-to-fail has not yet been fully resolved.

![Figure 6: Assets over GDP](image)

Source: Bankscope, World Development Indicators (World Bank), and authors’ own calculations.

Banks have an incentive to maintain off-balance sheet exposures, if these exposures attract relatively low risk weights as used in the calculation of overall risk-weighted on-balance sheet and off-balance sheet assets. Lower risk-weighted assets imply a higher regulatory capital ratio computed as the ratio of regulatory capital to risk-weighted assets. Acharya, Schnabl, and Suarez (2013) find that capital regulatory arbitrage was an important motive behind banks’ setting up of off-balance sheet commercial paper conduits in the US before the crisis. Figure 7 shows that the average SSM bank ratio of off-balance sheet items to total assets declined during the crisis years 2007-2012, to some extent reflecting that the crisis forced banks to take some previously off-balance sheet obligations onto the balance sheet to prevent reputational loss in case of conduit failure.
The ratio of off-balance sheet items to total assets has been relatively volatile for the G-SIBs: it fell relatively much from 15.62% in 2007 to 10.97% in 2008, and subsequently rose significantly to 16.69% in 2013. The resurgence of off-balance sheet exposures of the largest banks after the crisis suggests that such exposures still are an effective mechanism for these banks to arbitrage capital adequacy regulations. Adequate supervisory enforcement of rules for the assignment of appropriate exposure values to off-balance sheet items is important to reduce banks’ incentives to use off-balance sheet structures to arbitrage capital adequacy rules.\(^9\)

**Figure 7: Off-balance sheet items over total assets**

![Graph showing off-balance sheet items over total assets from 2003 to 2013.]

Source: Bankscope and authors’ own calculations.

Turning to bank internationalization, Figure 8 provides two measures of banking market internationalization in the Eurozone, based on data from Claessens and Van Horen (2014).\(^10\) First, the figure displays the GDP-weighted average for all the Eurozone countries of the percentage of foreign banks in total banks for the years 2005 to 2014. This ratio rose from 15.24% in 2005 to 17.63% in 2013, with the upward trend little if at all affected by the crisis. Second, the GDP-weighted average ratio for all Eurozone countries of the assets of foreign-owned banks relative to total banking assets is seen to have changed relatively little from 13.6% in 2005 to 13.15% in 2013 (even if it was somewhat lower in the intervening years 2006-2008).

The failure of the crisis to materially affect Eurozone banking integration may be due to the creation of the European Banking Union and, in particular, the Single Resolution Mechanism. A single resolution mechanism in the Eurozone should eliminate or at least reduce any bias of national public authorities towards generous bailouts of especially domestic bank when in distress. Continued internationalization of Eurozone banking markets is very valuable, as Schnabel and Seckinger (2015) show evidence that total foreign bank assets, as a measure of banking sector integration, had strong growth effects on industrial output in Europe especially during the crisis.

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\(^9\) It remains to be seen whether the rules of assigning exposure values to off-balance sheet items in the EU’s new capital regulatory framework materially reduce options for banks to use off-balance sheet items to arbitrage capital regulations. For the rules to be used in the standardized approach see European Commission (2013, Article 111).

\(^10\) To represent foreign banking, we use country-level averages unlike the bank-level averages in all other figures. Claessens and Van Horen (2014) only provide country-level data on bank foreign ownership.
Figure 8: Foreign banking

Source: Claessens and Van Horen (2014) and authors' own calculations.

KEY FINDINGS

- After the crisis, G-SIBs in the Eurozone have adopted less risky activities mixes focusing more on traditional banking activities, thereby becoming more like the average SSM bank.
- Average SSM bank size, measured as total assets relative to GDP, has declined only slightly after reaching a peak in 2007. This means that many banks remain too-big-to-fail, and that the need to bail out banks experiencing distress in the future cannot be excluded.
- After reaching a low point in 2008, G-SIBs in the Eurozone have materially expanded their ratio of off-balance sheet items to total assets, possibly with a view to arbitrage capital requirements and thereby increasing bank risk.
- The crisis did not cause a retrenchment of international banking in the Eurozone, which suggests that the benefits of international bank integration can still be reaped.

4. BALANCE SHEET ANALYSIS

In this section, we consider trends in banks’ asset composition, their liability composition, and their capitalization with a view to assessing how these trends affect bank stability.

4.1 Asset composition

In this subsection, we focus on developments in the portfolio shares of loans and of government securities in banks’ asset portfolios. From a bank’s perspective, loans tend to be a riskier asset category than investments in securities generally. Figure 9 shows that the average SSM bank ratio of loans to total assets rose from 52.26% in 2003 to 56.12% in 2008, while it subsequently fell to 53.58% in 2013. The crisis thus reversed the prior trend towards a greater emphasis on loans in bank portfolios. The post-crisis decline in the loans to assets ratio of the average SSM bank should increase bank stability, even if it implies that banks become less important as a source of loan finance to the economy. The G-SIBs, in turn, saw a relatively large increase in the average loans to assets ratio from 37.42% in 2003 to 38.90% in 2013, which suggests that these banks are becoming more like the average SSM bank and are adopting a more traditional, customer-focused banking model.
As seen in Figure 10, the average SSM bank reduced its ratio of government securities to total assets over the 2003-2008 years, in part to accommodate a higher loans to assets ratio. Subsequently, the average ratio of government securities to total assets rose from 6.12% in 2008 to 11.15% in 2013. G-SIBs in the Eurozone have been less heavily exposed to sovereign debt throughout the 2003-2013 period, but they also displayed a clear upward trend in their sovereign exposures after the onset of the crisis.

Acharya and Steffen (2015) describe the increase in bank holdings of Eurozone government debt in recent years as the greatest carry trade ever, as these used cheap additional liquidity made available by the ECB to increase their exposure to higher-yielding government debt. Banks in peripheral Eurozone countries especially had an incentive to invest in their own governments’ debt, as these banks would stand a high chance of failure in case of a domestic sovereign default, regardless of the size of their exposure to their own sovereign. Consistent with this, Battistini, Pagano, and Simonelli (2014) find that banks especially in the periphery countries increased their domestic government debt exposure in response to increases in home country risk.
Higher concentrations of especially domestic government debt in bank portfolios increase the probability of a joint banking and sovereign debt crisis. A major objective of bank supervisory and regulatory action in coming years should be to reverse these concentrations. A hindrance in this respect is that the newly adopted capital adequacy rules in the EU continue to assign a risk weight of zero to exposures to Member States’ central governments. To reduce sovereign debt concentrations in bank portfolios, Corsetti et al. (2015) recently proposed to introduce new regulation that would require banks to hold sovereign bonds of different sovereigns in some fixed proportion, for example in proportion to each country’s share in Eurozone GDP, to attain a zero risk weighting.

4.2 Liability composition

In this subsection, we consider trends in banks’ reliance on customer deposits and other short-term funding in their overall funding structures. Banks that rely to a large extent on funding themselves by way of customer deposits are relatively safe, as customer deposits are a stable and relatively cheap source of bank funding, in part as customer deposits are covered by deposit insurance. Figure 11 shows that the average SSM bank ratio of customer deposits to total liabilities declined from 50.31% in 2003 to 42.11% in 2008, as the rate of customer deposit growth apparently was lower than the overall rate of bank expansion. The crisis made it more difficult for banks to attract non-deposit funding, and the rate of customer deposits in total deposits is seen to rise to 50.13% in 2013. The ratio of customer deposit to total liabilities for the largest banks, while being relatively low throughout the 2003-2013 period, displays a similar pattern. Banks’ renewed reliance on customer deposits following the crisis should make them more stable.

Figure 11: Customer deposits over total liabilities

Banks’ short-term funding excluding customer deposits comprises short-term funding from other banks, from capital markets and from central banks. Short-term non-customer funding from private sources has the disadvantage that it can vanish during a systemic financial crisis, as was witnessed during the most recent financial crisis. Nonetheless, overall non-customer short-term funding for the average SSM bank has been relatively stable throughout the crisis period as seen in Figure 12, even if it declined somewhat in recent years, which should imply lower volatility of bank funding. The G-SIBs, instead, saw a major decline in the ratio of non-customer short-term funding to total funding from 27.71% in 2003 to 17.14% in 2008, in part as these banks were particularly affected by the drought of this type of funding during the

11 See European Commission (2013, Article 114, paragraph 4).
crisis. In recent years, the ratio of non-customer short-term funding for the largest banks has been converging to the higher level for the average bank in the overall SSM sample. This increase in the ratio of non-customer short-term funding to total funding of the G-SIBs by itself may make these banks less stable to the extent that this is market funding (rather than funding from central banks).

**Figure 12:** Short-term funding excluding customer deposits over total liabilities

![Graph showing short-term funding](image)

Source: Bankscope and authors’ own calculations.

### 4.3 Capitalization

This subsection shows trends in two capitalization measures: the regulatory total capital ratio, computed as the sum of Tier 1 and Tier 2 capital divided by risk-weighted assets, and the straightforward ratio of equity to assets. For the average SSM bank, the regulatory total capital ratio displayed a U-pattern with the lowest point in 2006, i.e. before the crisis rather than during the crisis, as seen in Figure 13. The failure of the regulatory total capital ratio of the average SSM bank to fall during the crisis suggests that banks had enough discretion over this ratio to keep it well above the regulatory minimum of 8%. The G-SIBs show relatively low regulatory total capital ratios throughout the 2003-2013 period, which could reflect that they were able to afford this on account of their too-big-to-fail status. The G-SIBs, however, saw lower regulatory total capital ratios in the crisis years 2007 and 2008 than before the crisis, perhaps because they were marking a relatively large share of their assets to market, resulting in quicker and more substantial asset write-downs during the crisis.

In recent years, the regulatory total capital ratio has risen to reach 16.82% for the average SSM bank in 2013, no doubt in anticipation of higher regulatory total capital ratios as part of the Capital Regulation Directive IV package that applies since January 1, 2014. The rise in the regulatory total capital ratio can have come about through a combination of a lower average risk-weight of assets (i.e. a lower ratio of risk-weighted assets to total assets), and a higher ratio of total regulatory capital to total assets. A lower average risk-weight of assets arises on account of higher bank investments in sovereign debt, which tends to attract low risk weights.
The ratio of equity to total assets has the advantage that it is not subject to potential downward risk-weight manipulation by banks that attempt to achieve a higher regulatory total capital ratio. Figure 14 shows that the average SSM bank experienced a declining ratio of equity to assets until 2008, and subsequently a trend towards a higher ratio of equity to capital. This suggests that the ratio of equity to assets better reflects true bank health than the regulatory total capital ratio at the peak of the crisis in 2008. This is confirmed by research by Demirguc-Kunt, Detragiache, and Merrouche (2013) who find that the pre-crisis equity to assets ratio is a better predictor of bank distress during the crisis than the regulatory total capital ratio. The G-SIBs had a lower ratio of equity to total assets throughout the sample period, possibly reflecting their too-big-to-fail status. Otherwise, the development of the equity to assets ratio of the average G-SIB is very similar to the trend for the average SSM bank.

KEY FINDINGS

- Directly supervised banks have increased their investments in government securities relative to total assets after the crisis, exposing them more to sovereign risk. Banks are encouraged to invest in government debt due to an inappropriately low zero risk weighting of sovereign debt.
• Following the crisis, SSM banks have increased their funding through customer deposits, and they have reduced the share of loans in total assets. Both of these developments contribute to more stable banks.
• SSM banks have materially increased the ratio of regulatory capital to risk-weighted assets after the crisis. The leverage ratio, computed as the ratio of bank equity to total assets, instead increased only slightly after the crisis, which suggests that effective bank capitalization has improved only little.

5. LOAN IMPAIRMENT

This section reviews trends in loan impairment, as measured by the ratio of nonperforming loans to gross loans, i.e. loans including loan loss reserves that have been built up in anticipation of future loan losses. The ratio of these loan loss reserves to gross loans is also considered. In addition, we consider the ratio of loan loss provisions (these are the annual additions to loan loss reserves) to gross loans.

Figure 15 shows that the ratio of non-performing loans to gross loans has increased significantly on account of the crisis. Specifically, this ratio rose from an initial 3.10% in 2003 to a much higher 11.49% in 2013 for the average SSM bank. The average G-SIB ratio of nonperforming loans to gross assets displays a qualitatively similar pattern, even if it has been lower than for the average SSM bank in each year. The high levels of nonperforming loans in 2013 suggest that many SSM banks will need to realize high loan losses for many years to come.

**Figure 15:** Non-performing loans over gross loans

![Graph showing non-performing loans over gross loans]

Source: Bankscope and authors’ own calculations.

In Figure 16, the ratio of loan loss reserves to gross loans for the average SSM bank displays a U-pattern with a low point in 2007, which is not long before major future loan losses stemming from the crisis became unavoidable. This suggests that loan loss reserves tend to reflect past losses, rather than future losses, as it is intended. The decline in loan loss reserves for the G-SIBs between 2003 to 2007 was even more pronounced than for the average SSM bank, which suggests that optimism about loan quality at these banks was even more procyclical. By 2013, SSM banks in general had accumulated much higher loan loss reserves than before the crisis. While this may be appropriate given that ample loan losses related to the crisis that still need to be taken, it could also reflect continued procyclicality of loan quality optimism.
Figure 16: Loan loss reserves over gross loans

Source: Bankscope and authors’ own calculations.

The ratio of loan loss provisions to gross loans, as seen in Figure 17, was very low before the crisis, consistent with a very low level of loan loss reserves relative to gross loans before the crisis. Loan loss provisioning has been at significantly higher levels since 2008 than before the crisis. Overall, a high volatility of loan loss provisioning arises from the fact that loan loss provisioning mostly mirrors contemporaneous macroeconomic conditions, rather than longer-term average macroeconomic conditions over the business cycle. A more stable, and sufficiently high level of loan loss provisioning throughout the economic cycle would leave banks better prepared to take loan losses when a major economic and financial downturn materializes.

Figure 17: Loan loss provisions over gross loans

Source: Bankscope and authors’ own calculations.

KEY FINDINGS

- The ratio of non-performing loans to total loans has reached a very high level in 2013, which implies that the effects of the crisis are far from over. The pattern of reserving for loan losses over the 2003-2013 period shows a tendency for banks to be overly optimistic regarding loan quality during high-growth years.
6. CONCLUSIONS

The effects of the recent economic and financial crisis on the Eurozone banking system are still apparent. Banks that are directly supervised by the ECB on average realized a negative return on assets of -0.13% in 2013, while their ratio of non-performing loans to total loans stood at 11.49%.

The experience of the crisis and ensuing policy measures should bring about a change in banking practices and in the structure of the Eurozone banking market that make a recurrence of the crisis less likely.

We find some evidence that banks have indeed changed since the start of the crisis in ways that make them more stable. Banks have started to raise a larger share of their overall funding in the form of customer deposits, and they have reduced their share of loans in total assets. Both developments make banks more stable. In addition, Eurozone G-SIBs have materially reduced their reliance on relatively risky non-interest sources of income such as trading income, which should make them more stable. A further positive finding is that the crisis has not reversed the trend towards greater international banking market integration, which suggests that the economic benefits of such integration will still materialize in the future.

On the negative side, we find that directly supervised banks have only slightly reduced their size relative to GDP since reaching a peak in 2007. This suggests that many banks remain too-big-to-fail, and that the need to bail out these banks with public funds may arise again in the future. Banks are further shown to have increased their exposure to sovereign debt after the crisis, while the G-SIBs have augmented their exposure in the form of off-balance sheet items after the crisis. Both trends potentially imply increased bank risk. Large increases in the ratio of regulatory capital to risk-weighted assets after the crisis have been accompanied by only small increases in the ratio of equity to assets, suggesting that effective capitalization has increased only slightly. Finally, provisioning for loan losses has in the past been unduly based on overly optimistic assessments of loan quality during periods of high economic growth.

Within the evolving regulatory framework, the ECB should use its supervisory tools to bend banking trends towards increased bank stability. Supervisory tools could, for instance, be applied to a greater extent to reduce risky off-balance sheet exposures at very large banks, and also to improve the procedures that banks use to reserve for future loan losses.

In the ECB Annual Report on Supervisory Activities, the ECB (2015b, pp. 6-9) lays out its supervisory priorities for 2015. These priorities, while varied, are not formulated to counter any specific banking trends that the ECB considers to be cause for concern. In the absence of clearly stated and also quantifiable objectives for bank supervision in terms of banking aggregates, it is difficult to ascertain whether the ECB is meeting its own supervisory objectives.
REFERENCES


European Commission, 2013, Regulation No 575/2013 on prudential requirements for credit institutions and investment firms (CRR).


European Parliament, 2014, Single Supervisory Mechanism - Size of directly supervised banks (list at entity level).


Laeven, L., L. Ratnovski, and H. Tong, 2014, Bank size and systemic risk, IMF Staff Discussion Note 14/04.

Report by the high-level expert group on reforming the structure of the EU banking sector (chaired by E. Liikanen), 2012.

http://www.unisg.ch/~/media/internet/content/dateien/unisg/schools/sof/forschungsseminar/2015/fs%202015/schnabel_seckinger_financial_fragmentation_and%20economic_growth_in_europe.pdf
ANNEX 1. DIRECTLY SUPERVISED BANKS BY COUNTRY AND LIST OF GLOBAL SYSTEMICALLY IMPORTANT BANKS (G-SIBS)

**Table 1:** Eurozone countries and the number of directly supervised banks

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of banks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>8</td>
</tr>
<tr>
<td>Belgium</td>
<td>7</td>
</tr>
<tr>
<td>Cyprus</td>
<td>4</td>
</tr>
<tr>
<td>Estonia</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>3</td>
</tr>
<tr>
<td>France</td>
<td>10</td>
</tr>
<tr>
<td>Germany</td>
<td>21</td>
</tr>
<tr>
<td>Greece</td>
<td>4</td>
</tr>
<tr>
<td>Ireland</td>
<td>4</td>
</tr>
<tr>
<td>Italy</td>
<td>14</td>
</tr>
<tr>
<td>Latvia</td>
<td>3</td>
</tr>
<tr>
<td>Lithuania</td>
<td>3</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>5</td>
</tr>
<tr>
<td>Malta</td>
<td>3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>7</td>
</tr>
<tr>
<td>Portugal</td>
<td>4</td>
</tr>
<tr>
<td>Slovakia</td>
<td>3</td>
</tr>
<tr>
<td>Slovenia</td>
<td>3</td>
</tr>
<tr>
<td>Spain</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>123</strong></td>
</tr>
</tbody>
</table>

Source: ECB (2015c).

**Table 2:** Eurozone G-SIBs

<table>
<thead>
<tr>
<th>Bank</th>
<th>Country</th>
<th>Assets over GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBVA</td>
<td>Spain</td>
<td>58%</td>
</tr>
<tr>
<td>BNP Paribas</td>
<td>France</td>
<td>88%</td>
</tr>
<tr>
<td>BPCE</td>
<td>France</td>
<td>35%</td>
</tr>
<tr>
<td>Credit Agricole</td>
<td>France</td>
<td>76%</td>
</tr>
<tr>
<td>Deutsche Bank</td>
<td>Germany</td>
<td>60%</td>
</tr>
<tr>
<td>ING Bank</td>
<td>Netherlands</td>
<td>175%</td>
</tr>
<tr>
<td>Santander</td>
<td>Spain</td>
<td>110%</td>
</tr>
<tr>
<td>Societe Generale</td>
<td>France</td>
<td>61%</td>
</tr>
<tr>
<td>Unicredit Group</td>
<td>Italy</td>
<td>54%</td>
</tr>
</tbody>
</table>

Sources: Financial Stability Board (2013), Bankscope and World Development Indicators, World Bank.