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EU Government bonds and banks: Home bias pervasive throughout member states but capital requirements differ greatly

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DIW Weekly Report 49 2018

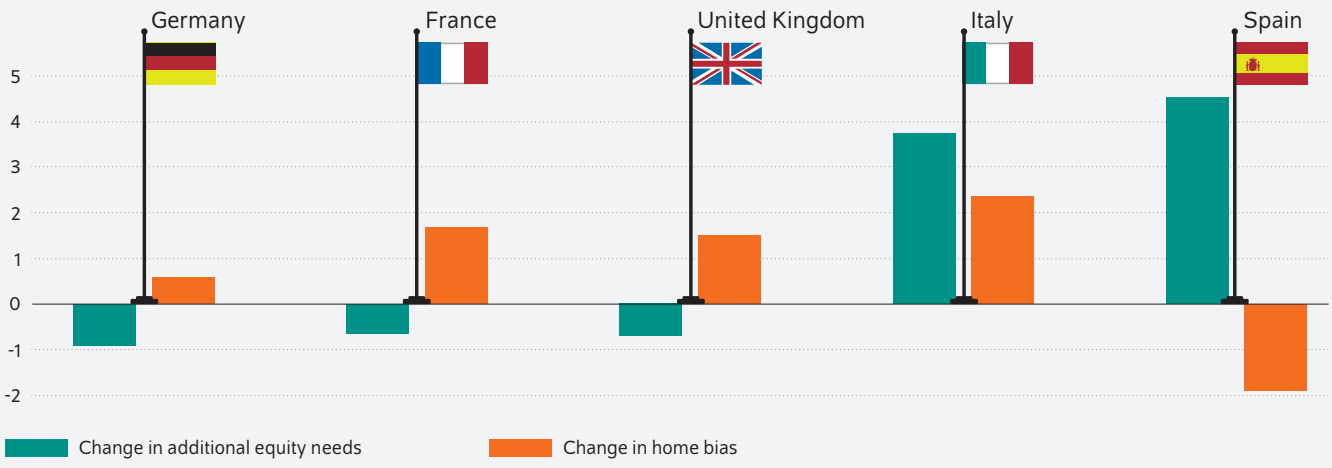
AT A GLANCE

EU government bonds and banks: home bias pervasive throughout member states but capital requirements differ greatly

By Dominik Meyland and Dorothea Schäfer

- Capital regulations continue to give EU government bonds preferential treatment
- Empirical analysis shows that major European banks have increasingly invested in domestic government bonds in recent years
- If equity capital privilege for EU government bonds is abolished, Italian and Spanish banks in particular would require additional capital
- Efforts should focus on reducing home bias in bank balance sheets
- Removing equity capital privilege is only advisable once government debt has stabilized

In Germany, France, and the United Kingdom, home bias contributed to a decrease in additional equity needs
Additional equity needs* and home bias** of major European banks, changes between 2014 and 2018



* In billion euro
** Share of domestic sovereign bonds in the EU sovereign bond portfolio of banks relative to the domestic country's share of EU GDP.
Source: EBA, authors' own calculations.

FROM THE AUTHORS

Risk weighting government bonds will not incentivize banks to better diversify their EU government bond portfolios.

— *Dorothea Schäfer, study author* —

MEDIATHEK

Audio Interview with Dorothea Schäfer (in German)
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EU government bonds and banks: home bias pervasive throughout member states but capital requirements differ greatly

By Dominik Meyland and Dorothea Schäfer

ABSTRACT

The current banking regulatory framework assigns EU government bonds a risk weight of zero. Since the European debt crisis, there has been increasing controversy over eliminating this equity capital privilege, which is viewed as contributing to the close relationship between state and bank risks. This report analyses the development of home bias—the tendency of major European banks to invest disproportionately high in domestic government bonds—for Germany, France, the United Kingdom, Italy, and Spain. In addition, it examines how much additional equity capital the banks of the euro area's major nations would require if equity capital privilege were eliminated. This report shows that home bias has increased over the last four years for many major European banks. Home bias only affects the additional capital requirements of Italian and Spanish banks, as their home countries have comparatively weak ratings. The estimated additional capital required if equity capital privilege were to be abolished indicates that Italian banks have the highest capital requirement at 11.5 billion euros, followed by the Spanish banks at 9.5 billion euros. Eliminating equity capital privilege would thus make it much more difficult to finance sovereign debt in Italy and Spain. Therefore, it would be advisable to introduce risk weighting for government bonds only after the EU sovereign debt levels have stabilized. At the same time, measures should be taken to make it easier for banks to reduce their home bias and better diversify their government bond portfolios.

The global financial and economic crisis of 2008/2009 resulted in declining tax revenues, high costs for economic stimulus programs, and billions spent on bank rescue packages. The direct costs of bank bailouts incurred to date are estimated to be in the high double-digit billions for Germany alone.[1] Greece, Portugal, Spain, Ireland, and Italy were particularly affected by the turbulence in the banking sector. Starting in 2009, the major rating agencies lowered the ratings of crisis countries in rapid succession. Growing doubts about these countries' debt sustainability put pressure on their government bond prices. The differences between the interest rates on domestic and German government bonds skyrocketed for these countries in 2010. For the first time in their history, the EU and the euro area were forced to contend with a veritable sovereign debt crisis.

Longstanding discussion on risk weighting of EU government bonds

There has been increasing controversy over lifting equity capital privilege for EU government bonds since the European debt crisis: the Basel capital requirements allow a risk weight of zero for EU government bonds. Banks can therefore acquire these securities one hundred percent debt financed. At the end of 2017, the Basel Committee again provisionally rejected positive risk weights, thus extending the debate. Proponents of abolishing equity capital privilege for EU government bonds argue that this would weaken, if not eliminate, the vicious cycle between states and banks. Opponents, on the other hand, see a risky increase in the cost of sovereign debt with the potential to rekindle the European debt crisis. In particular, states with high levels of debt, low economic growth, and weak ratings appear to fear positive risk weights.

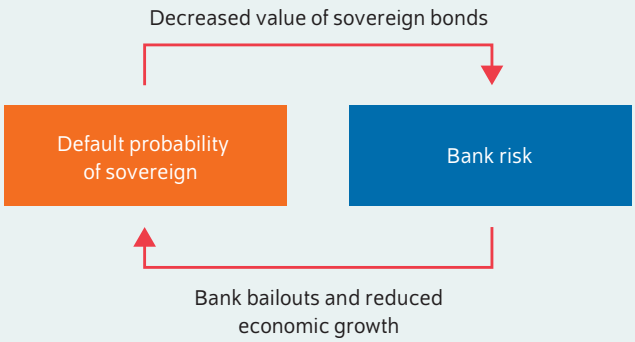
The equity capital privilege is based on the view that European government bonds are indeed the non-defaultable safe haven

1 An estimated 30 billion euros will be required for bailing out private banks, cf. Deutscher Bundestag, "Bankenrettung kostete 30 Milliarden," press release, September 19, 2018 (in German; available online, accessed November 10, 2018; this applies to all other online sources in this report unless stated otherwise). Additionally, there are further amounts in the high double-digit billions needed to bail out *Landesbanken* (state-owned banks).

DOI: https://doi.org/10.18723/diw_dwr:2018-49-1

Figure 1

Relationship between bank and sovereign risk



Source: Authors' own illustration.

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Additional expenditures to counteract a financial crisis increase the default probability of a country. As a result, the default probability of banks increases.

banks urgently need.[2] This view was strongly shaken by the debt crisis. As banks traditionally hold large parts of outstanding government bonds on their books, European banks were among the main sufferers of capital losses. Massive losses in the value of government bonds again endangered the stability of the banks and increased the probability of further costly bailouts. This raised doubts about the states' debt sustainability, putting further pressure on prices.

The close relationship between state and bank risks is often referred to as the bank-sovereign nexus or vicious circle. Mario Draghi's famous speech on July 26, 2012, was the only thing that managed to put an end to the selling off of government bonds, thus interrupting the acute mutual danger.[3]

According to the Basel III regulatory framework and the resulting EU Capital Requirement Regulation and Capital Requirements Directives (CRR/CRD) IV, banks may only partially finance their investments through bank deposits and bonds; the rest must come from their own sources.[4] The equity capital is intended to enable the bank to absorb any losses incurred so that bank customers' and bondholders' deposits remain protected and the banks' financial stability is guaranteed. The higher the risk weight of an investment (loan, securities purchase), the greater the prescribed equity capital share. Correctly determining the risk weight of a bank's assets is therefore crucial for the bank's capital base. The Basel III framework defines the approved methods of risk measurement. Banks may use an external rating to specify the risk weight under the standardized approach (SA), but the agencies providing the ratings must be registered with the European Securities and Markets Authority (ESMA).[5] Alternatively, banks may use the internal ratings-based (IRB) approach, where they use their internal models to estimate the risk weights of investments.[6]

Risk weighting is not yet necessary in the asset class of EU government bonds; in terms of capital regulation, they are risk-free. Equity capital privilege is based on the idea that the repayment claims of EU government bonds are not at risk of default—the security is fundamentally safe.[7] The European debt crisis intitally shattered this view before refuting it with the debt cut in Greek government bonds in 2012.

The Basel Committee therefore initially pursued a plan to also use the revised Basel III to abolish government bond privilege and introduce positive risk weights. A final agreement, however, was not reached by the end of the reform negotiations. Equity capital privilege will remain for the time being, but the discussion surrounding it will continue.[8]

Financial contagion risks

The bank-sovereign nexus is particularly close when banks hold a disproportionately large number of domestic government bonds and thus have a home bias in their government bond portfolio. A bank's preference for domestic government bonds can have both destabilizing and stabilizing effects *ex ante*. If a bank's home country is experiencing a debt crisis, losses in value of the dominant component in the government bond portfolio—domestic government bonds—will most likely lead to a domestic banking crisis. Crisis-ridden banks hamper economic growth and government revenues, which exacerbate the domestic sovereign debt crisis, and bailout measures may even be necessary. This increases the risk of further value losses in the domestic government bonds (Figure 1).

On the other hand, banks' home bias can also stabilize domestic public finances. The home bias makes it easier for a bank's home country to sell government bonds, thus exposing it to a lower risk of speculative attacks by external investors[9] and tending to reduce the risk premiums to be paid. Lower risk premiums in turn increase debt sustainability.

Without equity capital privilege for EU government bonds, banks with government bonds with weak ratings on their

2 Andreas Breitenfellner and Helene Schubert, "Europe Needs More than a Capital Markets Union: Focus on the Integration of Euro Area Sovereign Debt Markets," *Vierteljahrshefte zur Wirtschaftsforschung* 86, no. 2 (2017): 9-20 (in German; available online).

3 "Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough," cf. Mario Draghi, "Verbatim of the remarks made by Mario Draghi," (speech, Global Investment Conference, London, UK, July 26, 2012) (available online).

4 CRR/CRD IV (Capital Requirements Regulation/Capital Requirements Directive) is the EU law for implementing Basel III in the EU legal framework (available online).

5 Normally, ratings from major rating agencies, such as Fitch, S&P, or Moody's, are used here.

6 Basel Committee on Banking Supervision, *Basel III: Finalising post crisis reforms* (2017) (available online).

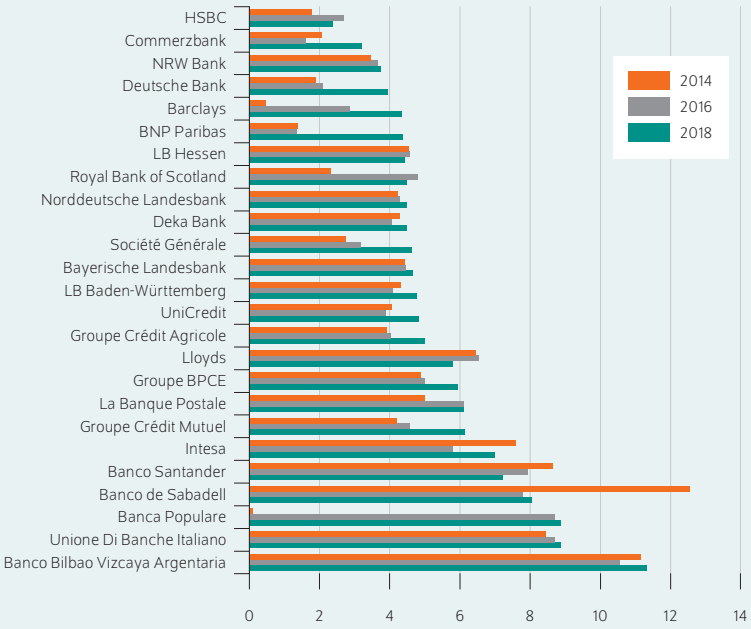
7 This assumption is based on the idea that a sovereign state can eliminate imminent payment defaults through tax increases. In addition, the central bank can prevent the state from becoming insolvent by buying its own bonds.

8 The final discussion paper by the Basel Committee on the regulatory treatment of government bonds is only one indication of the ongoing debate, Basel Committee on Banking Supervision, "The regulatory treatment of sovereign exposures," *Discussion Paper* (2017) (available online).

9 Stephen Morris and Hyun Song Shin, "Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks," *American Economic Review* 88 (1998): 587-597.

Figure 2

Home bias in sovereign debt portfolios of major European banks



Source: EBA, authors' own calculations.

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Home bias has tended to increase between 2014 and 2018.

Figure 3

Relationship between rating and risk weight

Rating	Risk weight
AAA	0 %
AA+	0 %
AA	0 %
AA-	0 %
A+	20 %
A	20 %
A-	20 %
BBB+	50 %
BBB	50 %
BBB-	50 %
BB+	100 %
BB	100 %
BB-	100 %
B+	100 %
B	100 %
B-	100 %
CCC	150 %
CC	150 %
C	150 %

Source: Basel III, authors' own illustration.

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A better rating of an asset reduces the corresponding risk weight.

books would need a particularly large amount of additional capital. Under the standardized approach, the worse the rating of the issuing country, the higher the risk weight and amount of additional capital required. For example, if a loan has a risk weight of 100 percent, the portion of equity capital for the loan amount granted would be eight percent. With a risk weight of over 100 percent, the amount of equity capital is larger; if the risk weight is below 100 percent, it is less than eight percent. The major rating agencies publish ratings on a regular basis for every EU member state. The hypothetical capital requirement for EU government bonds can be calculated using ratings and their accompanying risk weights under the standardized approach.

The structure of a bank's government bond portfolio determines the total capital requirement: a home bias, the tendency to disproportionately invest in domestic government bonds, only affects the *additional* capital requirement—which would only arise if zero weighting were abolished—under certain circumstances. The home country's rating is decisive here: home bias entails the strong possibility of requiring additional equity capital when the country's rating is low. With a good rating, on the other hand, home bias does not affect the potential equity capital requirement.

The following sections analyze the relationship between home bias and equity capital requirements for the major banks of the five largest EU member states evaluated by the European Banking Authority (EBA). Particular attention is paid to the question of whether banks' home biases and potential capital requirements have declined in recent years. The focus will therefore be on the banks which took part in all three stress tests.[10]

Data and methods

The EBA has been collecting and publishing data on the volume of government bonds on the books of the banks tested here since 2014.[11] Additional data from the World Bank on the real GDP of the five largest EU member states in question was used to calculate home bias.

Determining home bias

Home bias is calculated using a ratio of the share of domestic government bonds in the EU government bond portfolio of banks to the home country's share in the total GDP of the EU:[12]

10 Cf. also Dominik Meyland and Dorothea Schäfer, "Risk weighting for government bonds: challenge for Italian banks," *DIW Economic Bulletin* no. 28+29 (2017): 283-290 (available online); Dorothea Schäfer and Dominik Meyland, "Stricter Capital Requirements for Investing in EU Government Bonds as a Means of Creating a More Stable Financial System," *DIW Economic Bulletin* no. 20 (2015): 269-279 (available online).

11 The data were taken directly from the EBA here (accessed on November 2, 2018). While the EBA published a separate dataset on government bond investments in 2014 and 2016, the corresponding investments in 2018 are integrated into the credit risk dataset. In addition to government bonds from these key countries, the 2018 volumes also include regional and municipal government bonds.

12 The reference portfolio can be formed using GDP shares: cf. Isabel Schnabel and Ulrich Schüwer, "What Drives the Relationship between Bank and Sovereign Credit Risk?" German Council of Economic Experts Working Paper 07/2016; but also using government shares of the EU's total debt: cf. Kenneth R. French and James M. Poterba, "Investor Diversification And International Equity Markets," *American Economic Review* 81, no. 2 (1991): 222-226.

$$Home\ Bias = \frac{\frac{Government\ bonds_{domestic}}{Government\ bonds_{EU}}}{\frac{GDP_{domestic}}{GDP_{EU}}}$$

The GDP shares of the EU member states constitute a reference portfolio. The underlying idea is that investment in EU government bonds should be guided by the relative economic importance of EU member states.

If the home bias indicator takes a value larger than one, a bank is disproportionately investing in domestic government bonds, thus showing home bias. A value of two means that the bank's portfolio contains twice as many domestic government bonds as the home country's share in the total GDP of the EU. Banks with a higher home bias are more exposed to domestic government bond risk than banks with a lower home bias.

Estimating additional capital requirement

A bank's additional capital requirement that would result from ending the zero weighting of EU government bonds is estimated using the following equation:[13]

$$EKB = \sum_{i=1}^{28} RW_i \times 8\% \times SE_i$$

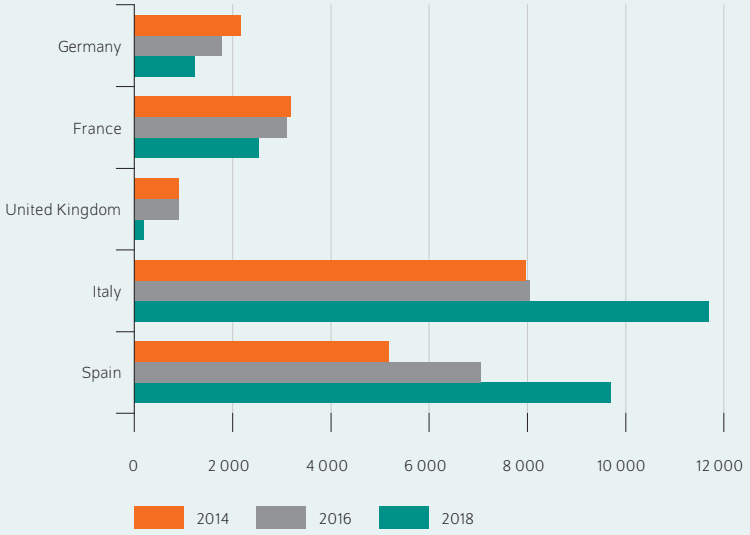
in which RW_i describes the risk weight of the government bonds of the ith EU member state and SE_i the extent of the bank's investment in the government bonds of the ith EU state. At a risk weight of 100 percent, the capital requirement for this investment is eight percent. Since the capital requirement for all EU government bonds is zero under the current regulatory framework, the additional capital required by a bank in the event that the equity capital privilege is abolished and replaced by the standardized approach results from the sum of the equity capital required for each state i.

Home bias stronger in Spanish and Italian bank portfolios

The data show that home bias is ubiquitous among the major banks evaluated in all three stress tests (Figure 2). Home bias values range from a bit over two (HSBC) to up to over ten. Home bias is especially strong in Spanish and Italian banks. For example, the Spanish bank Bilbao Vizcaya Argentaria had a good 11 times more domestic government bonds on their books than Spain's share of EU GDP in 2018.[14] Most banks, including the majority of German banks, have values between four and five. The German bank with the lowest home bias is Commerzbank while the Landesbank Baden-Württemberg

Figure 4

Additional equity needs of major European banks*
In million euro



* Additional equity needs if equity capital privilege for EU sovereign bonds is eliminated.

Source: EBA, authors' own calculations.

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The potential additional equity needs decreased for the German, French, and British banks but significantly increased for Italian and Spanish banks.

Figure 5

Additional equity needs of German banks*
In million euro

* Additional equity needs if equity capital privilege for EU sovereign bonds is eliminated.

Source: EBA, authors' own calculations.

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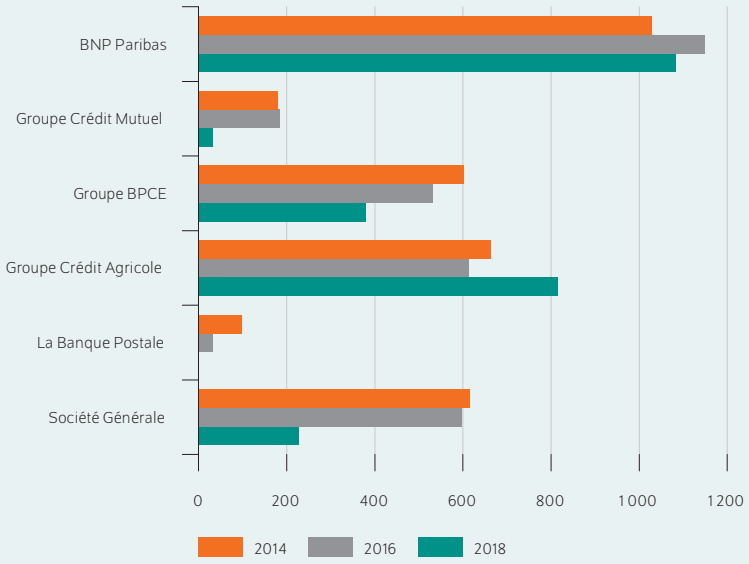
Among the German banks, Commerzbank would be most affected by the introduction of risk weights for EU government bonds.

13 Cf. Basel Committee on Banking Supervision, *Basel III: International framework for liquidity risk measurement, standards and monitoring* (2010) (available online).

14 The value for the Spanish bank CaixaBank, which participated in the stress test for the first time in 2018, is over 11.

Figure 6

Additional equity needs of French banks*
In million euro



* Additional equity needs if equity capital privilege for EU sovereign bonds is eliminated.

Source: EBA, authors' own calculations.

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The French banks analyzed show reduced additional equity needs in most cases.

Figure 7

Additional equity needs of Spanish banks*
In million euro

* Additional equity needs if equity capital privilege for EU sovereign bonds is eliminated.

Source: EBA, authors' own calculations.

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Additional equity requirements for Spanish banks increased.

has the highest. The home bias in the major European banks observed here rose on average between 2014 and 2018.[15] These values underscore the fact that major banks in major EU member states have a comparatively strong propensity to buy domestic government bonds. As a result, the risks faced by the state and banks are closely linked in all five countries, especially Italy and Spain.

Additional capital requirements have increased since 2014

At the end of 2017, Germany had an AAA rating, France AA, Italy BBB, Spain BBB+, and Great Britain AA (Fitch Ratings). Ratings between AAA and A- have a risk weight of zero when using the standardized approach (Figure 3). The home bias of German, French, and British banks thus does not affect their equity capital. Banks in these countries still have an incentive—despite the standardized approach—to invest in domestic government bonds. The situation is different for Italian and Spanish banks. Due to the weak ratings of these two countries, Spanish and Italian banks with home bias would require a considerable amount of additional capital. Thus, their incentive to invest in domestic government bonds would decrease significantly.

The capital neutrality of home bias is reflected favorably in the additional capital requirements of British, German, and French banks. Since 2014, the additional capital required if zero weighting of government bonds were abolished has fallen by 922 million euros for German banks, 648 million euros for French banks, and 710 million euros for British banks. In contrast, the additional capital required of Italian and Spanish banks has risen, partly because home bias has increased in these countries. The capital requirement of the banks in question increased by more than eight billion euros between 2014 and 2018 (Figure 4).

Of the German banks, Commerzbank would require the most additional capital (500 million euros), followed by Deutsche Bank at almost 400 million (Figure 5). The French bank with the highest additional capital requirement is BNP Paribas at almost 1.1 billion euros (Figure 6). Banco Santander, at more than 4.5 billion euros, needs the most capital of all Spanish banks (Figure 7). The three Spanish banks would lack a total of slightly more than 9.5 billion euros in their own funds if equity capital privilege for EU government bonds were to be eliminated. The four Italian banks would need additional capital of more than 11.5 billion euros for the government bond portfolios on their books at the end of 2017; the banks Intesa and Uni Credit would need the most (Figure 8). At around 200 million euros, the capital requirement of the British banks analyzed here is comparatively low (Figure 9). This is due to British banks' low level of investment in European government bonds with mediocre to weak ratings.

15 Between 2018 and 2014, the average difference between the home bias values is 0.94.

The equity gaps in Spanish and Italian banks—which would come about if zero weighting is removed—have also increased in recent years as a percentage of existing equity (Figure 10). At the major banks in the other countries, however, the gaps have tended to shrink. The shrinking can occur even if those banks have increasingly bought government bonds from their home countries, thus reducing the diversification of their government bond portfolios.

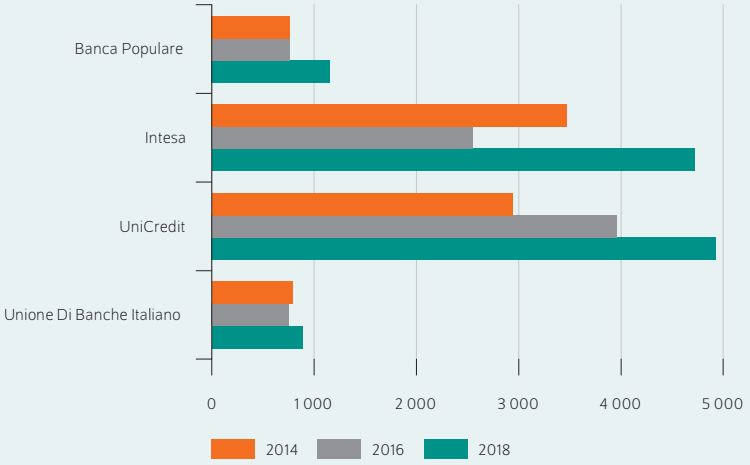
Conclusion

Since 2013, the importance of EU government bonds on the books has grown considerably.[16] At the same time, the home bias of banks has also increased. As a result, the interdependence between the default risk of states and banks has increased as well. At the same time, however, it is feared that introducing a capital requirement will make the financing conditions of the Italian and Spanish governments considerably more difficult. Since both countries still have weak public finances, introducing positive risk weights for EU government bonds could have negative external effects on the stability of the euro area. These consequences must be kept in mind when pursuing the objective of introducing risk weights for EU government bonds.

At the beginning of 2018, a high-level task force of the European Systemic Risk Board (ESRB) published a study on the feasibility of sovereign bond-backed securities (SBBS) for the euro area.[17] SBBS are based on the idea of bundling issued government bonds of the euro area countries together to create a new type of government bond through securitization and tranching which is specifically designed to be diversified. The waterfall principle also ensures that the senior tranche is much safer than the junior tranche, which would have to bear any losses first. The high-level group expects the SBBS senior tranche, with built-in diversification and a low default risk with a fair risk weight of zero, to be highly attractive to banks. This is based on the assumption that banks will buy SBBS instead of domestic bonds, thus disentangling the default risks between states and banks. Positive risk weights only provide an incentive to reduce home bias if the bank's home country rating is comparatively poor. If the rating is so good that the risk weight remains at zero even without equity capital privilege, disentangling will not necessarily proceed. This could be remedied by SBBS without affecting the financing possibilities of medium- and low-rated countries.[18]

Figure 8

Additional equity needs of Italian banks*
In million euro



* Additional equity needs if equity capital privilege for EU sovereign bonds is eliminated.

Source: EBA, authors' own calculations.

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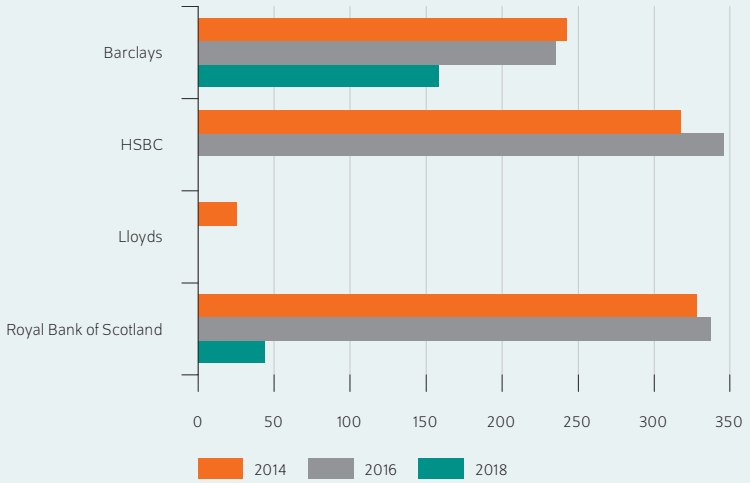
Italian banks would have the highest additional equity needs.

Figure 9

Additional equity needs of British banks*
In million euro



* Additional equity needs if equity capital privilege for EU sovereign bonds is eliminated.

Source: EBA, authors' own calculations.

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The additional equity requirements of British banks would be negligible.

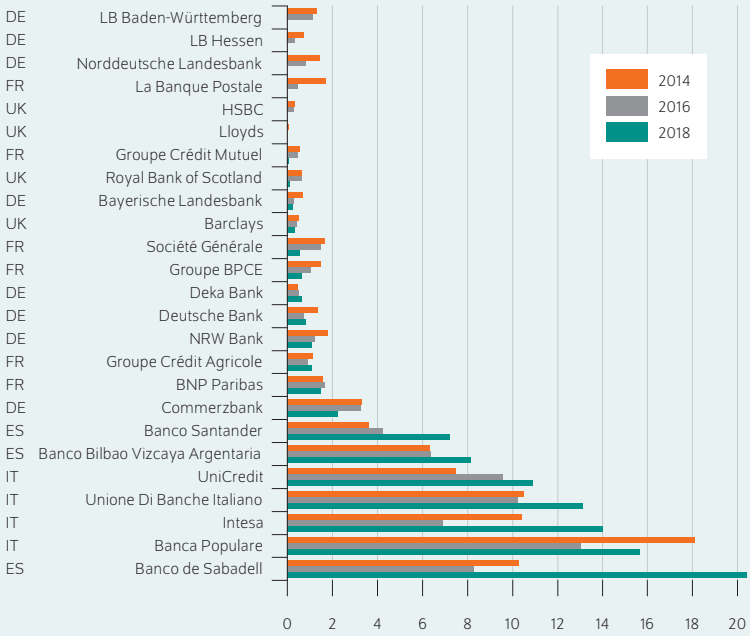
16 Massimiliano Affinito, Giorgio Albareto, and Raffaele Santioni, "Purchases of sovereign debt securities by Italian banks during the crisis: the role of balance-sheet conditions," *Banca d'Italia Occasional Papers* 330 (available online). A major reason for this is Basel III's liquidity requirements. Government bonds are usually very liquid securities.

17 ESRB High-Level Task Force on Safe Assets, *Sovereign bond-backed securities: a feasibility study, Volume I, and Volume II* (2018). Cf. Philip Lane and Sam Langfield, *The feasability of sovereign bond-backed securities for the euro area* (2019) (available online).

18 In the current debate, however, introducing these bonds is viewed critically. For example, the Advisory Board of the Federal Ministry of Finance has taken a critical stance on the SBBS.

Figure 10

Equity gaps of major European banks*
In percent of bank equity



* Additional equity needs in case equity capital privilege is eliminated relative to the banks' equity.

Source: EBA, authors' own calculations.

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The equity gaps of Spanish and Italian banks increased during the last years.

Under the current circumstances, a reform that would encourage banks to better diversify their EU government bond portfolios would be wise. Sovereign bond-backed securities (SBBS) could be a useful step in this direction. At the same time, improving the equity capital of major banks should be decoupled from public financing, at least until the euro area debt crisis has finally been overcome. A better equity base could be achieved by gradually raising the leverage ratio to at least five percent for major banks. Introducing risk weights for EU government bonds can presumably only be negotiated in a promising manner once home bias has been substantially reduced and EU member states' ratings have converged more closely once again.

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LEGAL AND EDITORIAL DETAILS

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