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IN-DEPTH ANALYSIS

Have European banks actually changed since the start of the crisis? An updated assessment of their main structural characteristics

External authors: Ata Can Bertay
Ozyegin University
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Tilburg University

Provided at the request of the
Economic and Monetary Affairs Committee

ECON
July 2017
EN

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Provided in advance of the public hearing
of the Chair of the Single Supervisory Mechanism
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Abstract
This paper documents trends in key bank variables over the 2003-2016 period for the set of banks that the ECB directly supervises as of January 1, 2017. A range of variables is considered that together indicate to what extent banks have been moving in the direction of better performance and greater stability. We examine variables related to bank profitability, activity mix, size, balance sheet composition, and loan impairment. 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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DISCLAIMER

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LIST OF ABBREVIATIONS

CDS Credit Default Swap
ECB European Central Bank
GDP Gross Domestic Product
G-SIB Global Systemically Important Bank
IFRS International Financial Reporting Standard
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 2003-2016. The main focus of this briefing paper is on the 125 banks that are directly supervised by the European Central Bank (ECB) as the single supervisor in the Single Supervisory Mechanism (SSM). Our data sources for bank-level information are Bankscope (for the period 2003-2015) and Orbis Bank Focus (for the years 2015-2016) of Bureau Van Dijk.

We consider a range of variables related to bank profitability, activity mix, size, 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 in recent years:

- The size of the average Eurozone G-SIB has continued to decline.
- The average directly supervised bank and the average Eurozone G-SIB have increased their ratios of loans to total assets, while they have reduced their ratios of government securities to total assets.
- The average directly supervised bank and the average Eurozone G-SIB have increased their ratios of customer deposit funding to total liabilities, while they have reduced their ratios of wholesale short-term funding to total liabilities.
- Directly supervised banks generally have been able to materially increase their capitalization rates.

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

- In recent years, the average directly supervised bank and the average Eurozone G-SIB have achieved returns on assets that are positive but close to zero, in part reflecting low net interest margins and rising ratios of overhead to assets.
- The average Eurozone G-SIB remains considerably less well capitalized than the average directly supervised bank, and has been able to increase its capitalization much less in recent years.
- The ratio of non-performing loans to total loans of directly supervised banks remains very high, even if it has declined during 2014-2016 after reaching a peak in 2013.
- During 2003-2016, the pattern of loan loss provisioning of directly supervised banks has been highly countercyclical.

The low profitability of Eurozone banks partly reflects only moderate economic growth and a low interest rate environment that are beyond the control of the banks and the supervisor. An appropriate response to increase profitability is to downsize banks with or without supervisory involvement. Among the SSM banks, the G-SIBs are a special concern as i) their return on assets in 2016 was even lower than for the average SSM bank, ii) they still are very large despite some recent downsizing, and iii) they have been able to increase their capitalization relatively little. The currently still high average ratio of non-performing loans to total loans is a legacy problem of the banking and sovereign debt crises. Sufficient supervisory pressure from the ECB will be required in the years to come to ensure that this ratio continues to go down fast enough. Concerns about the cyclicality of loan loss provisions are in part addressed by the implementation of International Financial Reporting Standard 9 (IFRS 9) on Financial Instruments planned for January 1, 2018, which aims to implement a forward-looking, expected loss model of loan loss provisioning. Even before this date, however, the supervisor should ensure that banks take sufficiently high loan loss provisions in preparation for any future financial crisis.

1. INTRODUCTION

This briefing paper documents broad trends regarding Eurozone banking market performance and structure during the 2003-2016 period.[1] Following the banking crisis of 2007-2009 and the sovereign debt crisis of 2010-2012, the Eurozone has achieved moderate GDP growth rates of 1.2%, 2.0%, and 1.8% in the years 2014-2016. Despite this relatively benign macroeconomic environment, Eurozone banks have not yet fully recovered from the twin crises as evidenced by recent trends.

The main focus of this paper is on the 125 banks that are directly supervised by the European Central Bank as the single supervisor in the Single Supervisory Mechanism (SSM) as of January 1, 2017. Table 1 in Annex I provides a breakdown of these directly supervised banks by Eurozone country.[2] 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 82.2% of total Eurozone banking assets in 2016.[3]

In addition, we separately consider a smaller set of 8 directly supervised banks that are identified as Global Systemically Important Banks (G-SIBs) by the Financial Stability Board (see Financial Stability Board, 2016). 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 8 G-SIBs together represent 41.7% of total Eurozone banking assets in 2016.

We obtain bank-level information from Bankscope compiled by Bureau Van Dijk for the years 2003-2015, and from Orbis Bank Focus from the same provider for the years 2015-2016.[4] We match significant banks directly supervised by the ECB under SSM with the Bankscope and Orbis Bank Focus financial statement databases.[5] This allows us to analyse banking trends over a relatively long time period that includes several pre-crisis years. The data from Bankscope and Orbis Bank Focus also allow 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).[6]

In this briefing paper, we consider a range of variables related to bank profitability, activity mix, size, 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 improved bank stability. Several other trends, however, raise potential supervisory concerns for the ECB as the relevant supervisor, as they imply ambiguous or insufficient change in the direction of improved bank stability. During the recent period of 2014-2016, trends that can be labelled positive are:

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[1] This paper provides an update of Bertay and Huizinga (2015) that documents trends for Eurozone banks during the period 2003-2013.

[2] For the list of significant supervised entities, see ECB (2017c).

[3] We calculate this figure by dividing the total assets of directly supervised banks from the Orbis Bank Focus database by the total assets of all Eurozone banks from the ECB Consolidated Banking Data in the second quarter of 2016.

[4] For 2015, we supplement data from Bankscope with data from Orbis Bank Focus.

[5] In some instances, we cannot match the bank group name with Bankscope and Orbis Bank Focus data (or these sources include 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.

[6] The ECB only publishes aggregated banking statistics in the form of the Consolidated Banking Data (see https://www.ecb.europa.eu/stats/supervisory_prudential_statistics/consolidated_banking_data/html/index.en.html), and currently also in the form of the Supervisory Banking Statistics (see ECB, 2017d).

- The average G-SIB size, measured as total assets relative to GDP, has continued to decline.
- The average SSM bank and the average G-SIB have increased their ratios of loans to total assets, while they have reduced their ratios of government securities to total assets.
- The average SSM bank and the average G-SIB have increased their ratios of customer deposit funding to total liabilities, while they have reduced their ratios of wholesale short-term funding to total liabilities.
- SSM banks generally have been able to materially increase their capitalization rates.

More ambiguously, the average SSM bank and the average G-SIB have shifted their business mix towards more non-interest income generating activities as reflected in a rising ratio of non-interest income to total operating income. This trend is positive to the extent that it signals increased income diversification for banks, but it also raises concerns about bank stability as non-interest income tends to more volatile.

Trends that raise supervisory concerns are:

- In recent years, the average SSM bank and the average Eurozone G-SIB have achieved returns on assets that are positive but close to zero, in part reflecting low net interest margins and rising ratios of overhead to assets.
- The average G-SIB remains considerably less well capitalized than the average SSM bank, and has been able to increase its capitalization much less in recent years.
- The ratio of non-performing loans to total loans of directly supervised banks remains very high, even if it has declined during 2014-2016 after reaching a peak in 2013.
- During 2003-2016, the pattern of loan loss provisioning of SSM banks has been highly countercyclical.

The low profitability of Eurozone banks partly reflects only moderate economic growth and a low interest rate environment that are beyond the control of the banks and the supervisor. An appropriate response to increase profitability is to downsize banks with or without supervisory involvement. Among the SSM banks, the G-SIBs are a special concern as i) their return on assets in 2016 was even lower than for the average SSM bank, ii) they still are very large despite some recent downsizing, and iii) they have been able to increase their capitalization relatively little. The currently still high average ratio of non-performing loans to total loans is a legacy problem of the banking and sovereign debt crises. Sufficient supervisory pressure from the ECB will be required in the years to come to ensure that this ratio continues to go down fast enough. Concerns about the cyclicality of loan loss provisions are in part addressed by the implementation of International Financial Reporting Standard 9 (IFRS 9) on Financial Instruments planned for January 1, 2018, which aims to implement a forward-looking, expected loss model of loan loss provisioning. Even before this date, however, the ECB should ensure that banks take sufficiently high loan loss provisions in preparation for any future financial crisis.

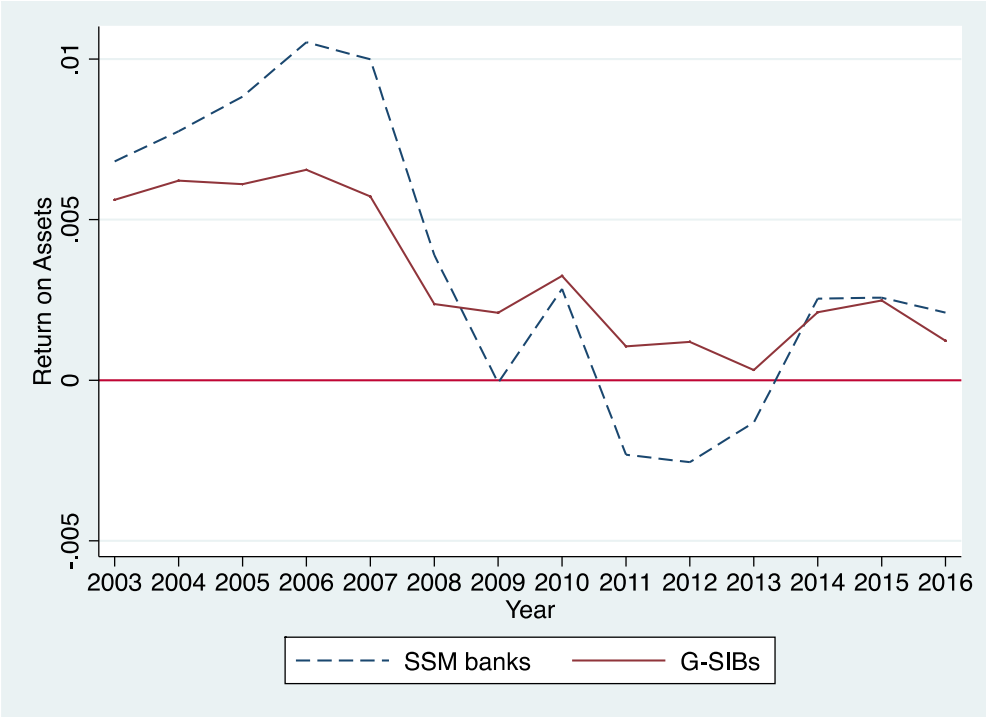
Section 2 documents trends in bank performance; section 3 describes trends related to bank business models and size; section 4 describes trends regarding asset composition, liability composition, and capitalization; and section 5 relates trends in loan impairment and loan loss reserving. Section 6 concludes.

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 turned negative during 2011-2014. More recently during 2014-2016, the rate of return on assets for the average SSM bank has been positive, but at very low levels. In 2016, it only was 0.21%. At this low level, banks cannot earn a satisfactory return for their shareholders, which suggests that banks will need to curtail some activities and downsize in order to raise their profitability.

Figure 1: Return on assets

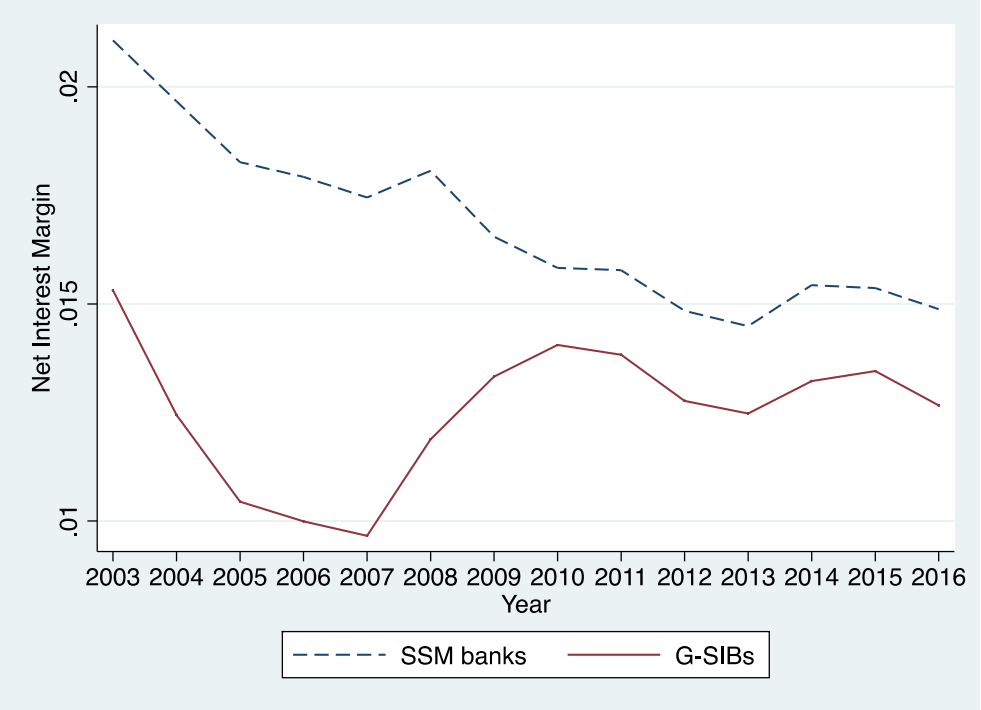


Sources: Bankscope, Orbis Bank Focus and authors' calculations.

The average G-SIB ROA remained positive throughout the 2003-2016 period. Perhaps this reflects that G-SIBs are less risky due to better asset and activity diversification. Alternatively, the G-SIBs were able to remain profitable during the crisis on account of their too-big-to-fail status which would suppress funding costs. During 2014-2016, the average G-SIB achieved a rate of return that was even lower than for the average SSM bank. In 2016, it was only 0.12%, which suggests that especially the G-SIBs will need to restructure or reduce their activities in order to become more profitable.

Figure 2 shows that the average SSM bank net interest margin declined from 2.1% in 2003 to 1.4% in 2013, and has been relatively constant since then. In 2016, the average net interest margin stood at a low level of 1.5%, reflecting moderate economic growth and a low interest rate environment. The average G-SIB net interest margin has been lower than for the average SSM bank throughout the 2003-2016 period. Since 2010, the average G-SIB net interest margin has tracked the average SSM bank net interest margin rather well, which suggests some convergence in asset allocation and funding models. In 2016, the average G-SIB achieved a rather low net interest margin of 1.3%.

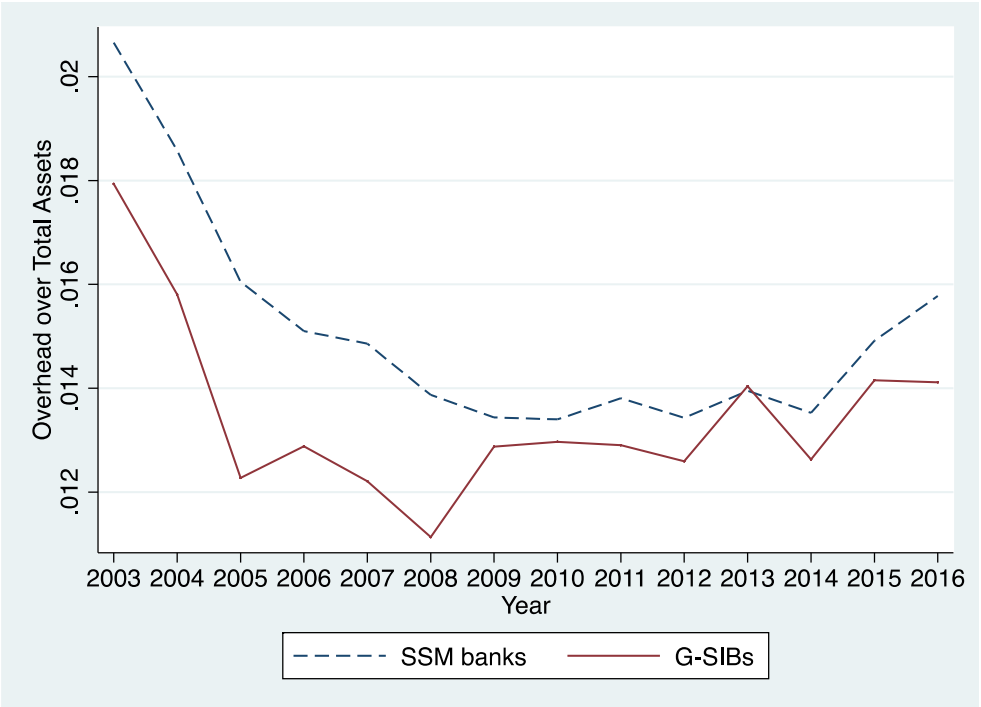
Figure 2: Net interest margin



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

Figure 3 shows that the average SSM bank ratio of overhead to assets displays a U-pattern during the 2003-2016 period: it declined from 2.1% in 2003 to 1.3% in 2010, and subsequently rose to 1.6% in 2016. Similarly, the average G-SIB ratio of overhead to assets also has risen since the crisis. Recently higher overhead to assets ratios of Eurozone banks could reflect a combination of higher labour costs after the crisis, increased spending on information technology, or to some extent a refocusing of banks towards non-interest income generating activities which tend to be more labour-intensive, and hence costly.

Figure 3: Overhead over total assets



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

KEY FINDINGS

- In recent years, the average SSM bank and the average Eurozone G-SIB have achieved returns on assets that are positive but close to zero, in part reflecting low net interest margins and rising ratios of overhead to assets.

3. STRUCTURAL ISSUES

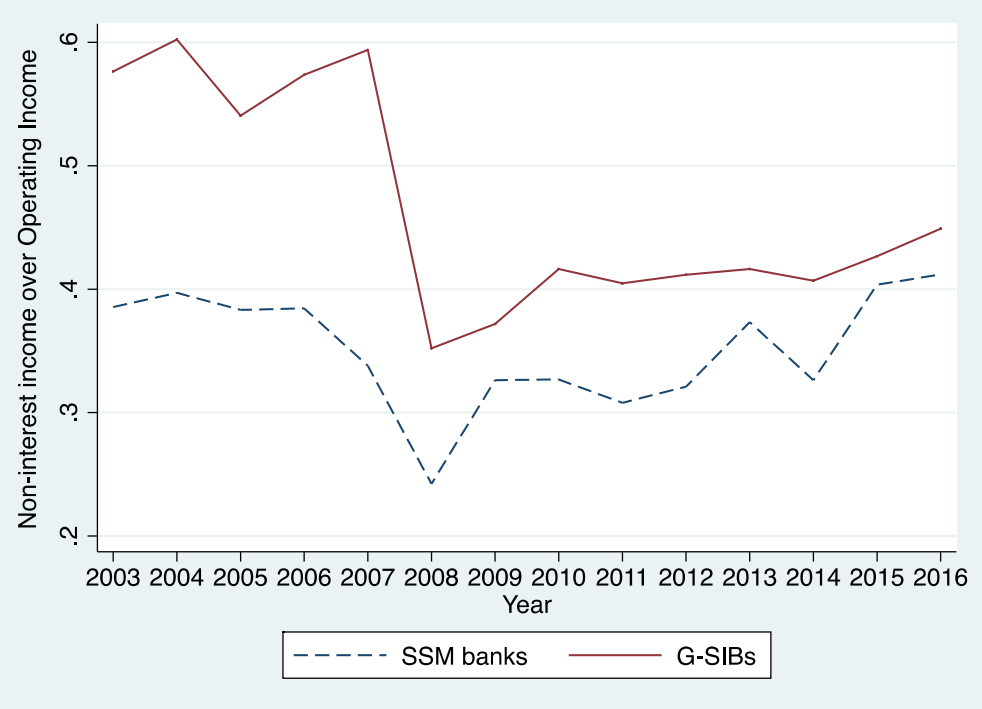
In this section, we consider trends in structural indicators related to banks' activity mix and size.

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. Since then, it has gradually increased to a level of 41.2% in 2016 that exceeds pre-crisis levels. The average SSM bank thus appears to have shifted its business model towards generating more non-interest income, in part reflecting currently low net interest margins.

The average G-SIB ratio of non-interest income to total income similarly dropped sharply in 2008, and has risen gradually since then to reach a level of 44.9% in 2016. The average G-SIB ratio of non-interest income to total income, while remaining higher than the average SSM bank level, has not risen back to pre-crisis levels, perhaps because these levels are deemed to be too risky. The ECB (2016, pp. 147-157) has conducted a review of the non-interest income generating activities of Eurozone banks, pointing out that a greater reliance on such activities can improve profitability, but possibly at a cost of higher bank fragility.

Figure 4: Non-interest income over operating income

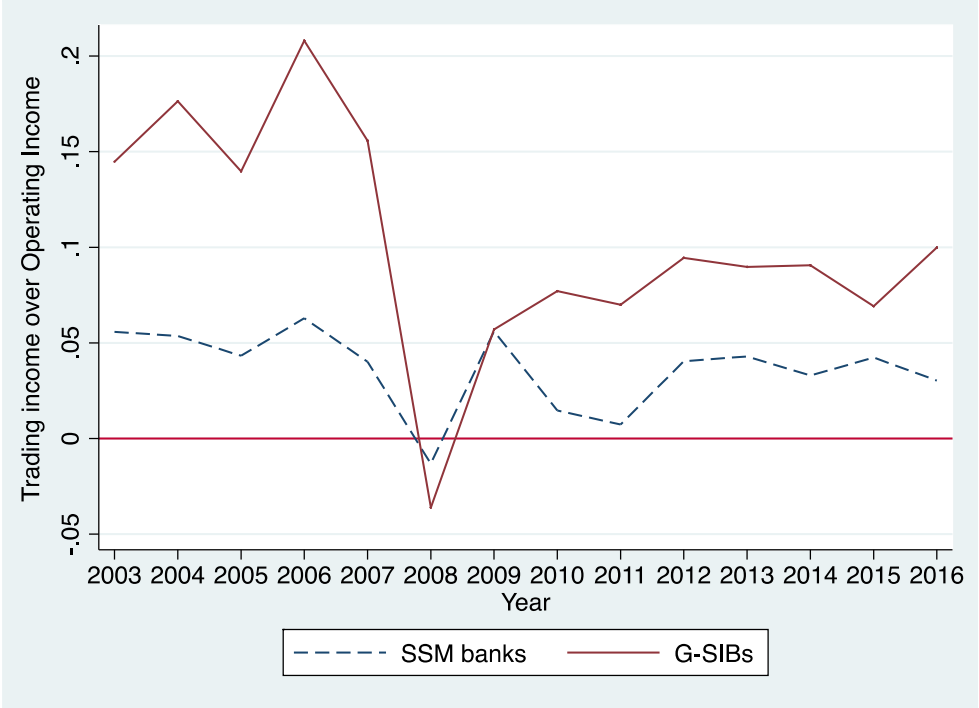


Sources: Bankscope, Orbis Bank Focus and authors' calculations.

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 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. In 2016, the average G-SIB ratio of trading income to total operating income stood at 10.0%. 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.[7] Our data suggest that Eurozone G-SIBs will still need to reduce their trading activities significantly in case the proposed ban on proprietary trading is enacted.

Figure 5: Trading income over operating income



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

3.2 Bank size

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 (2016) 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).[8] Figure 6 shows that the average SSM bank assets-to-GDP ratio peaked at 32.6% in 2009. Subsequently, it declined to 26.2 % in 2015, and rose again slightly to 27.2% in 2016. The average G-SIB assets-to-GDP ratio reached a maximum of 93.3% in 2007, and since then has gradually declined to 75.2% in 2016.

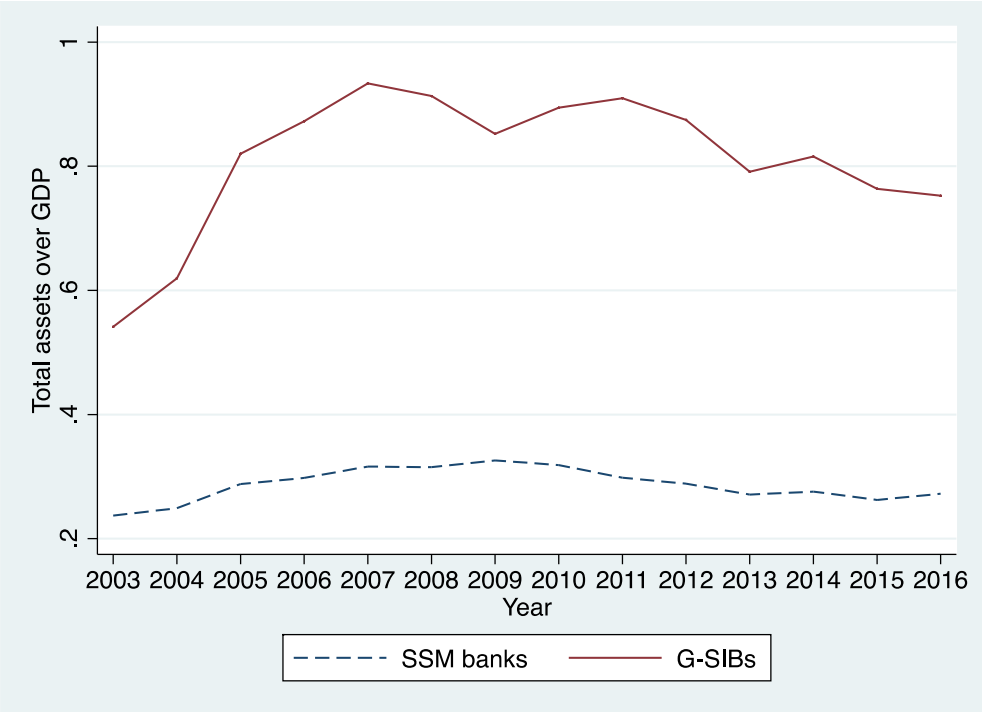
This decline in average bank size since the crisis may reflect lower expectations of generous public bailouts for large banks in case of bank distress following the implementation of the Bank Recovery and Resolution Directive on January 1, 2015. Schaefer, Schnabel and Weder di Mauro (2016) find that the credibility of future bail-ins (rather than bailouts) as reflected in Credit Default Swap (CDS) spreads and bank share prices was increased by the actual bail-in of deposits above 100,000 euros in Cyprus in 2013. In June 2017, Monte dei Paschi di Siena bank in Italy was rescued using public funds, which could increase investors' expectations of receiving public bailouts for large banks in the future. In the same month, however, Banco Popular in Spain was rescued without public funds as it was assumed by

[7] The issue is currently on hold after the European Parliament's Committee on Economic and Monetary Affairs rejected the proposal. See http://www.europarl.europa.eu/legislative-train/theme-deeper-and-fairer-internal-market-with-a-strengthened-industrial-base-financial-services/file-banking-structural-reform.

[8] Bertay, Demirgüç-Kunt and Huizinga (2013) find that bank ROA and return on equity are negatively related to bank size relative to GDP, which suggests that greater bank size does not benefit bank shareholders.

Santander, which could lower investor expectations of future public bailouts. Beyond bailout expectations, the tendency for Eurozone banks to become smaller after the crisis may also reflect their reduced profitability.

Figure 6: Assets over GDP



Sources: Bankscope, Orbis Bank Focus, Eurostat and authors' calculations.

KEY RECENT FINDINGS:

- The average SSM bank and the average G-SIB have shifted their business model towards more non-interest income generating activities as reflected in a rising ratio of non-interest income to total operating income.
- The average SSM bank size, measured as total assets relative to GDP, has remained fairly constant after some initial post-crisis decline, while the size of the average G-SIB has continued to decline.

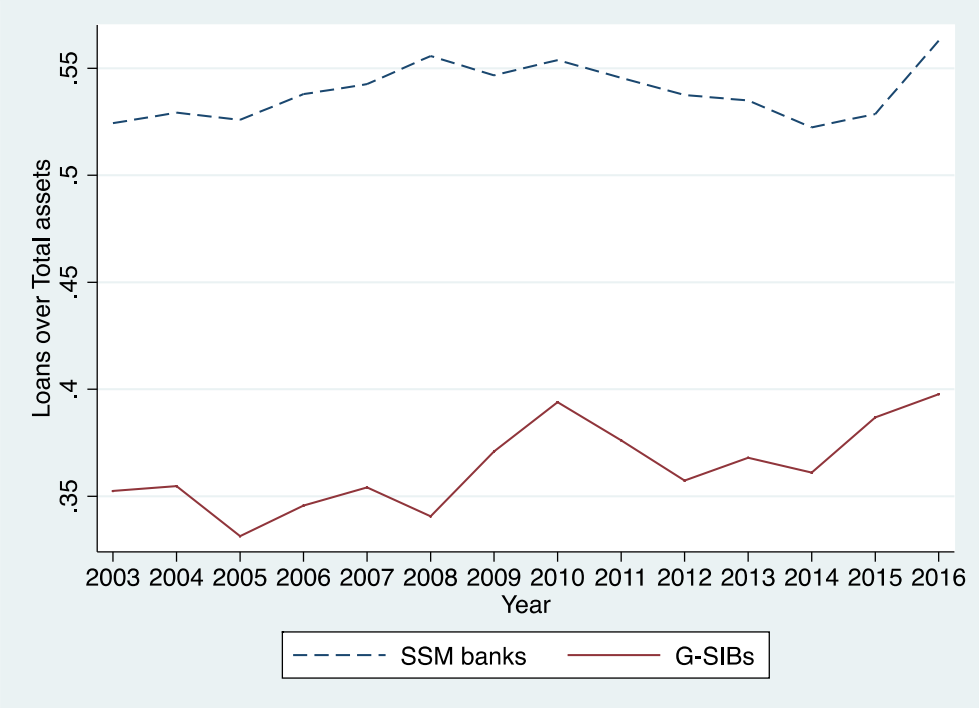
4. BALANCE SHEET ANALYSIS

In this section, we consider trends in banks' asset composition, liability composition, and 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 7 shows that the average SSM bank ratio of loans to total assets fell after the crisis to a low of 52.2% in 2014, and subsequently rose to 56.3% in 2016. The average G-SIB has seen a secular increase of the loans to assets ratio from 35.2% in 2003 to 39.8% in 2016. The uptick in the loans to assets ratio for the average SSM bank as well as G-SIB may reflect expectations of an improving economy, a search for yield in the face of low returns on especially government debt, as well as improved capitalization which enables banks to switch their portfolios towards assets such as loans that carry relatively high risk weights.

Figure 7: Loans over total assets



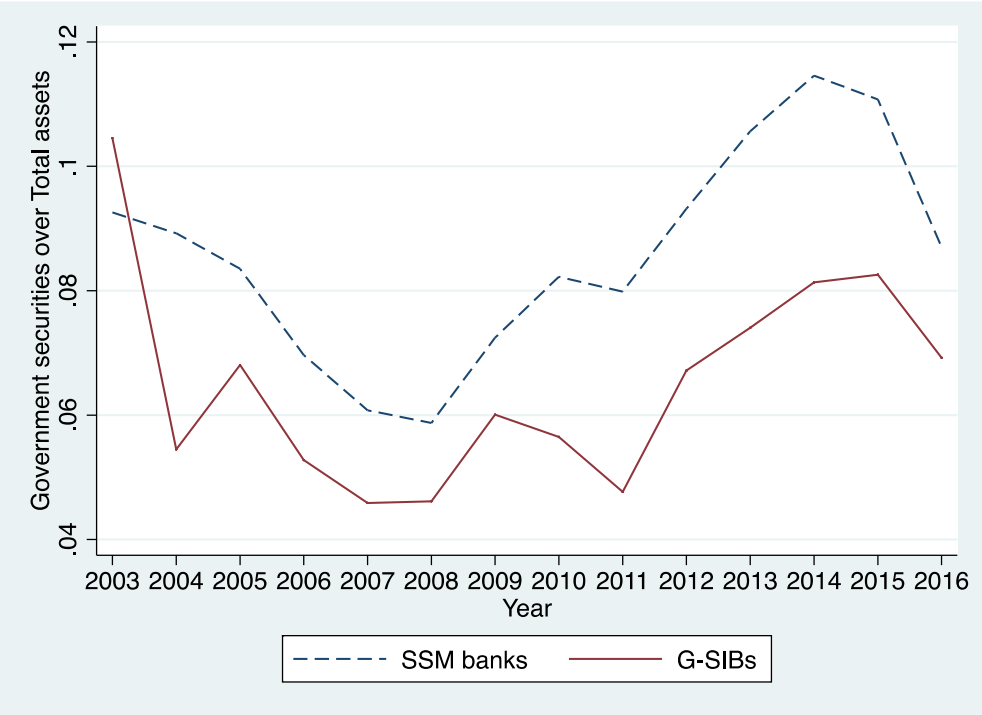
Sources: Bankscope, Orbis Bank Focus and authors' calculations.

As seen in Figure 8, the average SSM bank increased its ratio of government securities to total assets from 5.9% in 2008 during the crisis to 11.5% in 2014, after which it fell back to 8.7% in 2016. Eurozone G-SIBs have been relatively little exposed to sovereign debt throughout the 2003-2016 period, but otherwise they display a similar upward trend in their sovereign exposures after the onset of the crisis, and a decline most recently in 2016.

Following the financial crisis, banks used plentiful liquidity made available by the ECB to invest in government securities as in a carry trade (Acharya and Steffen, 2015). Investments in home country government debt were in part motivated by the realization by banks that they stand a high chance of being wiped out themselves in case of a domestic government default (Battistini, Pagano, and Simonelli, 2014). Also, there is evidence that banks were prodded to invest in domestic government debt by their respective

governments (Ongena, Popov, and van Horen, 2016). Recent declines in investments in government debt by Eurozone banks suggest that crisis-related incentives to investment in government securities have to some extent subsided. Alternatively, banks may already reduce their exposures to government debt in anticipation to future regulatory changes, for instance in the form of higher risk weights for government securities that would make such investments less rewarding.[9]

Figure 8: Government securities over total assets



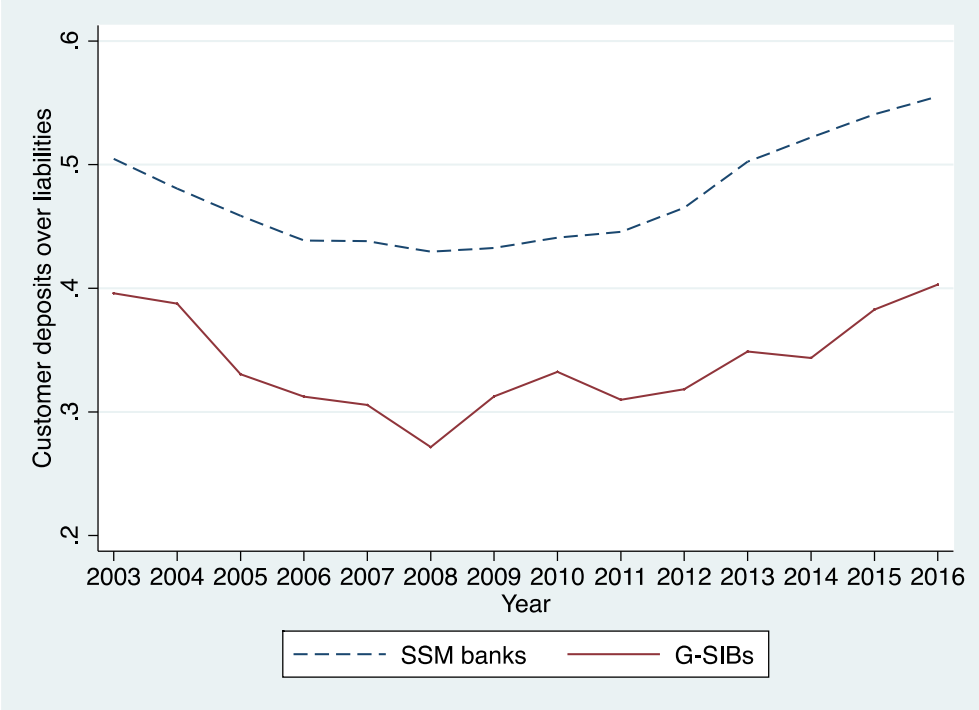
Sources: Bankscope, Orbis Bank Focus and authors' calculations.

4.2 Liability composition

In this subsection, we consider trends in banks' reliance on customer deposits and other short-term funding, and alternatively non-customer 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 9 shows that the average SSM bank ratio of customer deposits to total liabilities declined pre-crisis from 50.5% in 2003 to 43.0% in 2008, as banks increasingly accessed non-customer, market funding to finance their expansion. Subsequently, this trend was reversed, and the ratio of customer deposits to total liabilities rose to 55.5% in 2016, potentially reflecting an unavailability of short-term market funding and also a desire on the part of the banks to make their funding more stable. The ratio of customer deposits to total liabilities for the largest banks, while being relatively low during 2003-2016, displays a similar pattern. Banks' renewed reliance on customer deposits following the crisis should make them more stable.

[9] The Basel Committee on Banking Supervision (2016, p. 3) reports that the regulatory treatment of sovereign exposures is subject to an ongoing review.

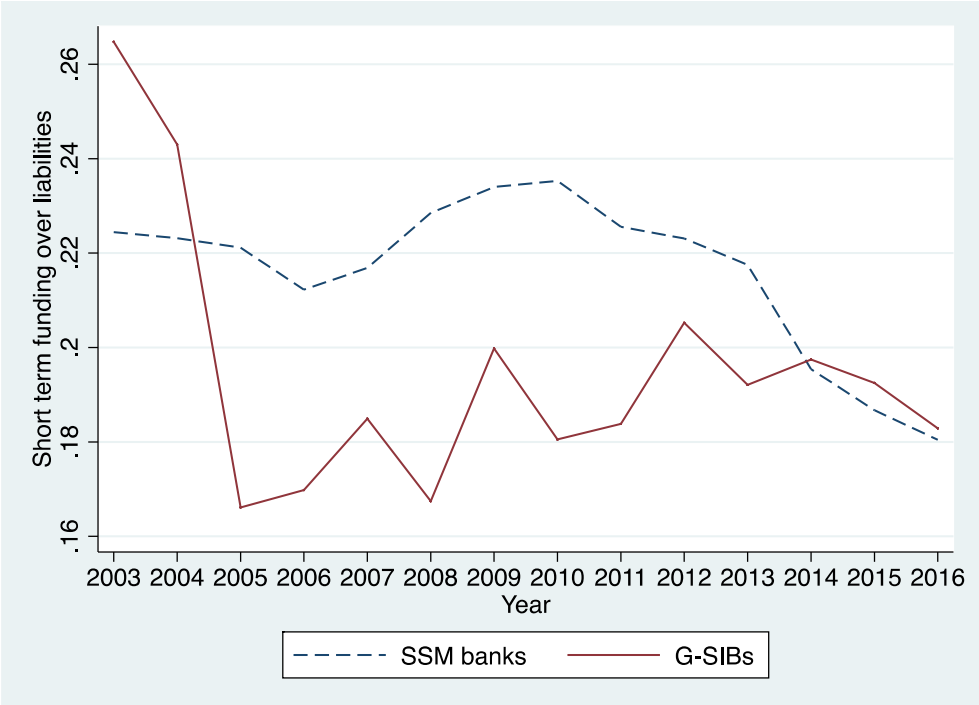
Figure 9: Customer deposits over total liabilities



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

Banks' short-term funding excluding customer deposits comprises short-term funding from other banks, from capital markets and from central banks. In Figure 10, the ratio of non-customer short-term funding to total liabilities of the average SSM bank declined following the crisis to 18.0% in 2016. The average G-SIB non-customer short-term funding ratio stood at a very similar 18.2% in 2016. The relatively low non-customer short-term funding compared to the beginning of the 2003-2016 period should make these banks more stable to the extent that this is market funding (rather than funding from central banks).

Figure 10: Short-term funding excluding customer deposits over total liabilities



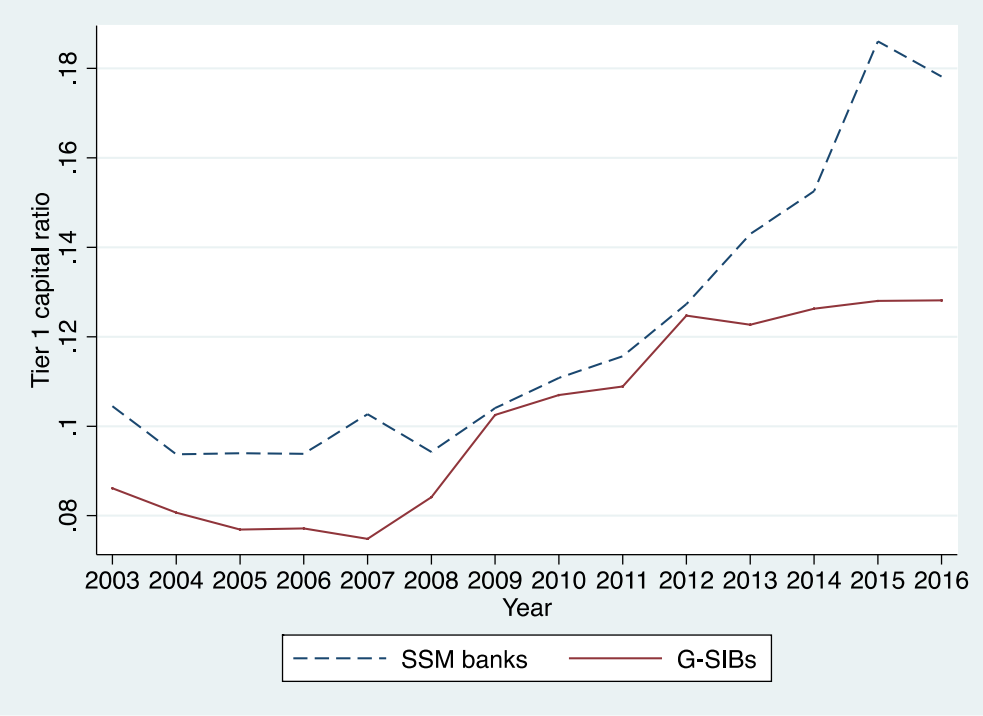
Sources: Bankscope, Orbis Bank Focus and authors' calculations.

4.3 Capitalization

This subsection shows trends in four capitalization measures: i) the ratio of Tier 1 capital to risk-weighted assets, ii) the regulatory total capital ratio, computed as the sum of Tier 1 and Tier 2 capital divided by risk-weighted assets, iii) the ratio of equity to assets, and iv) a 'synthetic leverage ratio', calculated as the ratio of Tier 1 capital to total assets.

Figure 11 shows that the Tier 1 capital ratio for the average SSM bank was relatively stable throughout the crisis period, which suggests that banks had enough discretion over this ratio to keep it well above the minimum level (of 4% under Basel II). Subsequently, this ratio gradually rose to 18.6% in 2015, to drop back slightly to 17.8% in 2016. The rise in the average Tier 1 capital ratio of SSM banks in recent years no doubt reflects the higher regulatory capital ratios to be maintained following the Capital Requirements Regulation and Capital Regulations Directive IV package that applies since January 1, 2014.[10] The average Tier 1 capital ratio of G-SIBs rose from a low of 7.5% in 2007 to 12.5% in 2012, after which it changed very little to reach 12.8% in 2016. Figure 11 thus shows that the average SSM bank was able to keep increasing its Tier 1 capital ratio in recent years, while it stayed essentially flat for the average G-SIB. This could reflect that the largest banks have difficulties in raising their capitalization due to their low profitability, or perhaps that they continue to see a benefit of low capitalization on account of their being 'too-big-to-fail'.

Figure 11: Tier 1 capital over risk-weighted assets

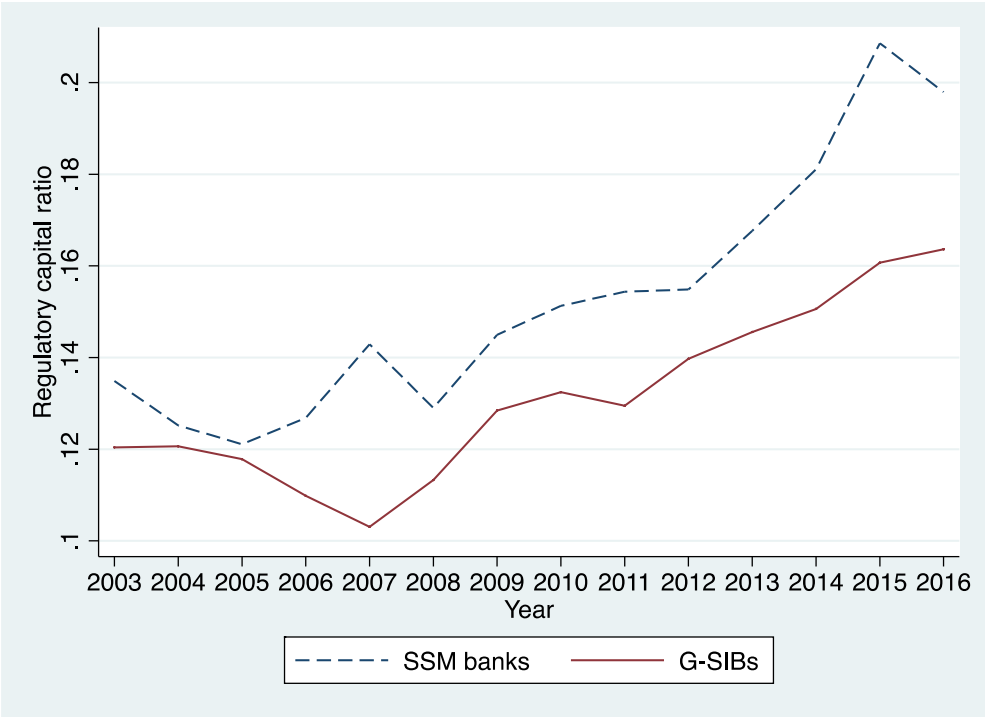


Sources: Bankscope and Orbis Bank Focus.

In Figure 12, the regulatory total capital ratio of the average SSM bank shows a pattern similar to Figure 11: it was relatively flat during the crisis period, subsequently rose till 2015, and fell back slightly in 2016. G-SIBs saw their average regulatory capital ratio decline on account of the crisis to a low point in 2008, after which is gradually rose till 2016. Figure 12 confirms that the average G-SIB has not kept up with the average SSM bank in increasing its capitalization in recent years.

[10] See European Commission (2013).

Figure 12: Regulatory total capital over risk-weighted assets



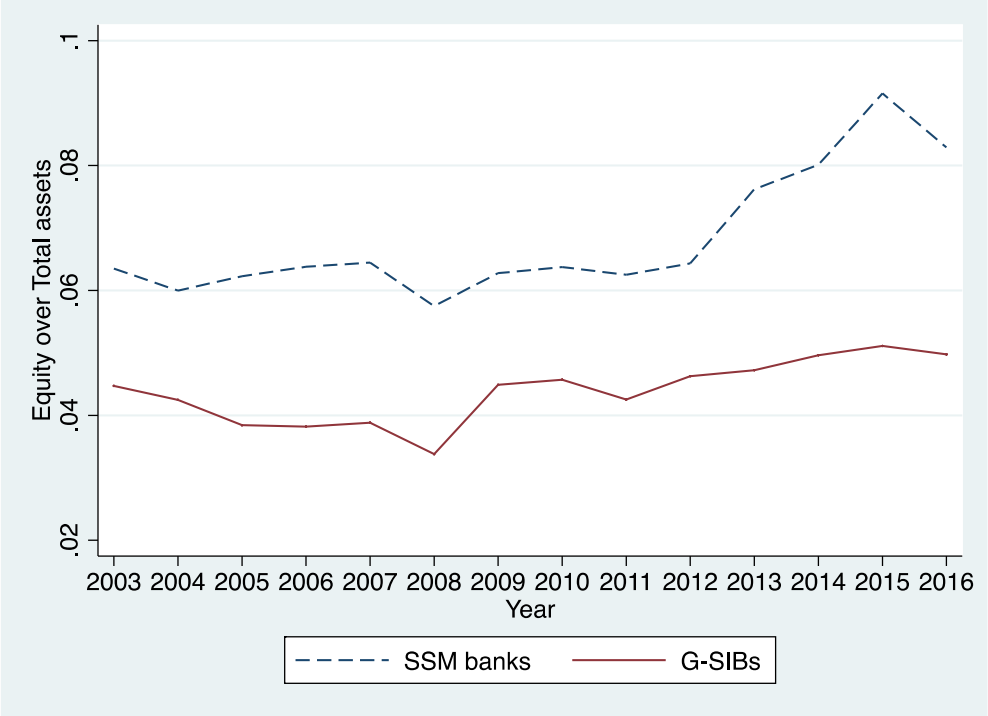
Sources: Bankscope and Orbis Bank Focus.

The rise in the Tier 1 capital ratio (and regulatory total capital ratio) following the crisis can have come about through a combination of i) more Tier 1 capital (and total regulatory capital), ii) lower total assets, and iii) a lower average risk weight of assets. A lower average risk weight, in turn, can result from a portfolio shift towards assets with lower risk weights (such as government bonds) or downward risk weight manipulation by the banks.

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 higher regulatory capital ratios.[11] Figure 13 shows that the average SSM bank experienced a trajectory of the ratio of equity to assets that is rather similar to Figures 11 and 12. In particular, the ratio of equity to total assets for the average SSM bank rose following the crisis till 2015, and then declined slightly in 2016. Also, the path of the ratio of equity to total assets for the average G-SIB is similar to the earlier figures. Specifically, Figure 13 also suggests that the average G-SIB has been able to increase its capitalization relatively little in recent years compared to the average SSM bank.

[11] Demirgüç-Kunt, Detragiache, and Merrouche (2013) find that the pre-crisis equity to assets ratio is a better predictor of bank distress during the crisis than regulatory capital ratios.

Figure 13: Equity over total assets



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

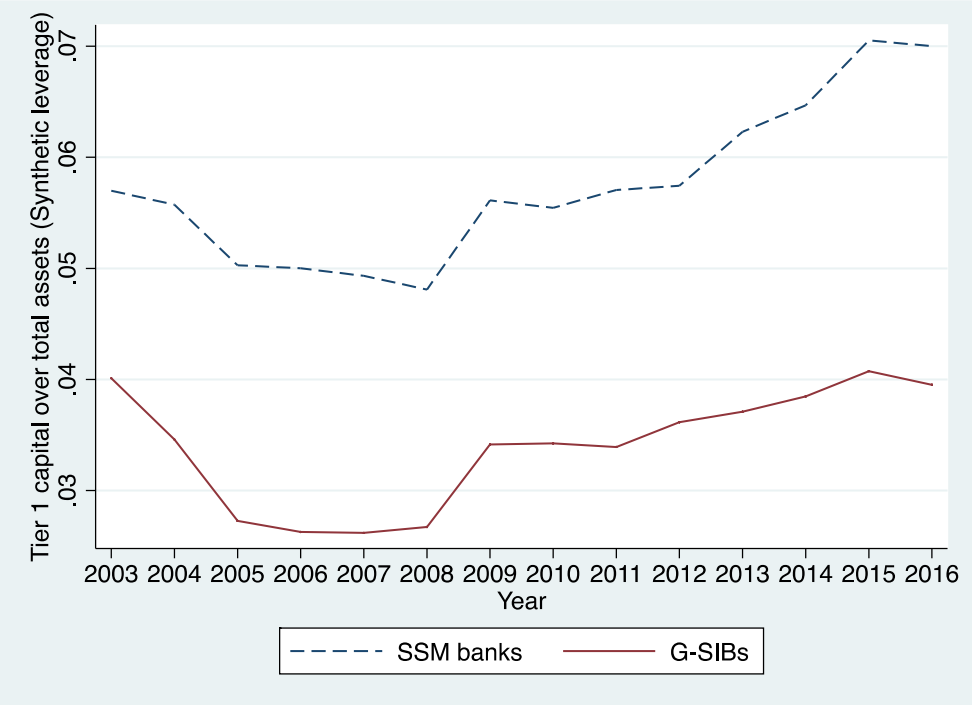
Basel III calls for the introduction of a minimum leverage ratio requirement of 3%. The leverage ratio is computed as the ratio of Tier 1 capital to the sum of total assets and other relevant exposures. EU banks currently are not subject to an EU-wide leverage ratio requirement.[12] Hence, they generally do not disclose a leverage ratio that would correspond to such a requirement.[13] All the same, it is possible to compute a 'synthetic leverage ratio' as the ratio of Tier 1 capital to total assets for the period 2003-2016, as displayed in Figure 14.

For the average SSM bank, the synthetic leverage ratio fell from 5.7% in 2003 to 4.8% in 2008 (a drop of 0.9%), which is more than the decline in the equity-to-assets ratio for the average SSM bank from 6.4% to 5.7% over the same period (a drop of 0.7%). Similarly, the synthetic leverage ratio for the average G-SIB declined more during the 2003-2008 period than the equity-to-assets ratio during the same interval. To explain the relatively large decline in the synthetic leverage ratio, note that under Basel II Tier 1 capital (used to construct the synthetic leverage ratio) was defined as equity (including retained earnings) minus various deductions for i) goodwill, ii) increases in equity capital resulting from securitisation exposures, and iii) investments in subsidiaries engaged in banking and financial activities which are not consolidated.[14] The relatively large decline in Tier 1 capital compared to equity (used to construct the equity-to-assets ratio) during 2003-2008 implies that the volume of deductions from equity to arrive at Tier 1 capital increased. The relatively large drop in the synthetic leverage ratio in the years preceding the crisis compared to the equity-to-assets ratio and other capitalization measures suggests that it provides superior information about banks' solvency. After the crisis, the synthetic leverage ratios for the average SSM bank and the average G-SIB rose to 7.0% and 4.0% in 2016, respectively. Consistent with the

[12] In November 2016, the European Commission (2016) provided further details on the prospective minimum leverage ratio requirement for EU banks.
[13] Orbis Bank Focus provides information on the fully loaded Basel III leverage ratio for 3, 4, and 5 Eurozone G-SIBs in 2014, 2015, and 2016, respectively.
[14] See Basel Committee on Banking Supervision (2006, p. 14 and p. 17)

earlier pictures, the average G-SIB has been able to increase its synthetic leverage ratio relatively little in the post-crisis period.

Figure 14: Synthetic leverage ratio



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

KEY RECENT FINDINGS:

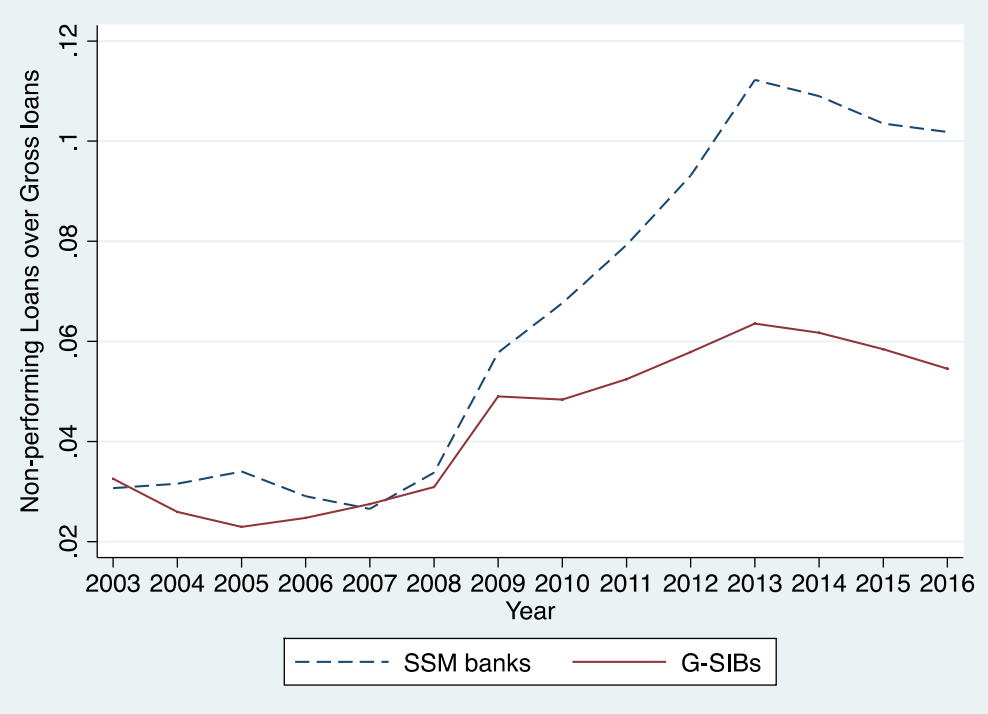
- The average SSM bank and the average G-SIB have increased their ratios of loans to total assets, while they have reduced their ratios of government securities to total assets.
- The average SSM bank and the average G-SIB have increased their ratios of customer short-term funding to total liabilities, while they have reduced their ratios of non-customer short-term funding to total liabilities. Both of these developments contribute to more stable banks.
- SSM banks generally have been able to materially increase their capitalization. The average G-SIB remains considerably less well capitalized than the average SSM bank, and has been able to increase its capitalization much less in recent years.

5. LOAN IMPAIRMENT

This section reviews trends in loan impairment, as measured by the ratio of non-performing 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 for the average SSM bank has increased following the crisis to reach a peak of 11.2% in 2013. Since then it has declined moderately to 10.2% in 2016. The average G-SIB ratio of non-performing loans to gross loans also rose following the crisis albeit to a much lower level of 6.4% in 2013, after which it declined to 5.5% in 2016. Overall, Figure 15 shows that SSM banks have started to resolve the overhang of non-performing loans from the crisis, but that the ratio of non-performing loans to gross loans remains at an elevated level. Aiyar et al. (2015) identify a range of interrelated impediments to non-performing loan resolution in the areas of supervision, legal systems, and distressed debt markets. Recently, the EBC (2017b) has published guidelines on how banks should address their non-performing loans problems, requiring banks to implement non-performing loan reduction targets.

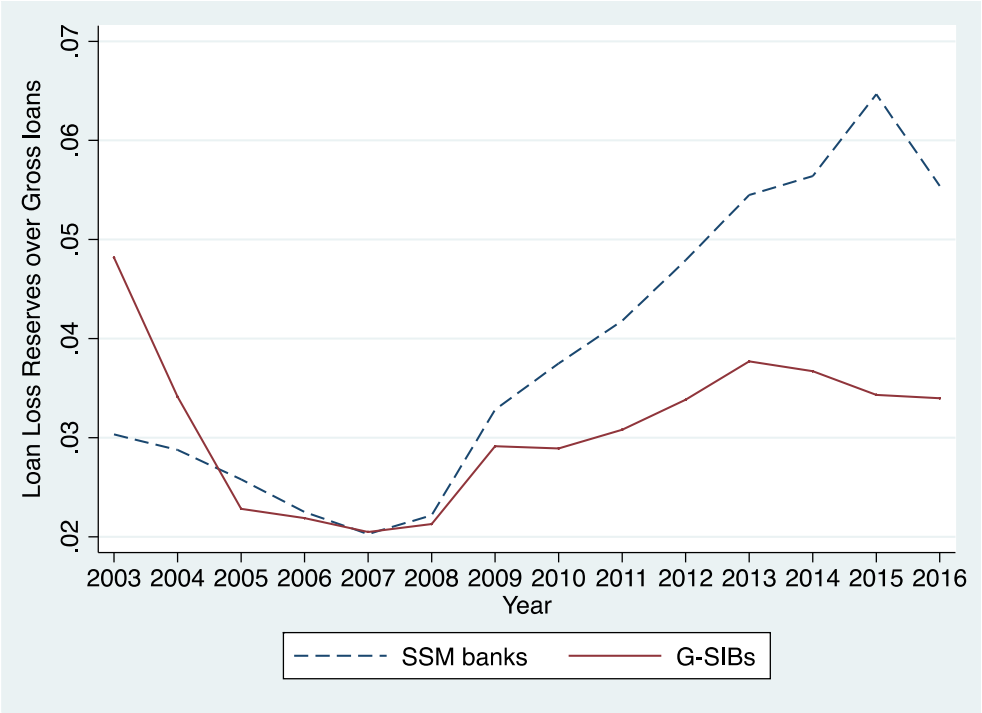
Figure 15: Non-performing loans over gross loans



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

In Figure 16, the ratio of loan loss reserves to gross loans for the average SSM bank rose post-crisis to 6.5% in 2015, and then declined to 5.5% in 2016. The recent reduction in loan loss reserves in Figure 16 combined with the decline in non-performing loans in Figure 15 suggests that banks have been lowering their non-performing loans by increased loan write-offs. The loan loss reserves ratio of the average G-SIB rose after the crisis to a level of 3.8% in 2013, and declined subsequently to 3.4% in 2016. Thus, G-SIBs also appear to have written off more loans in recent years.

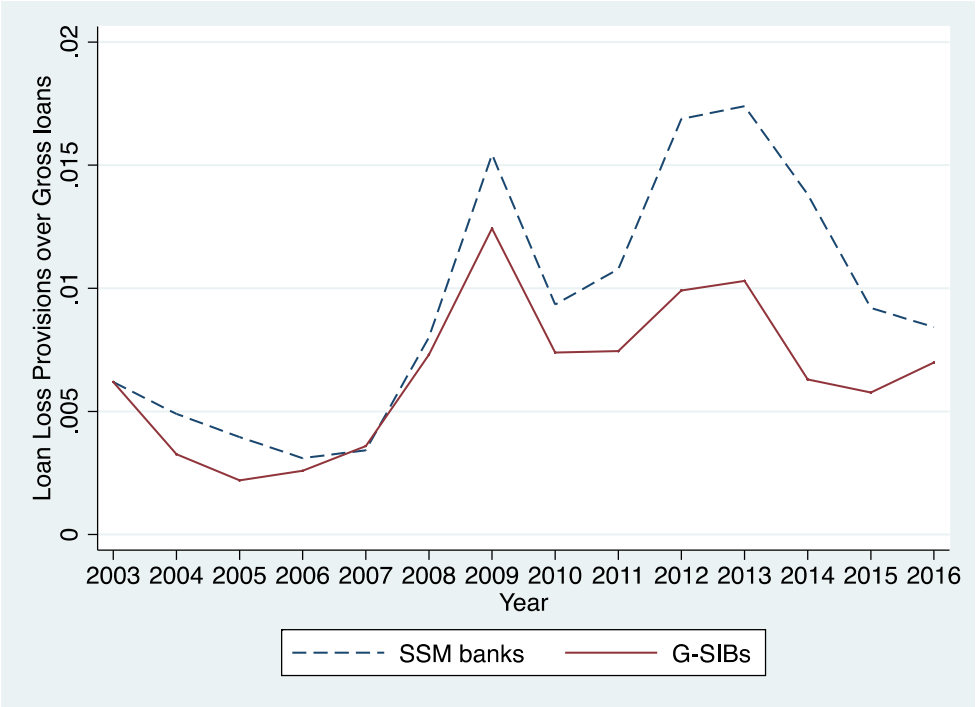
Figure 16: Loan loss reserves over gross loans



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

The ratio of loan loss provisions to gross loans, as seen in Figure 17, has been rather volatile during the 2003-2016 period. It was relatively low until 2007; it reached peaks in 2009 and 2013 corresponding to Europe's financial and sovereign debt crises; and it subsequently was at relatively low levels during 2014-2016. This pattern suggests that loan loss provisioning 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. International Financial Reporting Standard 9 (IFRS 9) on Financial Instruments, which will take effect on January 1 2018, introduces a forward-looking, expected credit loss model to determining credit loss provisions. It remains to be seen whether this standard will serve to make loan loss provisioning less cyclical.

Figure 17: Loan loss provisions over gross loans



Sources: Bankscope, Orbis Bank Focus and authors' calculations.

KEY FINDINGS

- The ratio of non-performing loans to total loans of directly supervised banks remains very high, even if it has declined during 2014-2016 after reaching a peak in 2013.
- During 2003-2016, the pattern of loan loss provisioning of SSM banks has been highly countercyclical.

6. CONCLUSIONS

Directly supervised banks achieved an average rate of return on assets of only 0.21% in 2016, while Eurozone G-SIBs achieved an even lower average return on assets of 0.12%. These paltry returns on assets reflect low net interest margins, and rising ratios of overhead to assets.

Rather than wait for macroeconomic conditions to improve, banks need to take measures now to structurally improve their profitability. An increasing ratio of non-interest income to total operating income suggests that banks are shifting their business models towards more non-interest income generating activities. This potentially improves profitability, but carries the risk of more bank fragility.[15] In addition, significant bank size reductions are called for in order to improve profitability. During 2014-2016, the average Eurozone G-SIB, but not the average directly supervised bank, has reduced its assets relative to GDP.

Directly supervised banks have been able to increase their capitalization rates in recent years. Eurozone G-SIBs, however, have done so relatively little, which could reflect their low profitability or their continued perception of a 'too-big-to-fail' status.

Directly supervised banks still had a high average ratio of non-performing loans to total loans of 10.2% in 2016 despite some decline in this ratio since 2013. The ECB should ensure that banks with high non-performing loans draw up and carry out plans to reduce these in a timely fashion.

During 2003-2016, the pattern of loan loss provisioning of SSM banks has been highly countercyclical, following rather than preparing for macroeconomic variability. Concerns about the cyclicality of loan loss provisions are in part addressed by the implementation of International Financial Reporting Standard 9 (IFRS 9) on Financial Instruments on January 1, 2018, which aims to implement a forward-looking, expected loss model of loan loss provisioning. Even before this date, however, the ECB should ensure that banks take sufficiently high loan loss provisions at present in preparation for any future financial crisis despite their low levels of profitability.

[15] The ECB (2017a, p. 6) lists the following three supervisory priorities for 2017: i) banks' business models and profitability drivers, ii) risk management, and iii) credit risk and non-performing loans.

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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 as of January 1, 2017

Country	Number of banks
Austria	8
Belgium	7
Cyprus	4
Estonia	2
Finland	4
France	13
Germany	21
Greece	4
Ireland	5
Italy	14
Latvia	3
Lithuania	3
Luxembourg	4
Malta	3
Netherlands	6
Portugal	4
Slovakia	3
Slovenia	3
Spain	14
Total	125

Source: ECB (2017c).

Table 2: Eurozone G-SIBs

Bank	Country	Assets over GDP
BNP Paribas	France	93%
BPCE	France	34%
Credit Agricole	France	68%
Deutsche Bank	Germany	51%
ING	Netherlands	121%
Santander	Spain	120%
Societe Generale	France	62%
Unicredit	Italy	51%

Sources: Financial Stability Board (2016), Orbis Bank Focus, and Eurostat

Европейски парламент Parlamento Europeo Evropský parlament Europa-Parlamentet Europäisches Parlament
Euroopa Parlament Ευρωπαϊκό Κοινοβούλιο European Parliament Parlement européen Parlaimint na hEorpa
Europski parlament Parlamento europeo Eiropas Parlaments Europos Parlamentas Európai Parlament
Parlament Ewropew Europees Parlement Parlament Europejski Parlamento Europeu Parlamentul European
Európsky parlament Evropski parlament Euroopan parlamentti Europaparlamentet

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