

AT A GLANCE

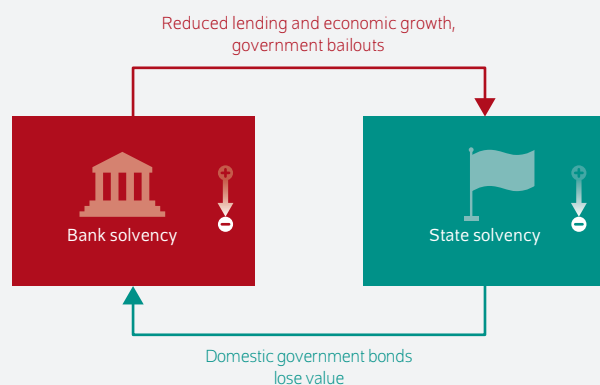
Government Bonds: European Banks Still Display Strong Home Bias; Requiring Capital Backing Could Worsen Problem

By Dorothea Schäfer, Michael Stöckel, and Henriette Weser

- Over a decade after the 2008 financial crisis, bank-sovereign interdependence in Europe has not been reduced
- Home bias remains high: many European banks continue to primarily purchase domestic government bonds
- The more the state and banks are intertwined, the lower the one's resilience is when the other is in crisis; this is a danger during the coronavirus pandemic
- If banks are required to back bonds with equity capital depending on country ratings, the capital requirement would be immense
- A capital backing requirement must therefore be accompanied by further measures, such as introducing a new and diversified type of government bond

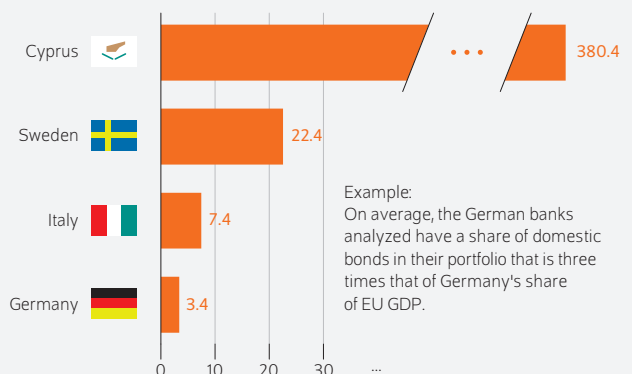
The more domestic government bonds banks buy, the more interdependent banks and states become; home bias is high in many countries

Bank-sovereign nexus vicious circle



Source: Authors' own depiction based on the EBA Transparency Exercises in 2016 and 2018.

Home bias in government bonds
Average, unweighted



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FROM THE AUTHORS

“As a new type of diversified government bond, SBBS would bundle together bonds from different euro area countries. Such a bond would be the first truly transnational and secure European bond in which banks could invest. This would benefit both the banks and the states—a classic win-win situation.”

— Dorothea Schäfer —

MEDIA



Audio Interview with D. Schäfer (in German)
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ABSTRACT

The European sovereign debt crisis illustrated how the stability of the entire financial system suffers when banks and sovereigns become too intertwined. However, there has been seemingly little success in reducing the bank-sovereign nexus in the decade since the crisis. As this Weekly Report shows, home bias remains strong and many European banks are still primarily purchasing domestic government bonds. One possible method of counteracting home bias would be to introduce a requirement for banks to back sovereign bonds on their balance sheets with their equity. So far, this has not been a requirement for banks, as government securities, which are inherently not free from risk, are considered risk-free from a regulatory perspective. However, as calculations in this report show, such a reform would entail a significant need for additional capital for many banks and could destabilize the euro area, especially as the home bias problem would become even more acute. Therefore, a future mandatory capital requirement for government bonds must be accompanied by additional measures, such as the introduction of a new, diversified type of government bond.

In July 2019, the German Federal Minister of Finance, Olaf Scholz, indicated he was prepared to introduce the European Deposit Insurance Scheme (EDIS).

So far, the banking union consists of only two pillars, the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM). Introducing EDIS would complete the banking union. Surprisingly, the Federal Ministry of Finance combined the EDIS proposal with capital requirements for EU sovereign exposures in the banks' balance sheets. Right now, banks are not required to hold equity capital as risk buffer for EU government bonds in their sovereign bonds portfolios; regulators consider government securities virtually risk-free, although they are not. A regulatory proposal that had been previously shelved in 2017 after being rejected by the Basel Committee is therefore being put back on the agenda with the EDIS initiative.

The reason for this new initiative is the bank-sovereign nexus, the strong interdependence between government and bank solvency. In the past, banks have tended to purchase a disproportionately high number of government bonds from their respective home countries.¹ This tendency is known as home bias. The bank-sovereign nexus is particularly pronounced when the home bias is strong. It is hoped that reforming the risk weighting for government bonds curbs the banks' tendency towards home bias. However, the incentive for a strong home bias does not only depend on the equity capital privilege for government bonds.

To be able to assess the extent to which Scholz's initiative of introducing capital requirements for sovereign exposures is suitable for reducing the home bias and thus the bank-sovereign nexus, it is first necessary to quantify the home bias (Box 1). Second, the potential capital requirements of the banks are determined (Box 2). These potential capital requirements can then be used to assess whether the estimated capital requirements create strong incentives for banks to reduce

¹ Cf. Dominik Meyland and Dorothea Schäfer, "EU government bonds and banks: home bias pervasive throughout member states but capital requirements differ greatly," *DIW Weekly Report*, no. 49 (2018): 1043–1051 (available online); as well as Dominik Meyland and Dorothea Schäfer, "Risk Weighting for Government Bonds: Challenge for Italian Banks," *DIW Economic Bulletin*, no. 28/29 (2017): 575–582 (available online).

Box 1

Quantifying home bias

Data and methodology

In addition to stress tests, the European Banking Authority (EBA) has been regularly conducting transparency exercises (TEs) with European banks since 2011. As a part of these exercises, the banks' investments in government bonds are surveyed and published.

The 2016 and 2018 TEs are used for this report.¹ The TEs examine the investment behavior of banks and their sovereign exposures. The data were collected on two dates: December 31, 2015, and June 30, 2018. The 2016 TE includes banks from 19 countries and the 2018 TE includes banks from 23 countries, but the analysis is limited to the countries that participated in both TEs. In addition to the bank-related data taken from the TEs, the real GDP of the respective EU Member States is used (Table).² The EBA data does not contain banks' total assets. Total assets at the two data collection dates are taken from the annual reports of the individual

Table

Real GDP of the countries analyzed

In millions of euros¹

Country ²	2015	2018	Increase (in percent)
Belgium	418,728	457,709	9.3
Bulgaria	46,060	54,822	19.0
Denmark	278,085	302,524	8.8
Germany	3,083,156	3,406,376	10.5
Finland	213,846	234,608	9.7
France	2,239,260	2,395,798	7.0
Greece	180,269	187,296	3.9
United Kingdom	2,659,648	2,422,400	-8.9
Ireland	267,352	323,829	21.1
Italy	1,681,578	1,799,977	7.0
Luxembourg	52,512	58,683	11.8
The Netherlands	702,903	779,111	10.8
Austria	350,661	390,068	11.2
Portugal	183,146	204,296	11.5
Sweden	457,078	486,876	6.5
Slovakia	39,415	45,940	16.6
Spain	1,101,223	1,223,662	11.1
Hungary	112,827	132,290	17.3
Cyprus	18,076	20,924	15.8
EU total	15,078,284	16,086,250	6.7

1 The dollar values are converted using the dollar/euro exchange rate from the respective data collection days. The decrease in British GDP is due to the worsening of the dollar/pound exchange rate.

2 No banks from Estonia, Croatia, Latvia, Lithuania, Malta, Poland, Romania, Slovenia, or the Czech Republic are included in the sample.

Source: World Bank.

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1 The survey period for the 2016 TE was between December 31, 2015, and June 30, 2016 (available online); for the 2018 TE, between December 31, 2017, and June 30, 2018 (available online).

2 Data on GDP are taken from the World Bank's Global Economic Monitor.

banks.³ The balance sheets' total assets of non-euro area banks were converted using the euro foreign exchange reference rates according to the ECB.⁴

Calculating the home bias

EU government bonds comprise a substantial share of banks' total assets (Figure). A home bias occurs when a bank disproportionately invests in domestic government bonds (*Government bonds_{domestic}*) as a share of their overall EU government bond portfolio (*Government bonds_{EU}*).⁵ The reference value for the disproportionality is the share of the home country's GDP (*GDP_{domestic}*) in the total GDP of all EU countries (*GDP_{EU}*).⁶ Accordingly, the following applies:⁷

$$\text{Home bias} = \frac{\frac{\text{Government bonds}_{\text{domestic}}}{\text{Government bonds}_{\text{EU}}}}{\frac{\text{GDP}_{\text{domestic}}}{\text{GDP}_{\text{EU}}}}$$

Theoretically, the home bias can take on values between zero and infinity. A rating of zero indicates a bank owns zero domestic government bonds. A value larger than one indicates a bank has domestic government bonds in their government bond portfolio worth more than its home country's share in the total GDP of the EU. For example, when domestic government bonds' share in the bank's total EU sovereigns' exposure is twice the home country's share in the total GDP of the EU, the home bias would have a value of two. The stronger the home bias, the more the solvency of banks and sovereigns are intertwined.

3 When no annual reports were available, other web-based sources were used.

4 Cf. European Central Bank, *Euro foreign exchange reference rates* (available online).

5 The Capital Requirement Regulation (CRR), Article 114, paragraph 4, allows government bonds issued in a bank's local currency to have a risk weight of zero. Therefore, risk weighting would no longer apply to all government bonds and bank loans to EU Member States. Under "permanent partial use" (CRD IV), a risk weighting of zero would apply to the banks that use the internal risk-based approach and therefore use their own models to estimate exposure risk. Furthermore, banks are not required to provide capital for EU government bonds when the national regulatory authority of the EU state in question allows a risk weight of zero for government bonds issued in its own currency. This combination of regulations leads to EU banks generally not being required to provide equity capital when investing in EU government bonds or lending to state and local governments, cf. European Stability Mechanism, *Tackling sovereign risk in European Banks* (2016) (available online).

6 Shares of GDP can be used to construct the reference portfolio, cf. Isabel Schnabel and Ulrich Schüwer, "What Drives the Relationship between Bank and Sovereign Credit Risk?" *German Council of Economic Experts Working Paper*, no. 7 (2016); as well as a country's share of debt in the total debt of EU countries, cf. Kenneth R. French and James M. Poterba, "Investor Diversification And International Equity Markets," *American Economic Review* 81, no. 2 (1991): 222–226.

7 To calculate the share of a country's GDP of total EU GDP, the 2015 GDP is used for the first data collection date. For the second date, June 30, 2018, the aggregated quarterly GDP data for the period of July 1, 2017 to June 30, 2018 is used.

Box 1 (continued)

To perform a country comparison, the values per bank are aggregated to give an average home bias of domestic banks per Member State. In addition to the unweighted home bias, a weighted average home bias is also calculated. The weight is based on the share of the balance sheet total of one bank in the sum of total assets of all banks in the relevant country, thus taking into account the different sizes of individual banks or the extent to which they are too big to fail.

The unweighted average per Member State is calculated using

$$\frac{1}{N} \sum_{i=1}^N \text{Home bias}_i$$

where i stands for the individual bank and N for the number of participating banks in the Member State with identifiable total assets.

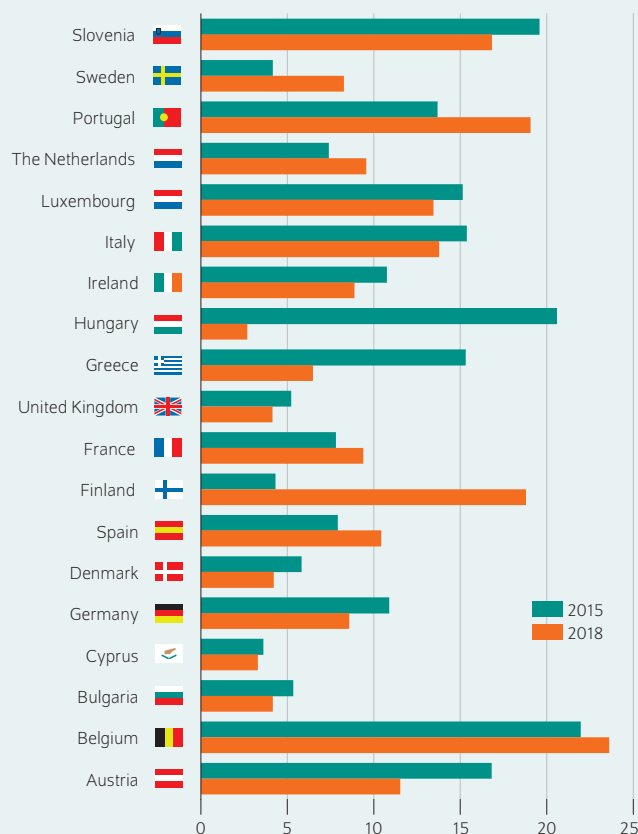
The weighted average is calculated using the following equation:

$$\sum_{i=1}^N \frac{\text{Total assets}_i}{\sum_{i=1}^N \text{Total assets}_i} \text{Home bias}_i$$

To calculate the weighted average, we only use the balance sheet's total assets from banks with complete balance sheet data. Thus, banks in countries that have one or more banks with missing balance sheet data are not integrated in the weighting. For example, if a country with seven banks participates in the TE and for two of these seven banks no figure for total assets is available, the aggregated balance sheet amount will only be calculated for the five banks with complete data. The weighting factor is then the respective bank's share in the aggregated balance sheet amount of the five banks.

Figure

Banks' EU government bonds to total assets Weighted average in percent



Notes: Only banks with identifiable total assets were included in the calculation. To calculate the average value per Member State, the bank's EU sovereign exposure as a share of total assets is weighted by the bank's share in the aggregated total assets of all participating banks from the Member State in question.

Source: Authors' own calculations and depiction based on data from the 2016 and 2018 EBA Transparency Exercises.

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EU government bonds make up a substantial share of the banks' total assets.

their home bias and to increase the diversity of their sovereign bond portfolios. Finally, using our findings, we examine alternative proposals for diversifying the banks' sovereign exposure.

Low home bias only way to reduce bank-sovereign vicious circle

The more the state and domestic banks are intertwined, the lower their individual resilience is during a crisis involving the other. Banks at risk of insolvency limit lending, the economy shrinks, and government revenues plummet. In the major financial crisis following the Lehman Brothers'

insolvency in 2008, huge government rescue packages for domestic banks also increased government spending sharply, putting the solvency of some EU Member States in question.² Due to an increased probability of defaulting, investors

² Germany's public debt ratio, for example, increased from almost 64 percent in 2007 to 82 percent in 2010. The increase was a direct consequence of the 480 billion euro bank rescue package adopted with the Financial Market Stabilization Act of 2008 (*Finanzmarktstabilisierungsgesetz*) and the establishment of two "bad banks" (*Erste Abwicklungsanstalt* and *FMS Wertmanagement*) by the German Federal Agency for Financial Market Stabilization (*Bundesanstalt für Finanzmarktstabilisierung, FMSA*). Also cf. Marius Kokert, Dorothea Schäfer, and Andreas Stephan, "Niedriger Leitzins: Eine Chance in der Euro-Schuldenkrise," *DIW Wochenbericht*, no. 7 (2014): 115–126 (in German; available online).

demand higher risk premiums for newly issued government bonds during a sovereign debt crisis. At the same time, the prices of old bonds fall. If banks hold many bonds issued by their own government, sharp capital losses will most likely lead to a new banking crisis (Figure 1). This vicious circle of interdependence can only be ended when banks diversify their government bond portfolios and avoid home bias. Even during the coronavirus pandemic of 2020, the close interdependence between states and banks is a source of mutual financial contagion and is escalating the crisis.

Zero risk assumption and capital privilege of EU government bonds promote home bias. Despite this, the Basel III reforms did not change the current practice of giving EU government bonds a risk weight of zero, irrespective of the actual default risk. Thus, banks can continue to finance government bond purchases entirely with borrowed capital without having to show additional equity capital on the balance sheet as risk buffer.³

The condition set by Scholz for introducing EDIS is now once again fueling the discussion about the risk weighting of government bonds. Supporters of risk weighting claim to want to finally break the bank-sovereign vicious circle. Opponents have concerns that risk weighting endangers the stability of the euro area and the European Union. They fear equity gaps in the banks' balance sheets and higher borrowing costs for the sovereign states; for highly indebted countries in particular, this combination could pose an almost insurmountable challenge.

Pronounced home bias in EU banks

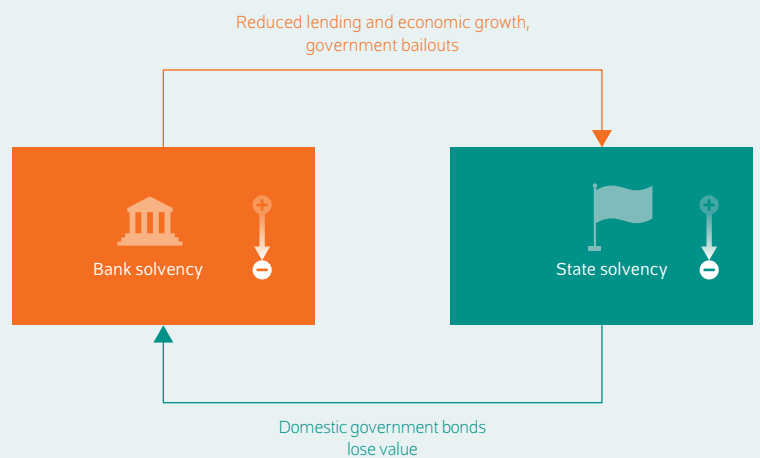
The following calculations show a pronounced home bias among banks in individual euro area countries. This applies when observing both the unweighted average home bias (Figure 2) and the weighted average home bias (Figure 3), which accounts for the size of the individual banks and the extent to which they are too big to fail (Box 1). The banks in Member States with a low GDP tend to have the strongest home bias. For example, Cypriot, Bulgarian, and Slovenian banks have the highest average home bias, with shares of domestic government bonds in their portfolios that exceed their home country's share of overall EU GDP by several hundred times. However, home bias was markedly lower in 2018 than in 2015.⁴ Hungarian, Portuguese, and Greek banks have the highest weighted average home bias. Between 2015 and 2018, the average home bias decreased in Ireland; in contrast, the weighted average home bias of Luxembourgish banks increased sharply from 28 to 134. The average home bias of

³ Equity capital secures the lenders of a bank against having to share in the losses of the bank. Lenders include short-term money market funds and other capital market investors as well as all bank customers with balances in checking and savings accounts. The more equity and other loss-bearing capital, such as conditional mandatory convertible bonds or long-term subordinated bonds, are available to cover losses, the better the lenders are protected.

⁴ For Cyprus, the strong decline can be explained by the fact that another Cypriot bank (that had no domestic government bonds in its portfolio) was integrated into the 2018 Transparency Exercise (TE) of the European Banking Authority.

Figure 1

Bank-sovereign nexus vicious circle



Source: Authors' own depiction.

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The more a state and its banks are intertwined, the less resilient one is when the other experiences a crisis.

Finnish banks also increased substantially over the observation period: the share of domestic government bonds in the portfolio was just over 60 times the share of Finnish GDP of total EU GDP in 2018.

In Denmark, the average home bias increased by about half of its value to 22 between 2015 and mid-2018 and the Swedish home bias increased from 14 to over 16. During the same period, Belgian banks reduced their home bias from almost 14 to 12. In 2016 and 2017, Austrian banks had a weighted average share of domestic government bonds in their portfolios that was over ten times the share of Austrian GDP of total EU GDP. However, in 2018, at 14, the value was still somewhat lower than three years earlier (over 16).

In the Netherlands, Spain, Italy, France, Germany, and Great Britain, the index in 2015 and mid-2018 had a value of below ten. Dutch and Spanish banks had the highest weighted average home bias of these countries in 2018, each with almost ten times the share of government bonds compared to the national share of EU GDP.

Between 2015 and 2018, the share of domestic government bonds in the portfolios of Italian banks remained, on weighted average, five to six times the Italian share of EU GDP. In France, the share stagnated at four times the French share of EU GDP.

Home bias in Great Britain increased from about three in 2015 to almost four in 2018. German banks were at the top of the list of countries with the lowest home bias in 2018. The share of German government bonds in the portfolios was "only" almost three times that of the German share of

Box 2

Calculating banks' additional capital requirement

According to Basel III and the CRR/CRD IV regulations, banks are required to partly finance their investments with bank capital. Assuming this will also apply to government bonds after a successful reform, the additional capital requirement (KB) is estimated as follows:

$$KB = \sum_{i=1}^{28} RW_i \cdot 8\% \cdot SE_i$$

The total value of the government bonds of a European country i on the books of a bank, SE_i , is multiplied by the risk-weight RW_i and the capital requirement of eight percent.¹ If future capital backing for government bonds follows the standardized approach (Figure), the country's rating determines the risk weight.² An investment in government bonds issued by a country rated BB+ would require a capital buffer amounting to eight percent of the investment amount due to the risk weighting of 100 percent. The

¹ Under Basel III, banks are required to hold capital equal to at least eight percent of risk-weighted assets. This capital can be in the form of equity capital, debt instruments convertible into equity capital, and long-term subordinated debt. Equity capital consists of tier 1 and tier 2 capital instruments. At least six percent must be tier 1 capital. Tier 1 capital consists of 4.5 percent of core tier 1 or common equity tier 1 (in the form of paid-in capital and retained earnings) and additional tier 1 capital of at least 1.5 percent. Contingent convertible bonds (CoCos), which were introduced with Basel III, are a part of the additional tier 1 capital. The tier 2 capital can consist of borrowed capital, but this must be paid in for at least five years and be subordinated debt, cf. Deutsche Bundesbank, *Eigenmittel* (2019) (in German; available online).

² The standard approach assigns a fixed risk weight to each rating. The banks have no discretionary leeway here, as no internal risk models are used to determine the probability of default and risk weighting.

Figure

Risk weights depend on states' ratings (credit standing)
In percent

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

Legend: Investing in the government bond of a state rated BB+ would require capital in the amount of eight percent of the sum invested due to the state's risk weight of 100 percent.

Source: Authors' own depiction.

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When a state has a high credit standing, banks will not have to provide any capital backing.

EU GDP. There was almost no change in this respect compared to 2015.

Overall, the average home bias of banks in the majority of the EU Member States observed has declined. However, even the comparatively low value for Germany is evidence of a persistent, strong home bias. And in many places, the home bias is even stronger, which the home bias of the 20 largest banks in the sample also illustrates (Figure 4).

Capital requirement for government bonds can increase home bias

Calculating equity gaps provides information on whether the proposed capital requirement for government bonds can solve the problem of interdependence between a sovereign state and its banks. Only banks whose home country has a rating worse than AA– would have an incentive to reduce their home bias were capital requirements for sovereign exposure to be introduced. According to the standardized approach, only banks in these countries would have to provide additional capital for domestic government bonds. The capital requirement for domestic government bonds in the portfolio would remain zero and the incentive towards home bias would remain for all banks in countries with

ratings equal or higher than AA–. Introducing a concentration factor would not change anything when it would be multiplied by the risk weight and when a risk weight of zero is still allowed for highly solvent government bonds.⁵

The ratings of Austria, Belgium, Denmark, Finland, France, Germany, Luxembourg, the Netherlands, Sweden, and the United Kingdom are currently equal to or higher than AA–. Therefore, even after a reform, the capital requirement for any domestic government bonds held by banks in these countries would be zero (Box 2).

For banks from these countries, the capital backing requirement could even further reduce the diversity of their government bond portfolios, thus increasing home bias. This is because such a requirement would, in fact, abolish the prevailing status quo for capital regulation: the equal treatment of all EU government bonds. Instead, this would create an incentive to abolish “foreign” government bonds that require capital backing. If those bonds were increasingly sold and replaced by domestic bonds with a risk weight of zero, diversity would drop.

⁵ Weighting the concentration factor with the risk weight of the states is planned in Scholz's EDIS suggestion.

currently applicable risk weighting $RW_i = 0$, on the other hand, allows banks to finance all purchases of government bonds from EU Member States without loss-bearing bank capital and thus completely with borrowing from depositors or capital market participants.³

The three largest credit rating agencies regularly publish ratings for every EU Member State. These ratings can be used to estimate the additional capital requirement of banks if the capital privilege were to be abolished. To determine the risk weights on the respective data collection days, the ratings from Fitch Ratings were used. In mid-2018, a number of countries had a significantly better rating compared to the end of 2015. However, for some countries, the improvement is not enough to change the risk weight (Table). In the cases of Greece, Portugal, Spain, and Hungary, however, the change in rating is also reflected in a lower risk weight for their government bonds.

The average additional capital requirements per bank of a Member State is calculated by weighting the capital requirement per bank by the bank's share in the aggregated total assets of all participating banks in the Member State.

Table

Ratings of countries analyzed

In millions of euros

Country	2015	2018
Belgium	AA	AA–
Bulgaria	BBB–	BBB
Denmark	AAA	AAA
Germany	AAA	AAA
Finland	AAA	AA+
France	AA	AA
Greece	CCC	B
Ireland	A+	A+
Italy	BBB+	BBB
Luxembourg	AAA	AAA
The Netherlands	AAA	AAA
Austria	AA+	AA+
Portugal	BB+	BBB
Sweden	AAA	AAA
Slovakia	A+	A+
Spain	BBB+	A–
United Kingdom	AA+	AA
Hungary	BB+	BBB–
Cyprus	B+	BB+

Note: Government bonds from the countries shaded in green would receive a zero risk-weight, meaning banks would not be required to provide capital for domestic government bonds.

Source: Fitch Ratings.

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³ The risk weight of zero also applies to loans to federal or regional/local governments.

The evidence shows that Italian and Spanish banks would be particularly negatively affected by a capital requirement for sovereign exposure. In 2018, the overall capital requirement for the banks in Italy and Spain would have been 9.6 and 6.4 billion euros, respectively (Figure 5). Per bank, this would imply average additional capital of 2.3 or 1.2 billion euros (Figure 6). Belgian, French, and Portuguese banks follow, additional capital needs amount to 648 million euros, 586 million euros, and 413 million euros, respectively.

Relative to the available core capital, the hypothetical capital requirement in mid-2018 would have been lower in almost all the countries considered than at the end of 2015 (Figure 7) with the exception of Sweden and Great Britain. In terms of pure core capital, the capital requirements of Portuguese banks would have been the highest in mid-2018 at just under nine percent.

Other methods of reducing home bias needed

Banks in Italy and Spain would need a significant amount of additional capital due to their strong home bias. Thus, the consequences of reforming capital requirements for sovereign exposure would probably be severe for the stability of the euro area as a whole. Furthermore, the issue remains

that banks in states with a zero risk weight would not have an incentive to reduce the number of domestic government bonds in their portfolio, as these bonds would not incur them any additional costs. This also applies if a risk-weighted concentration charge is introduced. Furthermore, capital backing would not necessarily result in broad diversification; on the contrary, it is highly likely that banks would increase the concentration of government bonds with a zero risk weight in their portfolios. These government securities would thus become even scarcer than they already are.

For these reasons, it is necessary to find other methods to reduce bank-sovereign interdependence.⁶ In this report, we examine three methods and assess whether they are capable

⁶ It is also criticized that the credit rating agencies' risk assessments can be incorrect and have often been so in the past, cf. for example Carmen M. Reinhart, "Default, currency crises, and sovereign credit ratings," *World Bank Economic Review* 16, no. 2 (2002): 151–170; Marco Pagano and Paolo Volpin, "Credit ratings failures and policy options," *Economic Policy* (2010): 401–431; Hans-Helmut Kotz and Dorothea Schäfer, "Rating-Agenturen: fehlbar und überfordert," *Vierteljahrshefte zur Wirtschaftsforschung* 82, no. 4 (2013): 135–162 (in German; available online); and Alexander M. Karminsky and Ella Khromova, "Modelling banks' credit ratings of international agencies," *Eurasian Economic Review* 6 (2016): 341–363. Requiring capital backing for government bonds would allow the major credit rating agencies to play the role of quasi-regulators even more than before. This directly contradicts a central lesson from the major financial crisis: it is imperative to reduce the dependence of capital regulation on the ratings, see Financial Stability Board, *Reducing Reliance on Credit Ratings* (2010).

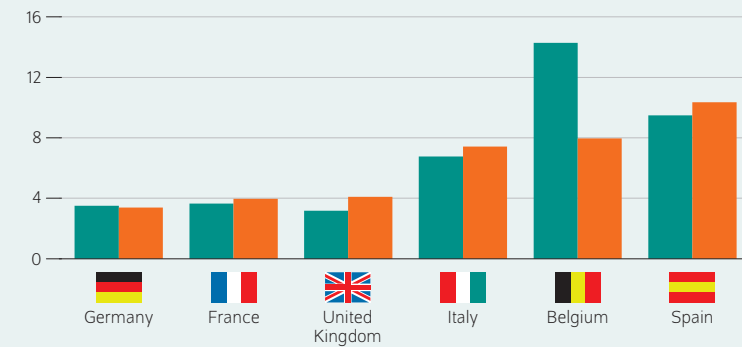
GOVERNMENT BONDS

Figure 2

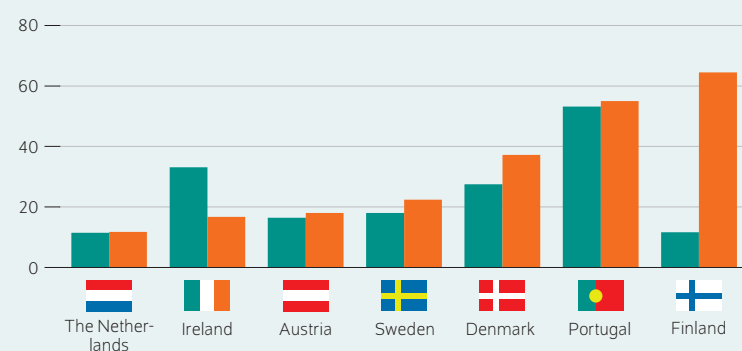
Banks' home bias¹ in government bonds

Bank average, unweighted²

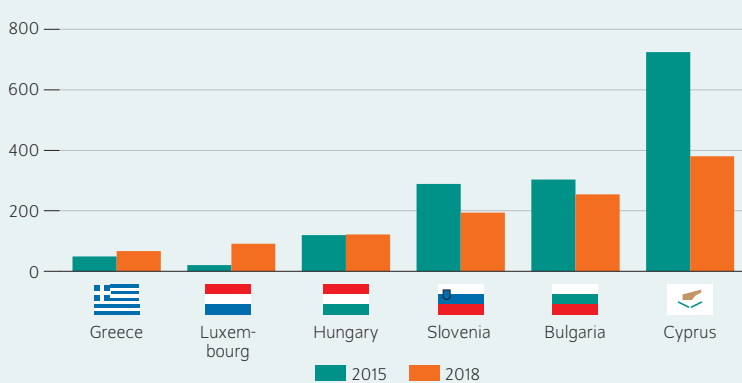
Weak home bias



Moderate home bias



Strong home bias



1 The figure shows how many times the share of domestic government bonds in a bank's portfolio exceeds the share of the bank's home country of total EU GDP on average. For example: Cypriot, Bulgarian, and Slovenian banks have so many domestic government bonds in their portfolio that their share of domestic government bonds exceeds the share of their respective country's share of total EU GDP by several hundred times.

2 Unweighted means that the same importance is given to each bank.

Notes: The strong home bias of Finnish banks can be explained by the fact that during the 2016 Transparency Exercises (TEs), only one Finnish bank with comparatively low home bias (13.9) participated. In the 2018 TEs, this bank's home bias was much higher (62.1). Moreover, a second Finnish bank with very strong home bias (66.6) participated in the 2018 TEs. The strong increase in Luxembourgish banks is due to the fact that the major bank RBC Investor Services Bank S.A. had zero domestic government bonds in 2016 but a large number of domestic government bonds in 2018. In addition, the Luxembourgish banks Banque et Caisse d'Épargne de l'État, J.P. Morgan Bank Luxembourg S.A., and State Street Bank Luxembourg S.A. did not participate in the 2016 TEs.

Source: Authors' own calculations and depiction based on the 2016 and 2018 EBA Transparency Exercises.

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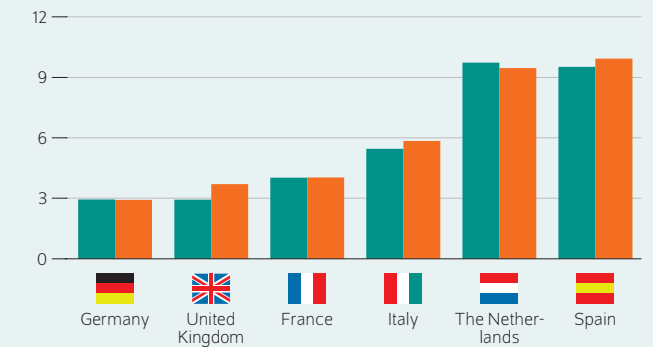
Home bias tends to be many times higher for banks from small EU countries than for banks from large Member States.

Figure 3

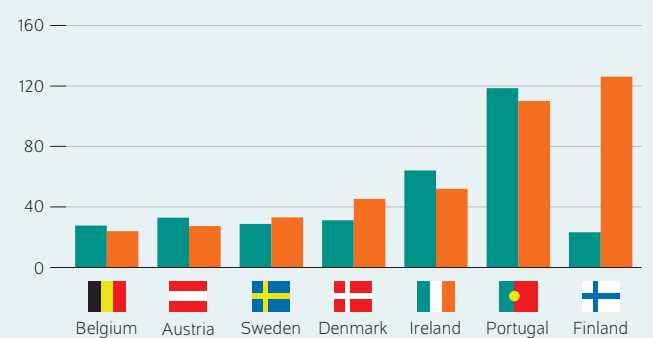
Banks' home bias¹ in government bonds

Bank average, weighted²

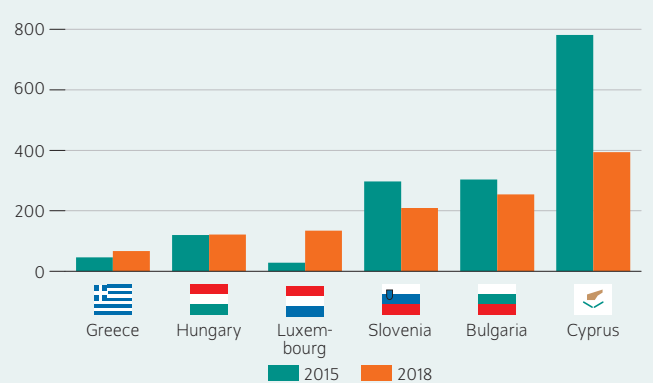
Weak home bias



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1 The figure shows how many times the share of domestic government bonds in a bank's portfolio exceeds the share of the bank's home country of total EU GDP on average. For example: Cypriot, Bulgarian, and Slovenian banks have so many domestic government bonds in their portfolio that their share of domestic government bonds exceeds the share of their respective country's share of total EU GDP by several hundred times.

2 Weighted means that the size of each bank and the extent to which it is too big to fail is taken into account (measured as the share of a bank's total assets in the aggregated total assets of all banks in a country).

Notes: No total assets could be identified for at least one bank in Austria, Belgium, Ireland, Luxembourg, the Netherlands, and Portugal. Banks for which total assets could not be identified are not included when calculating the weighted average home bias.

Source: Authors' own calculations and depiction based on the 2016 and 2018 EBA Transparency Exercises.

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While the average weighted home bias in some countries has increased, it has decreased in comparison to 2015 for others.

of mitigating or eliminating the above-mentioned deficiencies of capital requirements for sovereign exposure.

One mitigation strategy would be to impose risk weighting and capital backing only on newly purchased government bonds. With such a regulation, a bank could determine the amount of necessary additional capital buffers themselves, preventing the capital requirement from soaring. Afterwards, an increase in the capital requirement could be gradually introduced.⁷ However, this would not reduce the home bias of banks in countries rated AA– or better.

In its 2018/19 Annual Report (*Jahresgutachten*), the German Council of Economic Experts (*Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung*, GCEE) again recommended risk-weighted capital requirements for sovereign exposures⁸ supplemented by a risk-adjusted limit for those exposures.⁹ Alternatively, the GCEE proposes combining a risk-weighted regulatory capital requirement with concentration charges for government bonds.¹⁰ The Sovereign Concentration Charge Regulation (SCCR) would impose a tier 1 capital charge on euro area banks when the value of the government bonds of a euro country, expressed as a share of tier 1 capital, exceeds the threshold of 33 percent. The higher the share is, the higher the charge (Table). The absolute value of the charge increases the risk-weighted assets and reduces the tier 1 capital ratio. Therefore, banks with high concentrations of sovereign exposure require more tier 1 capital to reach the regulatory minimum ratios.

Unlike the concentration factor in Scholz's proposal, the SCCR is not based on the credit risk assessments of credit rating agencies. The SCCR treats banks whose home countries have poor ratings the same as banks whose home countries have good ratings; therefore, credit ratings play no role. One positive effect is that the SCCR also reduces the home bias in banks located in countries rated AA– or higher, as any strong concentration of bonds issued by one country would be sanctioned. The GCEE proposed to introduce the SCCR in combination with the EDIS.¹¹

⁷ The proposal to only require risk weighting of newly purchased government bonds was already introduced in an earlier issue of the DIW Economic Bulletin, cf. Dominik Meyland and Dorothea Schäfer, "Risk weighting for government bonds: challenge for Italian banks," *DIW Economic Bulletin*, no 28+29 (2017): 283–290.

⁸ Cf. Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, "Vor wichtigen Wirtschaftspolitischen Weichenstellungen," *Jahresgutachten* 2018/19 (2018) (in German; available online). A regulatory capital requirement in a different form had previously been suggested in the 2015/16 Annual Report.

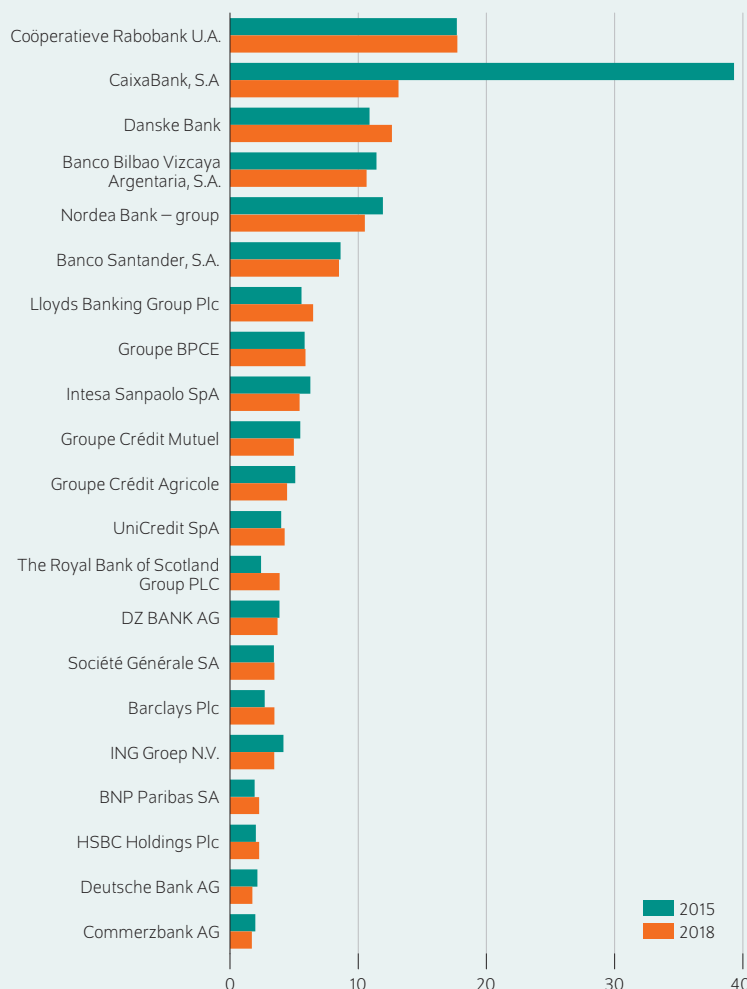
⁹ The large exposure limits vary depending on the country's rating. In 2015, the GCEE proposed a large exposure limit of 25 percent of eligible capital for the countries with the lowest ratings. This limit increases to above 50 percent for countries rated B– to BB+, 75 percent for BBB– to BBB+ countries, 90 percent for A– to A+ countries, and to 100 percent for AA– to AAA countries.

¹⁰ Cf. Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, "Zukunftsfähigkeit in den Mittelpunkt," *Jahresgutachten* 2015/16 (2015) (in German; available online).

¹¹ The original proposal of concentration charges comes from Nicolas Véron, *Sovereign Concentration Charges: A New Regime for Banks' Sovereign Exposures* (European Parliament: 2017) (available online). However, Véron is not specifically targeting home bias; rather, he focuses on reducing the concentration of government bonds from EU Member States in banks' portfolios in general. He emphasizes that all government bonds from euro area countries should be treated the same.

Figure 4

Home bias¹ of the 20 largest banks analyzed



¹ The figure shows how many times the share of domestic government bonds in a bank's portfolio exceeds the share of the bank's home country of total EU GDP.

Notes: Standard Chartered PLC, the 17th-largest bank in the sample according to 2018 total assets, did not participate in the 2016 TEs. Banks whose total assets could not be identified were not included.

Source: Authors' own calculations and depiction based on the 2016 and 2018 EBA Transparency Exercises.

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Home bias tends to be many times higher for banks from small EU countries than for banks from large Member States.

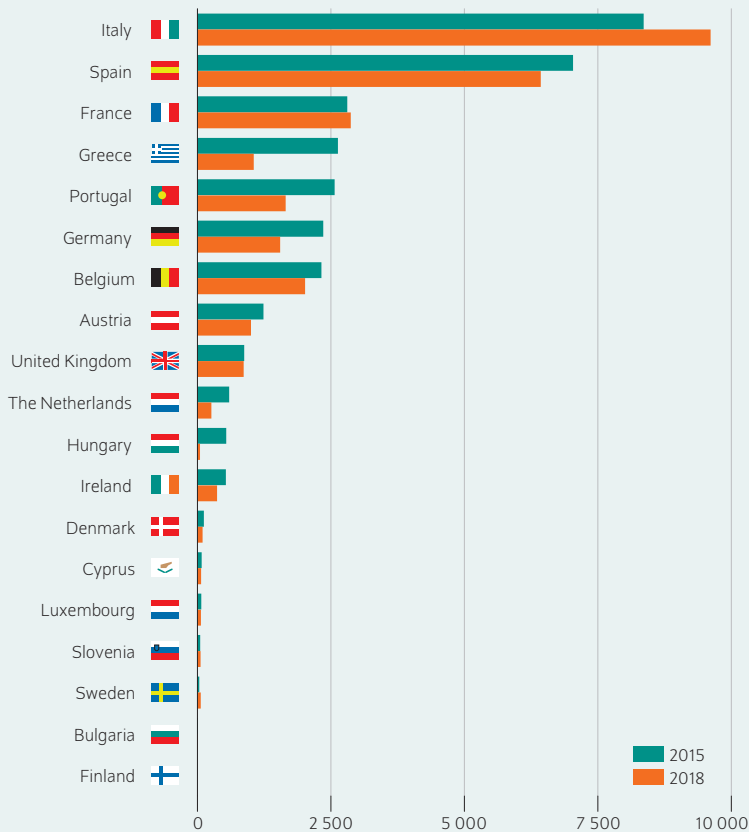
Another method would be to use the concept of sovereign bond-backed securities (SBBS).¹² SBBS are based on the idea of bundling issued government bonds of the euro area countries together to create a new type of government bond through securitization and tranching that is specifically

Assuming that the highest concentration of government bonds are from a bank's home country, the SCCR minimizes home bias.

¹² Cf. ESRB High-Level Task Force on Safe Assets, *Sovereign bond-backed securities: a feasibility study, Volume I* (available online) and *Volume II* (2018) (available online). Cf. as well Philip Lane and Sam Langfield, *The feasibility of sovereign bond-backed securities for the euro area* (2018) (available online).

Figure 5

Total hypothetical capital requirement of banks per country In millions of euros



Legend: Were a capital backing requirement for government bonds to be introduced, Spanish and Italian banks would require additional capital in the billions of euros.

Note: Banks whose total assets could not be identified were not included.

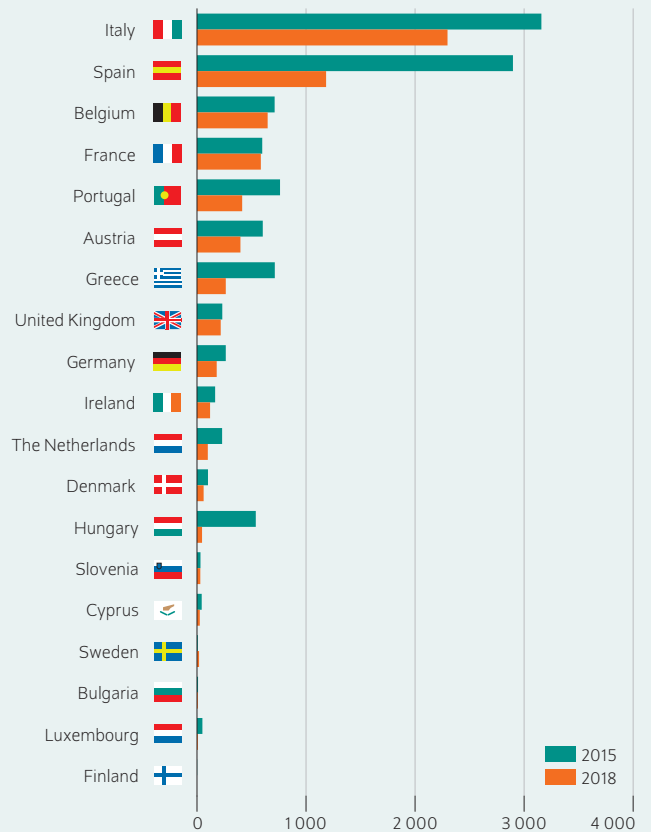
Source: Authors' own calculations and depiction based on the 2016 and 2018 EBA Transparency Exercises.

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Spain and Italy in particular would be hit the hardest if risk weighting of government bonds were to be introduced.

Figure 6

Hypothetical capital requirement per bank Weighted average¹ in millions of euros



¹ Weighted means that the size of each bank and the extent to which it is too big to fail is taken into account (measured as the share of a bank's total assets in the aggregated total assets of all banks in a country).

Note: Banks whose total assets could not be identified were not included.

Source: Authors' own calculations and depiction based on the 2016 and 2018 EBA Transparency Exercises.

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On average, Italian and Spanish banks have lower home bias than in 2015, but they would still require immense additional capital.

designed to be diversified. The waterfall principle¹³ also ensures that the senior tranche, with a risk weight of zero, is much safer than the junior tranche or equity tranche. The SBBS has two goals: First, to lower or end the home bias in banks in all euro area countries and replace it with a strongly

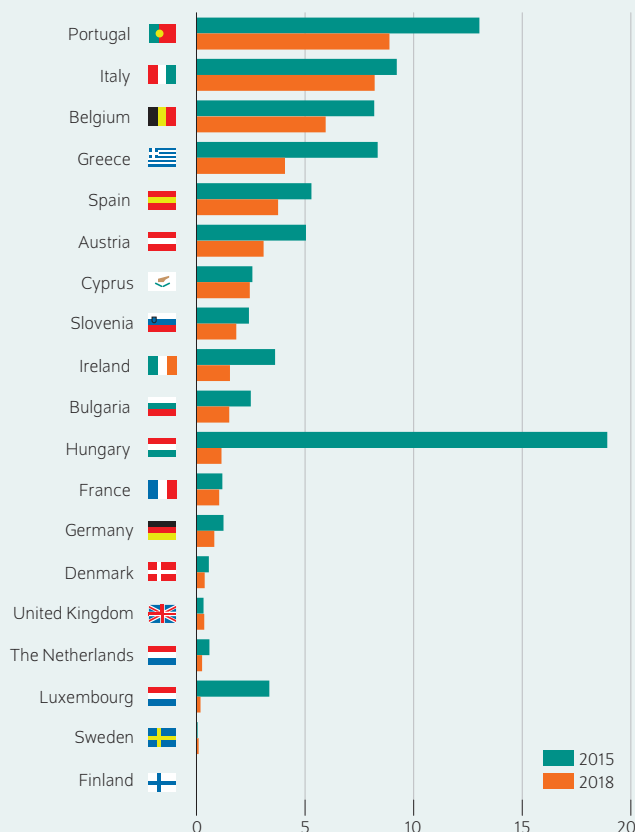
¹³ The waterfall principle is a loss absorption or cash flow principle that is used during securitization. Loans are bundled and sorted according to the probability of default. After sorting, the loans are summarized into tranches depending on their rating. There are at least two tranches that are in a hierarchical order to each other, since the tranche with higher risk provides a risk buffer for the tranche with less risk. Thus, the waterfall principle describes both the sequence of loss absorption, which flows from a tranche with a high risk to a risk-free tranche according to the risk assessment, and the sequence in which the securitization is serviced, i.e., the disbursement of the cash flows. The risk-free tranche is first and the tranche with the worst risk assessment is last. For more detailed information, cf. Stephan Ricken, "Verbriefung von Krediten und Forderungen in Deutschland," *Betriebswirtschaftliche Handlungshilfen* 213 (Hans Böckler Stiftung: 2008) (in German; available online).

diversified government bond portfolio. Second, the SBBS is based on the idea that capital requirements for government bonds can be introduced without jeopardizing the stability of the euro area if SBBS are available as an investment alternative. Banks that are located in sovereign states with fragile state finances would have access to the senior tranches of the SBBS and thus access to a "safe asset." There is no question that euro area banks need such highly liquid investment instrument.¹⁴ With built-in diversification and a risk weight of zero, the European Systemic Risk Board expects that banks in countries with a zero risk weight would also

¹⁴ Cf. 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 (available online).

Figure 7

Ratio of capital requirement to pure core capital Banks' average in percent, weighted¹



¹ The percentages were determined by comparing the additional capital requirement per bank with the bank's existing core capital. The bank-specific percentages were then weighted with the share of the respective bank in the aggregated total assets of all participating banks in the country.

Note: Banks whose balance sheet amount was not available were not included.

Source: Authors' own calculations and depiction based on the 2016 and 2018 EBA Transparency Exercises.

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Relative to the available core capital, the capital requirement in 2018 would have been lower in all countries analyzed than in 2015.

prefer the security of SBBS over their domestic government bonds. This would presumably also somewhat alleviate the extreme scarcity of the zero-risk-weighted government bonds of the particularly solvent euro area countries.

Conclusion: Introduce capital backing requirement for government bonds with additional measures

Banks in the EU Member States show a home bias when the share of domestic government bonds in their EU sovereign bond portfolio is higher than their home country's share in the GDP of the European Union. A strong home bias results in an unfavorable interdependence between banks and sovereigns, which can lead to mutual contagion effects during

Table

Sovereign concentration charges

Sovereign exposure ratio in percent	< 33	33-50	50-100	100-200	200-300	300-500	> 500
Sovereign concentration charge in percent	–	15	30	50	100	200	500

Source: Nicolas Véron, *Sovereign Concentration Charges: A New Regime for Banks' Sovereign Exposures* (European Parliament: 2017) (available online).

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a crisis. The findings of this Weekly Report prove that the home bias of the observed European banks and thus of their respective countries continues to be high and is extremely pronounced in some cases, although it generally declined from 2015 to 2018. Even German banks, which have the lowest weighted average home bias, have three times more domestic government bonds on their balance sheets than the share of German GDP of total EU GDP. Such a value also indicates a close connection between the solvency of a country and the solvency of banks from said country.

As was made painfully clear in 2008 and 2020, financial market crises do not announce their arrival. To keep the impact of a banking crisis as minimal as possible, measures must be taken in the European Union to reduce the bank-sovereign nexus. However, the secondary condition of introducing EDIS, capital requirements for sovereign bonds, at best only halfway achieves this goal; at worst, it may actually trigger turmoil in the euro area.

Other, not necessarily alternate, but rather preparatory and flanking instruments are therefore needed. Over a decade after the start of the European debt crisis, the coronavirus pandemic of 2020 is testing the stability of the banks. It is high time to introduce regulations that support the stability of the banks, improve Member States' financing opportunities, and strengthen the stability and cohesion of the EU. The capital backing requirement for government bonds is not suitable for achieving these goals. On the contrary, such a requirement would create high hurdles and mean additional costs in financing the national budget for some euro area states, and would probably lead to severe distortions within the euro area.

Although some countries have improved their rating, it is not advisable to require capital requirements for EU sovereign bonds at this stage. A capital requirement should only be introduced together with accompanying measures, such as a new type of diversified government bond like SBBS. In addition, banks' capital buffers should be increased. Policymakers must quickly make provisions to ensure that in the event of a systemic crisis, sovereign states can supply their major banks with equity capital even against the will of the bank management.

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