

Sovereign debt and banks

A concrete proposal for a regulation

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The bank at your side

Editorial



In a monetary union with a single monetary policy and bank supervision but no fiscal union, the interdependence between banks and sovereigns is a sensitive issue. After all, member states incur debt in a currency over which they have no sovereignty in terms of monetary policy. At the same time, it has become clear that this interdependency has fuelled and exacerbated the crises of recent years. This nexus can be traced back to a series of closely connected misplaced incentives and misinterpretations, not least the now refuted assumption that exposures to EMU member states do not pose a credit risk and therefore do not need to be subject to the capital adequacy and large exposures regimes. So it's no wonder that many banks in Europe built up high exposures to EMU member states – which was also in the interest of the governments.

The question is how this web of connections can be broken up. Supervisors have now pushed the issue to the top of the agendas. We at Commerzbank also wish to make a constructive contribution to resolving the situation. There is much to be considered: the repercussions on the capital markets, interconnection with other fields of regulation such as the new liquidity requirements imposed on banks, and last but not least the role that debt instruments of supranational issuers are to play in all of this. I therefore favour a capital adequacy requirement for sovereign debt if certain individual and total allowances are exceeded. These are based on large exposure limits and weighted with a risk factor as well as with a factor preventing excessive concentration within a sovereign's creditor structure.

Further details are given in our research paper by Carl-Christoph Hedrich and Dominic Hepp. They started off by analysing data from the European Central Bank's Comprehensive Assessment, which provides information on the extent and composition of the exposure of selected member states' banks to sovereign debtors. They then used this as a basis for examining the causes and possible solutions, and ultimately making a multi-stage regulation proposal for the EMU. Sample calculations underline how the proposal would impact market participants and, above all, banks. It goes without saying that the proposal remains subject to a more precise calibration of the parameters involved by regulators and supervisors. The primary objective of this paper is to highlight the key adjustments that can be built in to obtain a regulatory solution that is both practicable and incentive-compatible and to provide a basis for discussion.

Martin Blessing

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Commerzbank AG
Public Affairs Research

Authors:
Dr. Carl-Christoph Hedrich
GM-C, Public Affairs
Senior Research Manager

Dominic Hepp
GM-DS, Corporate Finance
Specialist

Edited by
Anja Käfer-Rohrbach
GM-C, Public Affairs

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1 Executive summary

Findings and task

In the European Union, up to one third of outstanding sovereign debt is held on bank balance sheets in the form of bonds and loans. In some countries, such sovereign debt instruments¹ on bank balance sheets account for over one tenth of their total exposure, while some credit institutions have total exposures towards EMU member states exceeding 400% of their eligible capital. The vast majority of these are exposures to the home country of the respective bank (see esp. Section 2 and Annex 1, p. 28 ff).

Such close ties between public finances and banks put the stability of the whole financial system at risk – at least latently. This is especially true in the European Monetary Union, where in spite of its single monetary policy and bank supervision, responsibility for economic and social policy still largely lies with the individual member states. In particular, there is no fiscal union. Except for the European Stability Mechanism (ESM) and the assets held on the balance sheet of the European Central Bank (ECB), there is, for example, no shared liability for debts incurred by individual sovereigns.

Thus, as long as individual member states remain liable for their sovereign debt (at least on paper), country risks will continue to play a key role not only for the stability of banks but also of the financial system. Unstable banks pose a risk for public finances, while, conversely, a sovereign debt crisis jeopardizes the stability of banks.

However, bank exposures to eurozone countries are not covered from a regulatory perspective, and thus are privileged versus other bank exposures. The introduced leverage ratio will to change this only to a lesser extent (see Annex 2, p. 32). With this in mind, close, reciprocal financial relationships between banks and sovereigns within the EMU should be scaled back, bulk risks should be minimized through adequate diversification and total exposures to member states should be capped.

Proposal

At the core of the approach is a capital adequacy requirement for sovereign debt instruments if individual and total allowances are exceeded. These are based on large exposure limits and are weighted with a risk factor as well as with a factor preventing excessive concentration within a sovereign's creditor structure.

- With regard to euro-denominated exposures (bonds and loans) to individual EMU member states (general government, i.e. sovereign and sub-sovereign borrowers) and supranational EU/EMU institutions (e.g. ESM, EFSF), these should be backed by regulatory capital when it exceeds a risk-weighted allowance defined specifically for the debtor state in question. The amount of a bank's individual allowance (IAW) without capital requirement for sovereign exposures is calculated using the following formula (see Sections 4.1 – 4.4):

$$IAW = 25\% \times EC \times \frac{90\%}{\text{current-debt-to-GDP-ratio, in}\%} \times S$$

- This is calculated
 - in analogy to the prevailing large exposure limit, for example to companies, of 25% of a bank's eligible capital (EC)²,
 - weighted by a factor for the country's creditworthiness, measured in accordance with the gross government debt-to-GDP ratio (D-2-GDP R) as an indicator of fiscal stability and calibrated to a ratio of 90% measured against GDP. Thus, the less the debtor state is indebted relative to its economic strength, the higher the allowance for the bank (and vice-versa); and
 - weighted with a factor S, which is inversely proportional to the share of the respective bank in the country's government debt; this should counteract an overconcentration in the debtor state's creditor structure (i.e. sovereign debt being held by just a few banks).

¹ In the following, "sovereign debt instrument" shall refer to all exposures towards a sovereign, including not only government bonds but also loans, claims arising from derivatives contracts, etc. See also Deutsche Bundesbank (2015a), p. 24.

² See EUR-Lex (2013a) Art. 387 ff., esp. 392 and 400 (1) and (2) CRR in conj. w/ EUR-Lex (2013b) Art. 67 CRD IV.

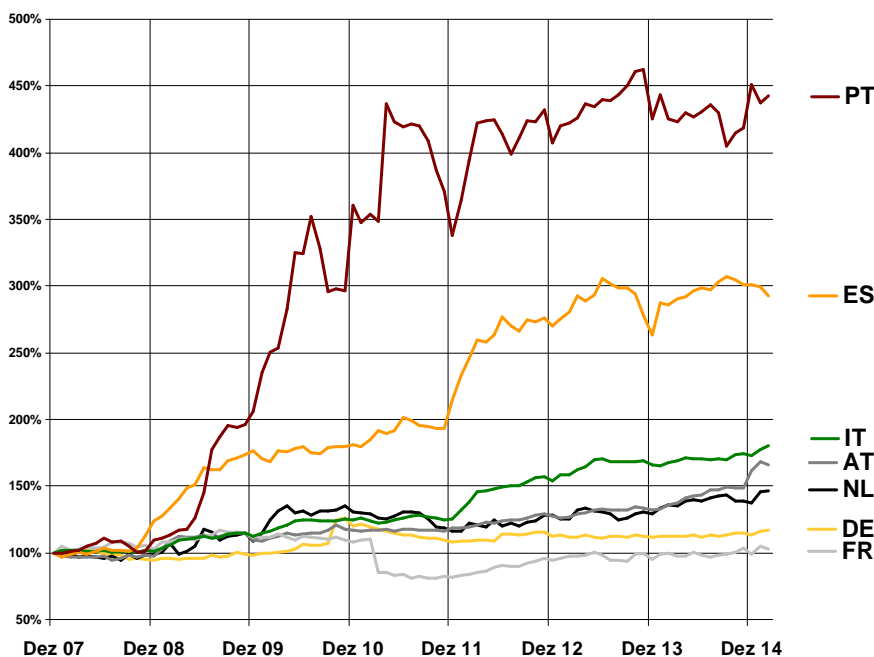
- The amounts exceeding the individual allowance (EXIA) are to be backed by regulatory capital.
- A bank may utilize individual allowances totalling up to 150% of its eligible capital (total allowance, TAW). If the sum of the utilized allowances exceeds this upper limit, the exposures in the amount exceeding this total allowance (EXTA) are to be backed by regulatory capital.
- Capital requirements are set by risk weights which are not defined by sovereigns' individual probabilities of default or external ratings, but rather are increasing on a progressive, step-by-step basis in line with the consolidated amounts exceeding the allowances (EXIA and EXTA).
- These progressively increasing capital requirements and the upper limit for utilized allowances counteract excessive exposures, in particular the "stockpiling" of allowances, creating a bulk risk for "EMU member states".
- Exposures to sovereigns that carry an exchange-rate risk, especially those held by institutions in the EMU towards non-eurozone countries, should in principle be backed by regulatory capital.³
- As a regulation option increased allowances or lower risk weights could be envisaged for exposures to EU/EMU institutions (e.g. ESM or EFSF).
- Entry into force not before 2019, i.e. application only after full implementation of Basel III/CRD IV.
- No grandfathering for existing exposures in order to avoid negative incentive effects beforehand (e.g. pre-stocking of bonds exempted by the regulation) and negative market effects afterwards (drying-up of bond supply).
- Phase-in of five years with capital adequacy requirements that increase in increments of 20% per year.
- It is imperative that impact studies be conducted prior to sign-off to examine the repercussions of the regulation in practice, especially with regard to unwanted pro-cyclical effects and its consistency with regulatory liquidity requirements.

³ Insofar as no use is made of an exemption similar to corresponding privileges on the part of the sovereign in question for its domestic banks. See EUR-Lex (2013a): Art. 150 CRR.

2 Empirical findings

In recent years, the link between credit institutions and sovereign borrowers, in particular in southern European countries, has become an emerging topic of both political and economic discussion.⁴ The issue came to a head in 2012 when the haircut on Greek government bonds resulted in a need for recapitalization for the majority of the country's banking sector, and thus in a need for capital assistance from both the sovereign and the European Union⁵. This prompted various institutions, in particular the European Central Bank, to take exceptional measures and issue an unlimited guarantee to calm financial markets. The ongoing and generous practice of the ECB of providing banks with extremely favourable forms of funding (e.g. through T-LTROs), combined with the purchase of government bonds (also known as quantitative easing or QE), which after much consideration was eventually implemented in March 2015, caused default risk premiums to fall even further⁶. This increased the incentive for banks to invest the funds acquired from the ECB in government bonds for an at times extremely lucrative margin or the prospect of price gains (so-called carry trades)⁷. Consequently, bank exposures to government bodies have risen further in some countries in recent years (see Fig. 1).⁸ The declared objective of financing the real economy is not being met in this way.

Fig. 1: In some EMU member state bank exposures to government bodies have risen significantly since the end of 2007



Notes: Development of domestic banks' loan and bond exposures to government bodies of the eurozone (December 2007 = 100%); last value 28.02.2015.

Sources: ECB Statistical Data Warehouse, Monetary Statistics, MFI balance sheets, Euro Area (aggregated), <http://sdw.ecb.europa.eu/browse.do?node=bbn3154>, Commerzbank Corporates & Markets Research.

⁴ This policy paper will not deal with extensive economic research discussions.

⁵ See e.g. *Wissenschaftlicher Beirat beim Bundesministerium der Finanzen* (Academic Advisory Council at the Federal Ministry of Finance) (2014); and Angelini, P. et al. (2014).

⁶ See de Groen, W.P. (2015).

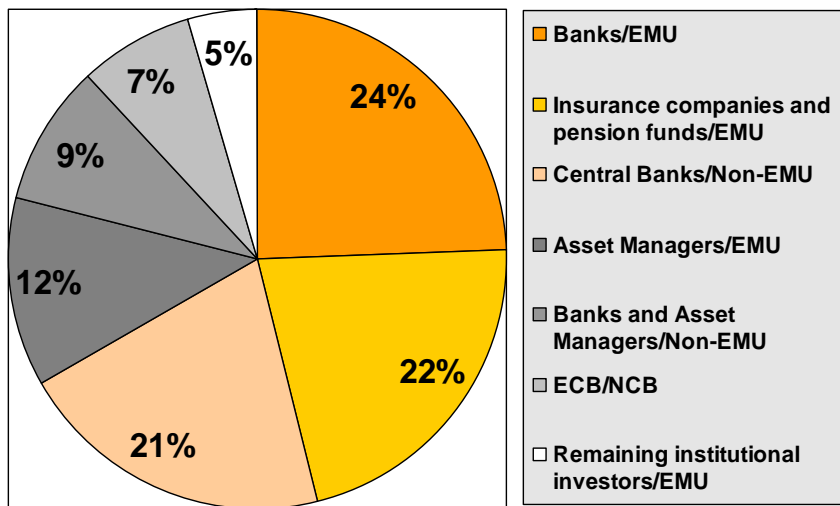
⁷ See Acharya, V./Steffen, S. (2013).

⁸ See here and in the following ESRB (2015), p. 69ff. containing further empirical findings and explanations.

The rise especially concerned in particular to bank exposures to government bodies in their respective country of domicile (home bias). According to calculations by the European Systemic Risk Board (ESRB) on the basis of stress test data from the ECB, as at end-2013 these exposures accounted for over 12% of the balance sheet total of systemically important Italian banks, and even as much as 9.5% at German institutions. At the end of 2010, the corresponding figures were 8% and 6%.

Eurozone credit institutions are the most important creditor group among EMU member states, holding almost one quarter of outstanding securitized sovereign debt instruments with maturity of over one year as at the end of the third quarter of 2014. This statistic does not yet include loans to sovereign borrowers. Other major bond investor groups included EMU insurance companies and pension funds as well as central banks outside the eurozone, each group accounting for around one fifth (see Fig. 2).

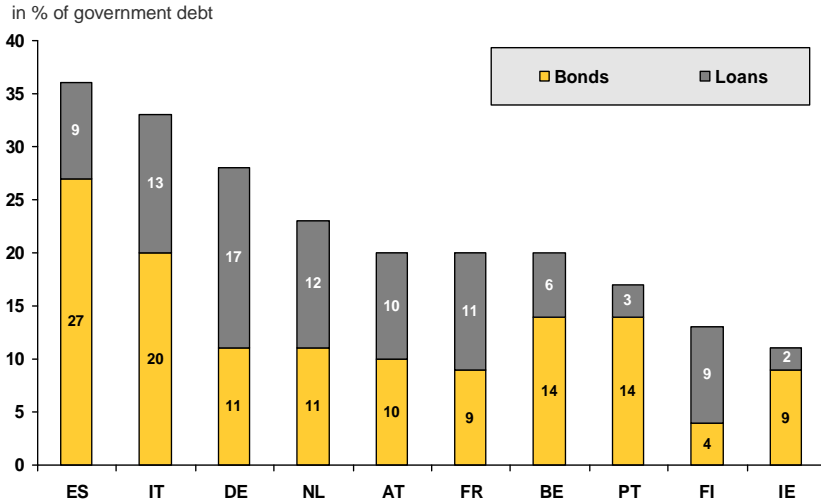
Fig. 2: Who is holding government bonds? – Almost half (46%) of outstanding securitized sovereign debt of EMU members lies with banks or insurance companies



Note: EMU government bonds outstanding with a maturity of over 1 year – breakdown by investor group, as of 30.09.2014, 100% = 7550 bn euros.
 Sources: ECB, IMF, Commerzbank Corporates & Markets Research, Rates Radar of Feb. 24, 2015.

The significance of banks as creditors of their home country however varies from one member state to the next. If the analysis is extended to include loans, it shows that in Spain and Italy around one third of general government debt is held on the books of domestic banks, compared with just one eighth in Ireland. The proportion of loans in these bank exposures was highest in Germany at 39%, followed by Finland at 31% (see Fig. 3).

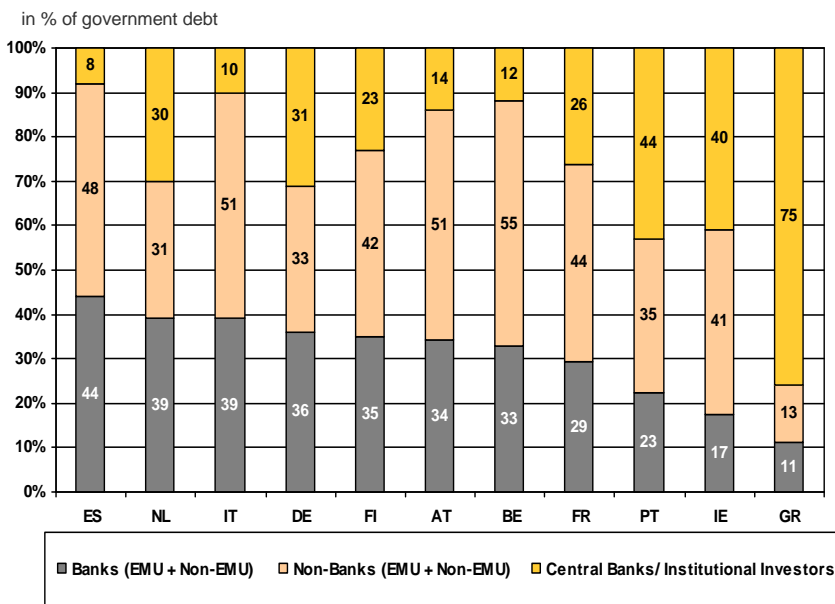
Fig. 3: Which proportion of general government debt is on the balance sheets of domestic banks? Comparison of selected EMU member states reveals large differences



Note: Proportion of bonds and loans of domestic banks measured by total government debt of their respective home country; as of 31.12.2013.
Sources: ECB, IMF, Commerzbank Corporates & Markets Research, Rates Radar of 24.2.2015.

Alongside domestic banks, central banks and supranational institutions are increasingly becoming creditors of sovereign debt in EMU (see Fig. 4).

Fig. 4: Importance of non-banks and central banks as creditors of EMU sovereigns is increasing and exceeding that of the banks



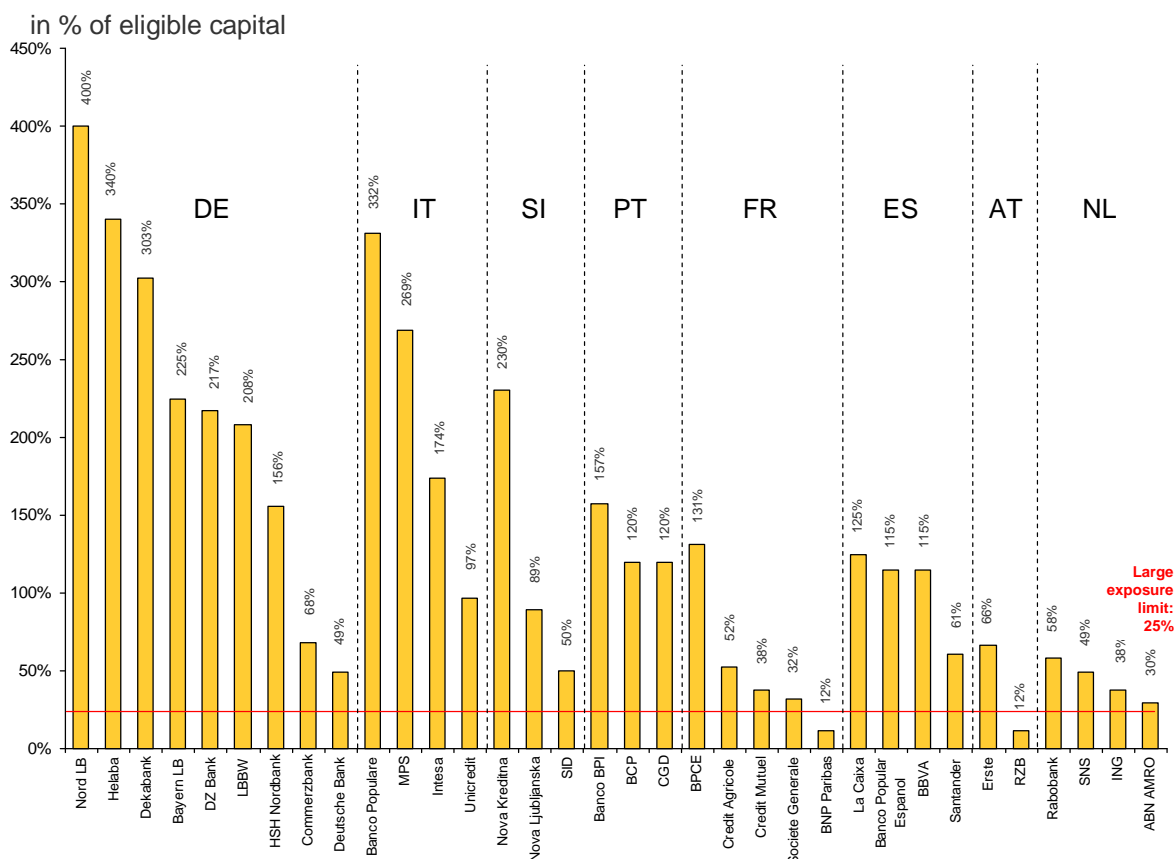
Note: General government debt in the euro zone – breakdown by creditor group in member-state comparison, as of 30.09.2014.
Sources: ECB, IMF, BIS, Commerzbank Corporates & Markets Research, Rates Radar of 24.2.2015.

Central banks outside the eurozone do this mainly with the intention of holding currency reserves denominated in euro; the ECB and rescue funds such as the ESM have, by contrast, acquired sovereign debt instruments of EMU member states for the purpose of monetary and stabilization policy. With respect to the question how bulk risks arising from sovereign exposures in bank balance sheets can be regulated at micro-prudential level, an aggregated analysis is insufficient. Instead, empirical findings need to be factored in on the basis of individual credit institutions.

For this paper, therefore, institution-specific sovereign exposures (i.e. those arising from both securities and loans) were analysed for a selection of 34 institutions in eight eurozone countries. This analysis was based on the Comprehensive Assessment published by the European Central Bank and the European Banking Authority (EBA) on 26 October 2014⁹.

A conscious decision was made to choose four large and four smaller countries (Germany, Italy, France, Spain, the Netherlands, Austria, Portugal and Slovenia) so as to take account of the differing balance-sheet structures of domestic banks, e.g. with respect to diversification by means of cross-border exposures.

Fig. 5: Bank sovereign exposures against their home country exceed large exposure limit considerably



Note: Net exposures to public sector in home country of a bank/banking group in per cent of eligible capital; the data represent the claims of the respective overall group, i.e. not the share of the group's holding in the country of the parent company; see also in this context Deutsche Bundesbank (2015), p. 36. Source: ECB Comprehensive Assessment 2014; own calculations.

⁹ See ECB Banking Supervision (2015).

Empirical findings reveal the following (see Fig. 5 and, for more detail, Annex 1, p. 28 ff.)

- As at end-2013, credit institutions in these member states had total exposures to the public sector in their home countries of between 12% and 400% measured in terms of their eligible capital¹⁰ (see Fig. 5).
- If we include the exposures of these banks to sovereign debtors of all EMU member states, the figures rise to between 41% and 452% of eligible capital (see Fig. 16 in Annex 1, p. 28).
- Thus, with very few exceptions, the exposures exceed the large exposure limit of 25% of eligible capital applicable to other clients, quite significantly in many cases.
- Large banks domiciled in smaller economies tend to be better diversified than those in larger economies, since their domestic market for government bonds require broader portfolio diversification due to an inherent lack of breadth and depth. Rather due to their size, strategy and history, some of these banks have multiple "home markets" and thus necessarily have cross-border exposures. The problem of "home bias" is thus more pronounced in the larger EMU member states.¹¹

Unstable public finances could continue to jeopardize the domestic banks of the respective debtor states, compounded further by the effects of cross-border contagion. Credit institutions whose stability has been threatened in turn can pose a risk to the public finances of their home countries, especially if the liability on the part of the banks' owners, creditors and guarantee schemes and resolution funds proves insufficient.

Negative dependencies such as these need to be broken in future, or at least the likelihood of their occurring significantly reduced. A key starting point here is the countless misdirected incentives arising from the privileges bestowed on sovereign debt in banking regulation, including exemptions from mandatory capital adequacy, large exposure limits and liquidity requirements.¹²

¹⁰ Eligible capital as defined in EUR-Lex (2013a) CRR Art. 3 (71) in conjunction with Art. 25 and Art. 71.

¹¹ See ESRB (2015), p. 69ff., esp. Tables 6-8.

¹² See the overview in Deutsche Bundesbank (2015a), p. 25ff. and, for more in-depth information, Wissenschaftlicher Beirat beim Bundesministerium der Finanzen (Academic Advisory Council at the Federal Ministry of Finance) (2014), esp. p. 7ff.

3 Positions of and proposals from supervisors, regulators and banks

Given the unequivocal empirical findings and the patent lack of regulation, calls to end – or at least significantly reduce – the privileged treatment of sovereign debt have multiplied in recent months, not only from supervisors but also from individual banks.¹³

In December 2014, Deutsche Bundesbank wrote in a section of its Financial Stability Review that "...the preferential treatment of exposures to sovereigns should be brought to an end or at least scaled back substantially, over a medium to long-term horizon. As this may have considerable repercussions for investors as well as for some sovereign issuers, implementation must be planned as a medium to long-term process. The timeline could also include a relatively long phase-out period for privileged treatment."¹⁴

In March 2015 the European Systemic Risk Board published a comprehensive working group report on the regulatory treatment of sovereign exposures¹⁵. It describes the regulatory status quo and the connections between sovereign debt and systemic risks. It also contains a comprehensive empirical analysis of the extent and development of sovereign exposures on the part of banks and insurance companies as well as the macroeconomic interdependencies involved. The cornerstone of the report is an in-depth discussion of regulatory proposals, which – considering the working group's mandate – are described as "political options"¹⁶. These include measures within the scope of Pillar II and III of the Basel framework, e.g. greater consideration of sovereign debt in stress tests, qualitative or institution-specific requirements on the part of the supervisory authorities or extended disclosure obligations. Within the scope of Pillar I, risk weighting floors are proposed for the purpose of calculating capital adequacy. It is noted, however, that the risk assessments issued by external rating agencies – especially those for the standardised approach (CSA) – frequently had a procyclical effect. Another issue addressed is the difficulties resulting from insufficient default data from industrialized countries for the internal rating based approach (IRBA). It also remains unclear whether minimum risk weights are an effective means of halting the accumulation of high sovereign exposures, in particular during economic upturns or phases of exuberance. The report therefore also mentions the possibility of utilizing indicator-based approaches, at least in a supplementary fashion, such as a long-term moving average for sovereign debt trends measured in terms of economic output (debt-to-GDP ratio), real interest rates or gross domestic product. The issue is not explored further, however. In addition, the report suggests removing the exemption from the large exposure

"I welcome that the regulatory treatment of sovereign debt is now being discussed by the Basel Committee. But if these discussions fail to produce an agreement, we need to move forward with a European solution."

Jens Weidmann, Bundesbank conference on debt and financial stability, March 27, 2015

¹³ See e.g. Weidmann, J. (2013); Blessing, M. (2014), p. 5; Weidmann, J. (2014); Nouy, D. (2014); Draghi, M. (2014).

¹⁴ Deutsche Bundesbank (2015a), p. 96f.

¹⁵ See ESRB (2015).

¹⁶ See esp. ESRB (2015), p. 106 (117) ff.

limit accorded to sovereign exposures, i.e. in future only to permit sovereign exposures totalling up to 25% of eligible capital. With regard to the quantitative impact assessment of these proposals, the working group nevertheless also uses partial weightings as options for sovereign exposures of 50%/20%, i.e. the zero weight currently used within the scope of the large exposure regulation is continued in some respects. In response to the fact that country risks can change over time, the report also indicates the possibility of making the large exposure limit "risk-sensitive", i.e. increasing it proportionately to risk up to 25% or even reducing it to zero¹⁷. The group is somewhat more critical of the option of counteracting bulk risks in bank balance sheets through capital adequacy requirements alone. To this end, an analysis is also carried out of a supplementary macro-prudential capital buffer for sovereign risks that can be activated or deactivated by supervisory authorities on a discretionary basis, i.e. dependent of indicator thresholds defined in the fiscal compact. Finally, the report discusses interaction with the new, tighter liquidity requirements imposed on banks. Throughout, the report warns against an overly abrupt change in regime and regulation with a procyclical effect. Thus, special emphasis is placed on the significance of impact studies and adequate phase-in periods and regulations.

In its Annual Report 2014, Deutsche Bundesbank devotes an entire section to "Reducing the privileged regulatory treatment of sovereign exposures". This includes a detailed overview of the exemptions from regulatory requirements for sovereign debt, as well as an exploration of the harmful implications for financial stability, public-sector borrowing incentives and the real economy. The institutions and mechanisms constituting the banking union are not sufficient to eliminate the misplaced incentives, since they do not change the regulations on the privileged treatment of sovereign exposures. In addition, not all credit institutions are subject to direct supervision by the ECB. The Bundesbank states: "...a raft of small institutions whose risks are correlated and which continue to be supervised largely by the individual member state can also become systemically important."¹⁸

The Bundesbank "broadly backs"¹⁹ the ESRB's regulation proposals and options, but warns against new exemptions for sovereign exposures, e.g. for widely diversified government bond portfolios, as well as in other regulations such as the EU proposal for banking structural reforms. Under the assumption that the privileges for sovereign debt are removed when calculating regulatory capital, simulation calculations on the basis of ECB/EBA stress test data reveal that capital requirements for the major systemically relevant SSM banks would rise by EUR 33 billion (of which around EUR 2 billion applies to German credit institutions)²⁰. Since the "braking effect" arising from this would probably be marginal overall, the Bundesbank favours applying the large exposure limits to sovereign debt in future. As part of this, the state as a whole – in Germany, therefore, the Federal Government, the federal states and the municipal authorities – should be seen as bearing joint liability and is thus deemed a single borrower unit. The Bundesbank comes to the following conclusion: "Based on the broad definition of borrowers, German banks would be most strongly affected by the introduction of large exposure limits, as they predominantly hold claims on domestic government debtors, and all levels of government in Germany are considerably indebted (...). In other countries, debt is concentrated more strongly on central government." For Landesbanken, savings banks and central cooperative institutions, a reduction in exposures would be required, above all vis-a-vis federal states and local authorities. Bundesbank deems it as important that implementation of the re-

"This is primarily about recognizing that government debt is not risk free. There should be a large loan ceiling for sovereign bonds, just like for any other type of credit."

Danièle Nouy, Handelsblatt, Global Edition, April 1st, 2015

¹⁷ See ESRB (2015), p. 130

¹⁸ Deutsche Bundesbank (2015a), p. 31

¹⁹ Deutsche Bundesbank (2015a), p. 33

²⁰ For this section, see Deutsche Bundesbank (2015a), p. 36ff.

form initiatives be coordinated internationally, spearheaded first by the Basel Committee on Banking Supervision and then by European legislators.

In another article by Deutsche Bundesbank a division of government bond issues into a "first loss" and a "second loss" tranche is put forward into discussion.²¹ This would enable the higher-risk components of sovereign debt on bank balance sheets to be shifted to the capital markets. However, it is not explained in closer detail which investors would be prepared to buy those high risk tranches.

In addition to academic discussions, numerous requests and recommendations have been made by regulators, supervisors and practitioners calling for a change in the way sovereign debt is regulated. On the basis of these initiatives, Section 4 develops a multi-stage proposal which also draws upon the empirical findings outlined in Section 2 and Annex 1. It also contains an analysis of the interplay expected between these proposals and the new regulatory and market requirements on the way credit institutions manage their liquidity²².

²¹ See Deutsche Bundesbank (2015b), p. 28

²² The proposal thus covers three of the five areas for action defined as significant by Deutsche Bundesbank (2015a); the following does not go into (4) the increased transparency requirements for sovereign exposures, or (5) the need to make corresponding adjustments to the regulations for other financial intermediaries (consistency check).

4 A combined, multi-stage regulation proposal

Better regulation should pursue three main objectives:

1. On credit institution level, the reduction and subsequent prevention of bulk risks for sovereign exposures, achieved by means of better diversification and limitation of individual exposures as well as through limitation of aggregated total exposures to sovereigns within the EMU.
2. Regarding the financial system, higher stability and crisis resilience, achieved by minimizing risks of contagion between banks, financial markets and public finances. Attention should be paid here to reverse cluster risks that could emerge on the financial markets, for example, if an individual credit institution holds a disproportionately high share of the total sovereign debt of a smaller state (concentration risk).
3. Given the close ties between banks, the financial system and public finances, a third and final objective is to be added to the catalogue: consistent incentives for governments to manage their country's total sovereign debt in such a way that financial policy does not pose a risk for the banking system. If governments want to take on more debt within the banking system, for example within the scope of anti-cyclical fiscal policy, this should be linked to increasing risk premiums and interest rates.

Any future regulation aligned to these points should thus combine objectives and instruments of both micro- and macro-prudential regulation as far as possible. At the same time, it should eliminate or reduce distortions in risk pricing for sovereign debt instruments, and thus contribute to better capital allocation within the economy, not least by means of more favourable financing conditions for private companies and households. Ultimately, it should therefore also foster growth.

With regard to these specific objectives, future regulation should meet several general criteria. Ideally, it should be

- transparent, i.e. comprehensible for both credit institutions and supervisors in their results, as well as predictable in their requirements, i.e. manageable, and, as far as possible, rule-based;
- incentive-compatible, i.e. it avoids new misplaced incentives and exemptions that could incite regulatory arbitrage or procyclical behaviour; in particular, it is not a "one-size-fits-all" approach, but risk-sensitive and adequately differentiated; at the same time, however, it is
- simple, i.e. not excessively complex, in that, for example, it solves data problems for internal rating systems in a pragmatic manner and avoids exaggerated abstractions; it is thus also more readily explained in political and public spheres.

This section is divided up as follows: Alongside notes on the method involved, it explains why simply eliminating the privileged treatment of sovereign debt in regulatory capital and large exposure regulation does not suffice, and why a combined, multi-stage approach is recommended in its place (4.1). The plausibility of these considerations is reviewed on the basis of a simple yet realistic numeric example for typical balance-sheet structures (4.2). On this basis a rule-based proposal for regulatory capital requirements is developed for sovereign exposures; this is combined with risk-sensitive (individual and total) allowances geared towards the fiscal stability of sovereigns, and above which capital adequacy is mandatory (4.3). After this, the proposed formula is supplemented by a factor that makes the extent of the individual allowances dependent on the proportion of the respective country's total debt held by the bank (4.4). This is followed by regulations governing calculation of the capital requirement and the scaling of the risk weights (4.5), as well as abstract sample calculations to demonstrate the "mechanics" of the proposal (4.6) and concrete sample calculations to assess the quantitative impact on the basis of published individual bank data (4.7). The section is rounded off by proposals for transition regulation or phase-in (4.8).

4.1 Justification and scope of application

There are a number of macroeconomic and regulatory arguments that speak in favour of treating exposures to sovereigns in banking regulation in the same way as exposures to private debtors. However, it is an undisputed fact that nations differ from private borrowers, for example in terms of their sovereign powers (taxation right) and their endurance as a legal entity (continuity even after insolvency). A certain appropriate level of differentiation in regulation would thus appear reasonable and permissible to take account of the criteria indicated above, not least regarding exposures to industrialized countries or EMU member states.

However, the elimination of all exemptions, i.e. the full application of regulatory capital and large exposure regulations, would take insufficient account of the need for differentiation and also create wrong incentives. As stated by the Bundesbank²³, a pure capital requirement – according to both the standard approach and the internal ratings-based approach – would fail to put an adequate brake on the accumulation of excessive bulk risks arising from sovereign debt instruments. Therefore, it would not be sufficiently effective and risk-sensitive.

Compared with this, the full application of large exposure limits, i.e. the limitation of individual exposures to sovereigns to a maximum of 25% of eligible capital, would place markedly higher restrictions on credit institutions. Furthermore, not only would it significantly hamper compliance with regulatory liquidity requirements, it would also lead to unwanted attempts to circumvent these requirements (regulatory arbitrage).

Thus it is conceivable that a bank might build up an excessively large portfolio of sovereign debt instruments by entering into a number of individual exposures to countries that are each individually complying with the large exposure limit. While a portfolio like this would be broadly diversified, as a whole it would also pose an EMU cluster risk. A regulation of this kind would theoretically be possible in EMU; however, in extremis such a portfolio with exposure to the 19 member states would comprise up to 475% of eligible capital (19 x 25%). Last but not least, the financial market and sovereign debt crisis of recent years has shown that solvency and liquidity problems of several countries may be correlated, while other countries may not be faced with any stability problems at all. It would thus not be conducive to incentives if the 25% limit were applied across the board, i.e. for all countries equally.

Therefore, a solution that combines both regulatory approaches would seem most appropriate: a capital adequacy requirement for individual exposures that extends beyond certain allowances. It should be effective and risk-sensitive.

However, there is far fewer empirical default data available for sovereigns than for corporates (low-default portfolios). So the proposal is to introduce risk-sensitive allowances that are dependent on the country's debt-to-GDP ratio and the bank's eligible capital. This is supplemented by a factor to prevent an excessively high concentration in a country's creditor structure.

The individual allowances calculated in this way should therefore be able to fluctuate above and below the 25% limit, and a stronger and stronger brake placed on it by the progressively increasing capital requirement for the amounts exceeding the allowance. Thus, the amount of the permissible individual exposures to one country itself is not limited. The large exposure limit should therefore not be applied directly in future to sovereign debt exposures.²⁴

In order to prevent the unchecked "stockpiling" of numerous individual allowances and thus the circumvention of the capital adequacy requirement, the sum of the utilized allowances is limited to 150% of the institution's eligible capital (total allowance). If the utilized individual allowances combined exceed the total allowance of 150% of eligible capital, exposures equivalent to the sum by which the total allowance is exceeded must be backed by regulatory capital.

With regard to the scope of application, the regulation proposed here should refer to exposures to the government overall as a joint liability, not only to those exposures to central government. The focus here is on a regulation for all credit institutions and exposures within the EMU that are denominated in EUR. Sovereign exposures denominated in other currencies are already subject to a capital requirement on account of exchange rate risks.²⁵

²³ See Deutsche Bundesbank (2015a), p. 36ff.

²⁴ EUR-Lex (2013a): Art. 400 (2) (h) CRR allows for a similar exception.

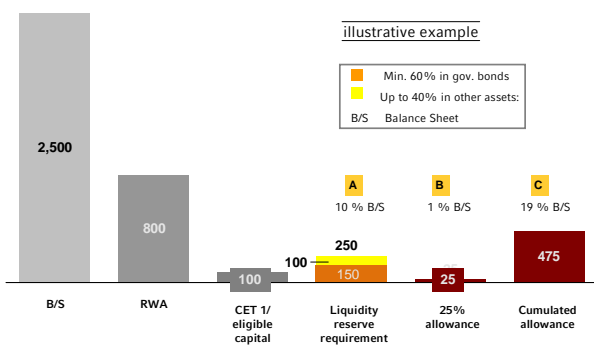
²⁵ EUR-Lex (2013a): As per Art. 392 and 395 in conj. w/Art. 400 (1) an (2) CRR.

4.2 Plausibility check using the example of a typical balance-sheet structure

Before the calculation of allowances and weighting factors is discussed in greater detail in the following sections, let us first examine whether the assumptions and imputed dimensions are realistic, i.e. with respect to typical balance-sheet structures and regulatory requirements.

The following assumptions are used as an example here (see Fig. 6): A sample bank has a balance-sheet total (B/S) of 2,500. Assuming a concentration of risk weighted assets (RWA) typical for a universal bank with a broad business base of 40% of the balance-sheet total, these amount to 1,000. The markets – and investors – generally expect a core capital ratio of at least 10% (CET 1) for banks of this kind. Since for reasons of simplicity the CET 1 and eligible capital can be deemed as equivalent, this results in an eligible capital (EC) requirement of 100. The leverage ratio of 4% (EC/BST) resulting from this corresponds to current market expectations for this target variable.

Fig. 6: Are the assumptions and regulation proposals realistic? - Schematic diagram of typical levels and ratios of a bank balance sheet



Source: own representation

In order to assess the extent to which a proposal for a future bank regulation for sovereign debt instruments can be applied in practice, it is important to establish their degree of interaction with the current liquidity regulation.²⁶ Using empirical evidence as a guide, it is assumed that the sample bank must maintain a liquidity reserve of 10% of the balance sheet total, or that it holds such a reserve for reasons of overall bank management (A). As per

the liquidity regulation, this must consist of at least 60% high-quality liquid assets (HQLA), typically sovereign debt instruments. The remaining 40% exposure can be made up of, for example, asset-backed securities from private issuers (such as Pfandbriefe, covered bonds).

This means that the sample bank must hold sovereign debt instruments in the amount of 150 to meet its liquidity reserve requirement of 250. According to the assumptions made, this is equivalent to 150% of its eligible capital and therefore to the upper limit chosen for the total allowance for the proposed regulation outlined here. It would thus be possible for the sample bank to meet its liquidity reserve requirement without having to back it with regulatory capital, provided that it complies with the individual allowances for the exposures to EMU member states. If these individual allowances corresponded to the "standard amount" of 25% of eligible capital and thus to the large exposure limit, it could, for example, structure its liquidity portfolio with up to six individual exposures of 25% each, without being subject to a capital adequacy requirement. This degree of diversification also seems realistic (see also the examples in Section 4.7).

In addition to this, options to "stockpile" allowances (as in the theoretical case of 19 EMU member states x 25% = 475% of EC, see (B) and (C)) would be neither necessary nor feasible from a bank management perspective. A political decision still needs to be made regarding the extent to which special regulations or exemptions are required for special banks and credit institutions with special tasks, which due to their business model (public finance) usually have significantly higher exposures to government bodies.

All in all, therefore, the proposal seems to be plausible and practicable. Below is a more detailed examination of how the allowances and capital requirement are calculated.

²⁶ See Basel Committee on Banking Supervision (2013); Basel Committee on Banking Supervision (2014); and Deutsche Bundesbank (2015a), p. 26f.

4.3 Risk-sensitive allowances and fiscal policy incentives

The allowances for sovereign debt exposures corresponding to the large exposure limit do not generally differ depending on a country's creditworthiness. Different degrees of credit quality would therefore be treated equally, and new arbitrage options for banks would emerge.

- Thus, the individual allowances per member state should be weighted with solvency criteria.
- Given the data issues mentioned above, no separate modelling should be prescribed for the purpose of differentiated allowance measurement.
- Instead, the risk weight should be modelled on externally available and easily understandable key figures (indicator-based approach).
- The key figure should not be based on absolute values and thus not discriminate countries (esp. smaller ones).

A standard allowance without capital requirement of 25% of eligible capital is used as a guide, by analogy with the large exposure limit. This is multiplied by a factor representing the fiscal stability and solidity of the debtor state in question. An easily understandable and relatively stable measure of default risk over time is, for example, the general government debt level.

The weighting formula for the individual allowance (IAW) per sovereign should thus be defined in such a way that it corresponds to the large exposure limit of 25% of eligible capital (EC) when the country in question has a government debt-to-GDP ratio of 90% (factor = 1). This results in the following formula for the individual allowance per sovereign and bank, measured as a percentage of the institution's eligible capital:

$$IAW = 25\% \times EC \times \frac{90\%}{\text{current-debt-to-GDP-ratio, in}\%}$$

- If a country's debt level²⁷ exceeds the threshold of 90% of GDP, a credit institution's exposure allowance towards this sovereign is reduced in proportion to the extent by which the target is breached.

²⁷ It remains to be discussed whether and to what extent a similar weighting should be introduced for jointly and severally guaranteed exposures (e.g. Eurobonds).

Infobox

Why the 90% threshold?

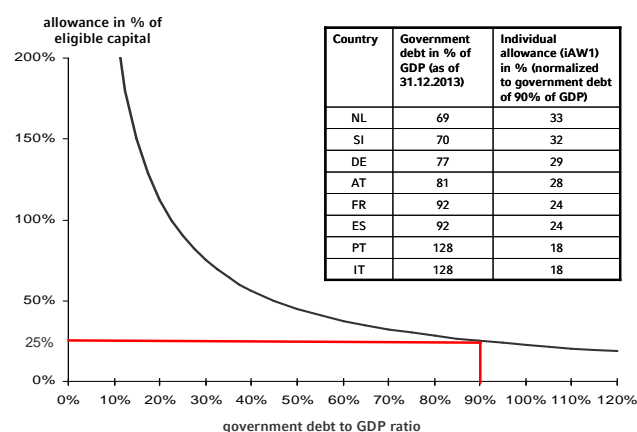
In recent years the general government debt level in two out of three EMU member states has been above the Maastricht criterion of 60% of GDP (see Tab. 2, p. 18). While this convergence criterion defined in advance of the Maastricht Treaty was in line with the amount of debt deemed sustainably compatible with a single monetary policy at the beginning of the 1990s, it was not intended as a benchmark for a sovereign's default risk.

In addition, studies support the assumption that public debt in excess of 85%-90% of GDP hampers growth²⁸. With this in mind, it would seem reasonable to calibrate the standard allowance of 25% of eligible capital at a higher debt-to-GDP ratio in order to avoid a large number of allowances below this value. It goes without saying that not only regulators and supervisors but also economists should have the right to propose a different weighting on a broader empirical basis.

- By contrast, the exposure allowance is increased vis-a-vis this country to the extent by which its debt-to-GDP ratio falls below the 90% criterion.

Generally, the percentage amount of the individual allowances measured in terms of the credit institution's eligible capital can be depicted as a curve based on the extent to which the country in question fulfils the debt-to-GDP criterion.

Fig. 7: Level of individual allowances of the credit institute (in per cent of the eligible capital of the respective bank) for an exposure to an EMU member state depending on its debt-to-GDP ratio



Sources: Eurostat, own presentation

With this proposal, the objectives and criteria of economic and fiscal stabilization policy would be directly linked with those defined in bank regulation. This is in line with the concept of macroprudential banking supervision.

²⁸ See Cecchetti, S. et al. (2011).

It would seem only prudent from a bank's microeconomic perspective, with regard to risk aspects, that the higher a country's debt level rises, the more the bank's individual allowance measured in terms of eligible capital for this country should be decreased. Since when allowances are exhausted, the supply of credit from banks to sovereigns is reduced or at least becomes more expensive, countries would be forced to turn to the capital markets and rely on their receptiveness if they wanted to take on debt exceeding this threshold. Above and beyond the debt level, however, this would have implications for banks' allowances and thus for their credit supply and conditions. If countries want to create some leeway for debt in their banking system that they can draw on during economic downturns, they need to do this in advance, in periods when the economy is more favourable, by scaling back their debt.

If a bank exceeds its allowance towards a sovereign, it has to back this with regulatory capital. If it does not have an adequate capital buffer at its disposal, it can increase regulatory capital or reduce its exposures to this sovereign and/or shift them to other countries. In the final analysis, the proposal fosters the risk-adjusted pricing of sovereign debt instruments and therefore improves capital allocation within the economy. The proposal thus follows the recommendation of the German Council of Economic Experts, which in its annual report dated October 2014 called for binding regulations in macro-prudential banking supervision and emphasized the advantages over discretionary intervention:²⁹

"There is for one thing the danger of delays or even inaction bias. For another, making the rule binding could make it easier for the supervisor to implement politically unpopular measures. In the medium term, therefore, a stronger commitment is necessary, in particular in the (politically sensitive) regulation of cyclical risks. Sticking to a rule would have the advantage that market participants could form their expectations based on it."

Table 2 (p. 18 shows the individual allowances (IAW 1) resulting from applying the (sub-) formula to the debt-to-GDP ratios of the EMU member states.

4.4 Rule governing diversification of the creditor structure

Risk-weighted allowances and progressively increasing capital requirements for exposures exceeding this amount can go a large way to counteracting bulk risks in bank balance sheets. Such a regulation can reduce the dependency of individual credit institutions on sovereigns and their domestic finances by means of better diversification of portfolio of sovereign debt instruments.

The part of the proposal outlined thus far can, however, not prevent a small number of banks from acquiring or holding a disproportionately high share in a country's sovereign debt, which could jeopardize the stability of the financial system.

In an extreme scenario, it is theoretically possible that one or two major banks could each hold a very significant share of the sovereign debt of a small eurozone country. The banks could get rid of the exposures even without the country's credit quality having worsened, for example if the bank were forced to sell the bonds to resolve a liquidity problem. This would flood the market with large volumes of a country's sovereign debt within a short space of time, triggering price crashes and market turmoil for this nation's bonds. With that in mind, a cap should also be placed on the share individual banks can hold in a state's sovereign debt.

The proposal to calculate incentive-compatible allowances for sovereign exposures is therefore expanded by an additional **scaling factor (S)** that rises or falls in inverse proportion to a bank's share in the sovereign debt of an individual EMU member state:

$$IAW = 25\% \times EC \times \frac{90\%}{\text{current-debt-to-GDP-ratio, in \%}} \times S$$

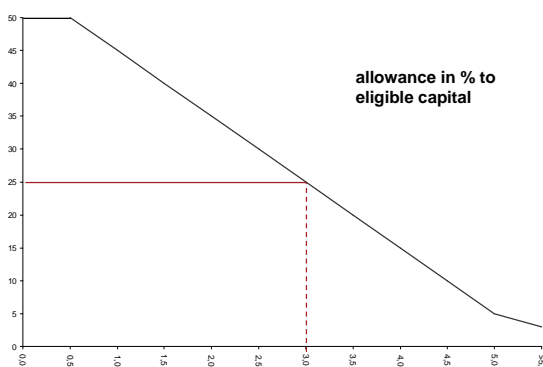
- If $S < 1$, the individual allowance without capital requirement contracts.
- If $S > 1$, the individual allowance without capital requirement increases.

In the following, the "standard share" of a banking group in a sovereign's total debt should be set at 3%. In absolute figures, using Germany's sovereign debt of approx. EUR 2,100 billion as an example, a (national) sovereign debt portfolio of a single bank in the amount of EUR 63 billion would leave the individual allowance unchanged ($S = 1$). For a smaller country such as Finland with a general government debt of approx. EUR 120 billion, this "neutral" standard bank share of 3% would, however, correspond

²⁹ German Council of Economic Experts (2014), item 367.

to a figure of only EUR 3.6 billion. Exposures exceeding this amount would decrease the individual allowance without capital requirement (and vice-versa). The scaling factors for the creditor structure concentration could accordingly be defined for example largely linearly (see Tab. 1 and Fig. 8).

Fig. 8: Scaling factor against excessive concentration of creditor structure, normed to 3% share of a bank in the general government debt of a country



Source: own representation

This avoids scale-based advantages or disadvantages for individual countries³⁰. Additionally, incentives would be created – at least indirectly – for sovereigns to better diversify their investor base and in the future no longer to rely unilaterally on the banking sector as central creditor. As a consequence, the sovereign portfolios of banks as well as the creditor structures of countries would be more diversified, and the stability of the financial system and the crisis resilience of the banking sector would be strengthened.

Tab. 1: Bank's share of the government debt of a country in % determines its level of allowance

Bank's share of government debt	Scaling factor	Effect on 25 % norm-allowance
≤ 0.5%	2.0	50
≤ 1.0%	1.8	45
≤ 1.5%	1.6	40
≤ 2.0%	1.4	35
≤ 2.5%	1.2	30
≤ 3.0%	1.0	25
≤ 3.5%	0.8	20
≤ 4.0%	0.6	15
≤ 4.5%	0.4	10
≤ 5.0%	0.2	5
> 5.0%	0.1	3

³⁰ Such a factor would be, for example, the share in ESM or ECB capital of countries.

In summary, Table 1 contains an example of how the proposed calculation formula, applied to the debt-to-GDP ratios (D-2-GDP R) of the EMU member states (as of 31 December 2013), influences the amounts of the individual allowances.

- Column 3 shows the allowance resulting solely from multiplication by the factor for the state's debt-to-GDP ratio (IAW 1).
- The following two columns show the impact the additional scaling factor S has on the individual allowances for a bank's exposures to the respective state, for the credit institution share in general government debt of both 2% (IAW 2a for S = 1.4) and 5% (IAW2b for S = 0.2).

Tab. 2: Derivation of individual allowances from norm allowance of 25% of eligible capital

Country	Government debt in % of GDP (as of 31.12.2013)	Individual allowance (IAW1) in %; (normalized to government debt of 90% of GDP)	IAW2a with the applied scaling factor S = 1.4 in % of eligible capital	IAW2b with the applied scaling factor S = 0.2 in % of eligible capital
AT	81	28	39	6
BE	105	22	30	4
CY	102	22	31	4
DE	77	29	41	6
EE	10	223	312	45
ES	92	24	34	5
FI	56	40	56	8
FR	92	24	34	5
GR	175	13	18	3
IE	123	18	26	4
IT	128	18	25	4
LU	24	95	133	19
MT	70	32	45	6
NL	69	33	46	7
PT	128	18	25	4
SI	70	32	45	6
SK	55	41	58	8

Note: Data on 31.12.2013, taking account of national accounts revision (cf. http://epp.eurostat.ec.europa.eu/portal/page/portal/government_finance_statistics/documents/Revisions-gov-deficit-debt-2010-2013.pdf, S. 13).
Sources: Eurostat, own calculations.

The analysis shows that the proposed regulation is effective within the context of the objectives defined above. It creates strong incentives for banks to better diversify sovereign debt instruments, especially given the prevailing high exposures and concentration on just a few debtors. On the other hand, it allows exposures to fiscally stable states that significantly exceed the large exposure limit of 25%. This does not mean that individual banks would not be confronted with a substantial debt-shifting and/or capital increase requirement (see sample calculations in Section 4.7). Therefore, the impact depends on the upcoming capital adequacy requirements for exposures exceeding the allowances, i.e. in particular which (cost) incentives are set in the process.

4.5 Capital requirements: calculation method and risk weights

Using the formula developed in the preceding sections, the respective individual allowances can be calculated for each credit institution and each debtor state.

(A) Which exposures need to be backed by regulatory capital?

As already explained above (Section 4.1), a mandatory capital requirement should apply

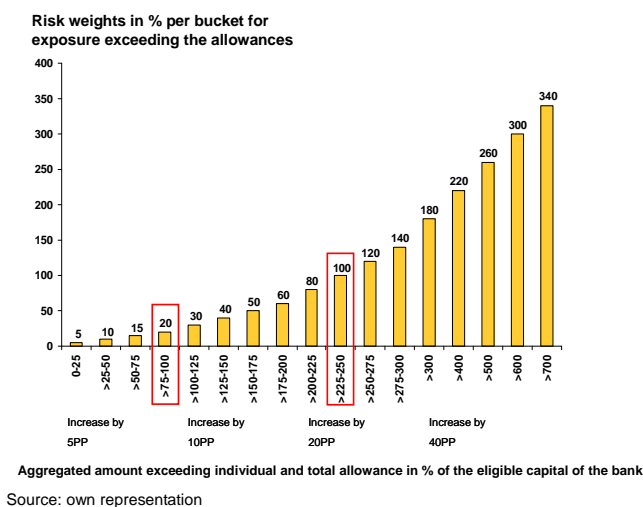
- to all individual exposures that exceed the respective individual allowance (EXIA); and
- to exposures in the amount by which the sum of the utilized individual allowances exceeds the total allowance of 150% (EXTA).

A bank can thus utilize individual allowances towards EMU member states up to a total of 150% of its eligible capital without the need for an additional capital requirement. Double counting of the same government exposures is avoided.

B) How is the capital requirement calculated?

The capital requirement is calculated using risk weights that increase on a progressive, step-by-step basis in line with the aggregate amount exceeding all allowances (see Fig. 9).

Fig. 9: Derivation of risk weights for the capital requirement depending on the amount exceeding the allowances (in per cent of eligible capital)



The risk weight steps are calibrated on every 25 percentage point increase in the aggregate amount exceeding the allowances. In addition to this, the height of the steps doubles by each 100% of

the exceeding amount exposure in relation to the eligible capital, as shown below:

- for excess exposures up to 100% of eligible capital, risk weights increase by 5 percentage points (PP) at each step;
- for excess exposures between 100% and 200% of eligible capital, by 10 percentage points (PP) at each step;
- for excess exposures between 200% and 300% of eligible capital, by 20 percentage points (PP) at each step;
- for excess exposures exceeding 300% measured against eligible capital, the risk weight increases by 40 percentage points (PP) for each 100% increment.

This risk weight progression is intended to prevent the total allowance and the individual allowances from being exceeded to an excessive degree, since such a transgression could cause the regulatory capital costs to rise to a prohibitive level. Thus, exceeding the allowance by more than 225% of eligible capital leads to a risk weight of 100%, while exceeding it by 75% up to 100% leads to a risk weight of only 20% (see Fig. 9).

The amount of regulatory capital (RC) needed as backing is thus calculated using the following formula

$$RC = [(\sum EXIA_i) + EXTA] \times RW \times 8\%$$

In line with the regulation objectives formulated at the outset, the capital requirement for sovereign debt instruments is thus comprised of two components, mathematically speaking:

- regulatory capital (RC1) for the aggregate amount exceeding the individual allowances; this serves as an incentive to diversify exposures;
- regulatory capital (RC2) for the amount exceeding the total allowance; this counteracts the excessive utilization of individual allowances and also the formation of concentrations versus EMU member states as a whole.

As far as practical application is concerned, a distinction can be drawn between four basic cases:

	Individual allowances	Total allowance	RC components
A	☺ all observed	☺ observed	RC1 = 0 / RC2 = 0
B	☹ some exceeded	☺ observed	RC1 > 0 / RC2 = 0
C	☺ all observed	☹ exceeded	RC1 = 0 / RC2 > 0
D	☹ some exceeded	☹ exceeded	RC1 > 0 / RC2 > 0

They are explained in the section below using examples.

4.6 Mechanics of the proposal using abstract examples

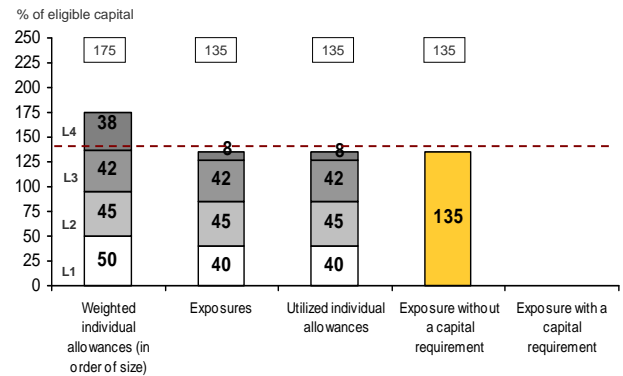
To assess how the regulation can be applied in practice, it is helpful to keep in mind the differing strategies and target systems of banks.

- There may for example be credit institutions that take a conservative stance, i.e. they want to retain their exposures in secure sovereign debt instruments as far as possible; when they do this, they choose to forgo returns and in the process even accept that allowances will be exceeded (i.e. imputed costs for regulatory capital).
- Other credit institutions, by contrast, may place a stronger emphasis on earnings, i.e. they enter into exposures to sovereign debt instruments offering higher returns (e.g. carry trades), supported by broadly diversified portfolios where necessary, while at the same time trying to minimize the regulatory capital requirement.

In the following discussion of abstract examples – and later also in supervisory and banking practice, if appropriate – a rule should apply that when calculating the capital requirement, the individual exposures are to be categorized in order of descending creditworthiness, i.e. beginning with the largest of the utilized individual allowances, namely the country with the highest credit quality. This means that utilized allowances exceeding the total allowance always relate to the lowest individual exposures in terms of credit quality. Since they are to be backed by regulatory capital, this is commensurate with the objective of an incentive-compatible and risk-sensitive regulation. In addition, it becomes clear to both supervisory authorities and the bank's internal risk and liquidity management which of the bank's areas and/or objectives is to be assigned the necessary capital requirement in terms of costs (e.g. customer business versus treasury). This also tends to improve cost and price transparency and in turn enhances risk discipline within the financial system.

The following four examples (A to D) are intended to illustrate what impact the "mechanics" of the proposed transactions would have in practice and how allowances and the capital requirement would interact (see also above, Section 4.5, at the end). For the sake of clarity, no concrete ("real") individual allowances were used for the abstract numerical examples; rather, a conscious decision was made to select simple numerical ratios and to keep these values constant as far as possible so as to highlight the differences between the cases. (An application of the proposed regulation to concrete debt-to-GDP ratios and individual bank data can be found in Section 4.7)

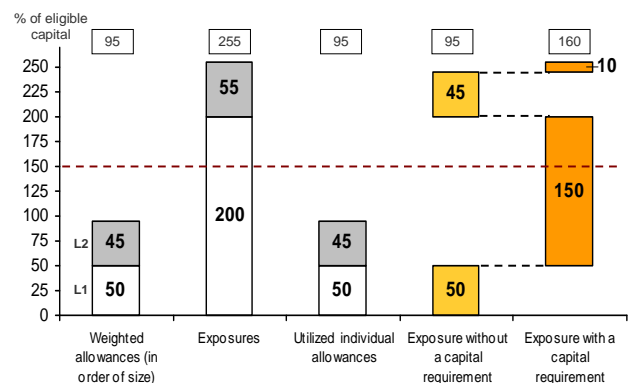
Fig. 10: Bank does not exceed an individual allowance nor the total allowance (example A)



Source: own representation

The bank has distributed its portfolio of sovereign debt instruments among four countries (L1 to L4). It serves as an example of a conservative bank that focuses on low risks and as a consequence has low exposures to sovereigns overall. The weighted allowances for the countries selected by the bank have been categorized according to their size and thus their creditworthiness (column 1 in the figure). They add up to 175. However, the bank makes only partial use of these individual allowances, leaving allowances of 10 and 30 unused for Country 1 and Country 4, respectively (columns 2 and 3 in the figure). The total exposure and the utilized allowances are thus the same and add up to 135. This means the bank remains below the total allowance of 150. Since no exposure exceeds an individual allowance, nor the total of the utilized allowances exceeds the total allowance, all exposures are exempt from the capital requirement.

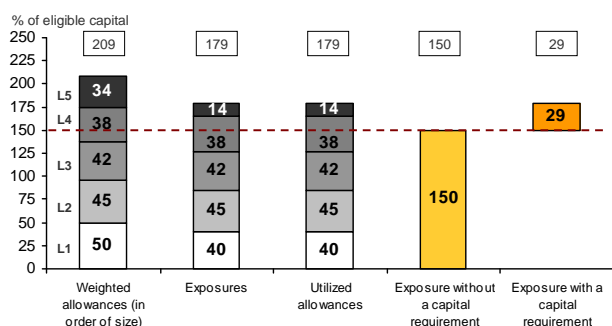
Fig. 11: Bank exceeds individual allowances but not the total allowance (example B)



Source: own representation

The bank has distributed its public sector loan portfolio among just two countries – possibly because it places a strong emphasis on security and rejects diversification towards high-risk exposures. For this portfolio, the formula results in a total allowance of 95 (L1 50 + L2 45). The total exposure, by contrast, amounts to 255 (L1 200 + L2 55). The individual exposures are thus significantly higher than the respective allowances, which are fully exhausted. The amounts exceeding the individual allowance add up to 160 (L1 150 + L2 10). By contrast, the utilized individual allowances remain below the threshold of 150% of eligible capital and thus are not subject to a capital requirement. As a result, the bank has to back up exposures totalling 160 with regulatory capital (column 5 in the figure). It therefore has a greater incentive to diversify its portfolio.

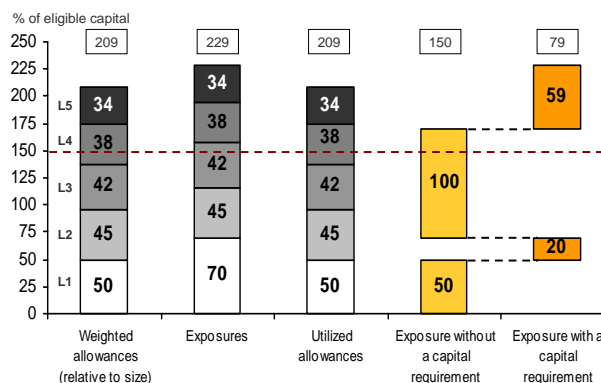
Fig. 12: Bank does not exceed an individual allowance but the total allowance (example C)



Source: own representation

The bank has exposures to five countries totalling 179. With this approach, the aim of the bank may be to hold a wide variety of high-return, high-risk exposures, but to back them up with as little regulatory capital as possible. The risk-weighted allowances add up to 209. However, none of the individual allowances is exceeded by an individual exposure. Those are therefore either fully utilized (L2 to L4) or only partially utilized (for countries L1 and L5). Combined, the utilized allowances are thus commensurate with the total exposure (179). However, this means they exceed the total allowance by 29. While all individual allowances are observed, an exposure amounting to 29 needs to be backed by regulatory capital.

Fig. 13: Bank exceeds both individual allowances and the total allowance (example D)



Source: own representation

The bank has built up exposures to five countries in the amount of 229, to which individual allowances totalling only 209 are assigned. The individual allowance for Country 1 is exceeded by 20. All other individual allowances are observed precisely. This first leads to a capital requirement for an exposure in the amount of 20 (see pillar 5 in the chart). The sum of utilized allowances of 209 is 59 above the total allowance. Thereby, exposures in the same amount also have to be backed by regulatory capital. As the figure shows, this makes it possible to avoid the same exposures being backed twice by regulatory capital. Indeed, if the exposures exceeding 150 (79) were applied in full to the calculation, the exposure resulting from exceeding the individual allowance that has already been backed by regulatory capital (20) would be double-backed. The example shows that the proposed regulation creates incentives not only for diversifying portfolios and complying with individual allowances, but also for observing the total allowance of 150% of eligible capital.

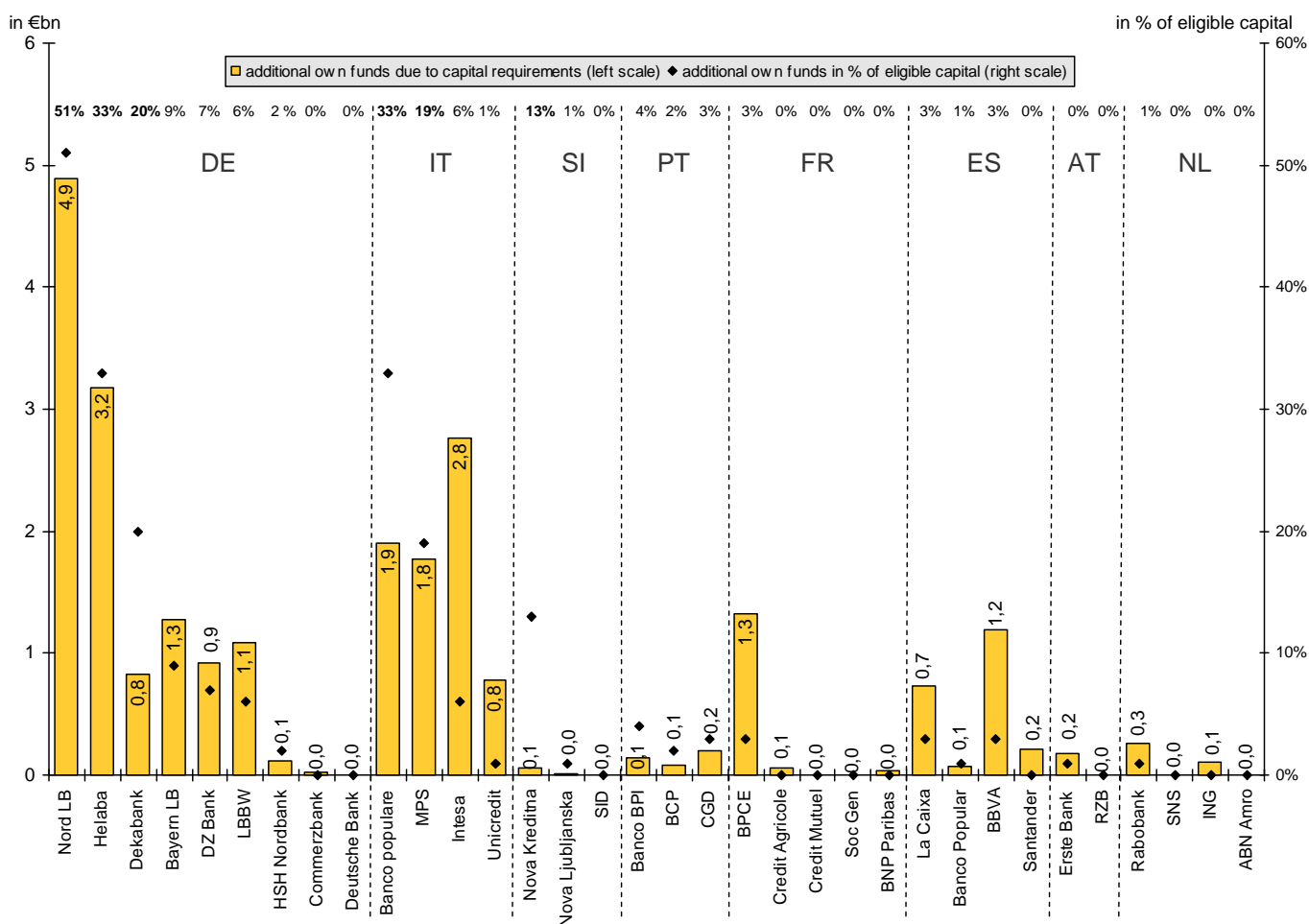
The "mechanics" of this proposal obviously fulfil the regulation objectives set, at least in these abstract case studies (see p. 16). In the following, individual bank data will be used to assess the impact of the proposed regulation.

4.7 Concrete examples of application based on individual bank data

Based on ECB/EBA data from the 2014 AQR/stress test for 34 individual institutions, we have performed an approximate calculation of the regulatory capital adequacy required if the proposal were applied to the individual banks. To keep the calculations and data sets manageable, we concentrated on the five largest individual bank exposures. Given the portfolios' home bias, this would seem unproblematic from a methodological perspective. In most cases, the calculated capital requirement is proportional to the exposure values in Fig. 5 in Section 2.

The result (see Fig. 14) shows that the regulatory capital requirement rises significantly for the German Landesbanken and for Italian and two Spanish institutions (SSM banks) in particular. In the most extreme case, NordLB, the additional capital requirement of EUR 5 billion amounts to more than half of the eligible capital reported at end-2013, while for Helaba and Banco Popolare it comes in at one third (see country-specific analysis in the box p. 35f.).

Fig. 14: What regulatory capital requirement results from the proposal for selected SSM banks? – Example calculations taking account of the 5 largest government debt exposures



Sources: ECB Comprehensive Assessment 2014, Eurostat, own calculations.

By contrast, many banks get by without any significant additional regulatory capital.

Infobox: Significant country-specific differences in the sample calculation results

The detailed analysis reveals deviations with regard to individual banks that reflect the "mechanics" of the proposal. These formula triggered stimuli are analysed per country below. However, a cross-country comparison between individual banks is difficult from a methodological perspective since in each case the institutions are focussed on different countries of residence.

Germany:

- All of the German banks analysed here have a high concentration on their home country. However, the relations of the additional regulatory capital requirement and eligible capital differ significantly (lowest: DB 0%, CB 0.1%, HSH Nordbank 1.6%; highest: NordLB 51%, Helaba 33%, DekaBank 20%).
- For those banks with the highest ratios, a higher regulatory capital would be required especially for "home country" concentrations. These banks would need to adjust their balance-sheet structures before the new regulation will be applied in full.

Netherlands:

- SNS Reaal is showing a high total exposure to the top 5 countries totalling 162% of eligible capital, yet with no amount exceeding the individual allowance per country (diversified bank, Case C). This results in a proportionately low capital requirement in percentage terms (0.1% of total eligible capital for the sum of utilized allowances exceeding the total allowance of 150% by 12 PP).
- Rabobank with a total exposure to the top 5 countries totalling 85%, yet with an amount exceeding the individual allowance for the Netherlands (Case B, i.e. with bulk risk; 58% exposure versus 33% allowance = 25% excess exposure measured against eligible capital). This results in a higher capital requirement in percentage terms (0.6% of total eligible capital) and reflects the incentive to avoid country exposure concentrations.

Italy:

- All of the four Italian banks examined have absolute amounts significantly exceeding the allowances towards their home country (Intesa + EUR 69 billion, UCG + EUR 42 billion, MPS + EUR 22 billion, Banco Popolare + EUR 19 billion).
- The resulting capital requirement takes account of the ability of the respective banks to absorb losses and is thus proportional to their size (Banco Popolare 33% of eligible capital, MPS 19%, Intesa 6%, UCG 1%).
- The proposed calibration hence does not categorize banks according to their size, but rather takes into account parameters such as the relationship between eligible capital and exposures requiring capital backing.

Spain:

- All Spanish banks have excess debt exposures to their home country. However, these can generally be deemed moderate in relation to their eligible capital (from Santander with 0.3% of eligible capital to BBV with 2.6%).
- The relative share per bank in sovereign debt reveals a shift between Banco Popular and BBVA in comparison with the pure exposure view. The latter has a higher share (5.4%) in sovereign debt than Banco Popular (1.1%). This influences the factor S in the formula and leads to the higher capital requirement for BBV (2.6%) versus Banco Popular (0.9%).

So the "mechanics" of the proposal work in principle, i.e. they are accurate, have the desired effects and are transparent. As far as this can be estimated using published data, the regulatory liquidity requirements also remain attainable without any notable restrictions.

- For example banks in smaller countries are already better diversified and have no or only a limited capital requirement when our proposal is applied.
- On the other hand, the proposal creates strong incentives for institutions with extremely high exposures and minimal diversification to better diversify their portfolios by shifting debt, to scale back their exposures in absolute terms or to increase their regulatory capital.
- In accordance with the typology proposed in Sections 4.5 and 4.6, most institutions belong to Cases A and B, i.e. in each case they comply with the total allowance but not always with the individual allowances. Usually it is the individual allowance for the home country that is exceeded.

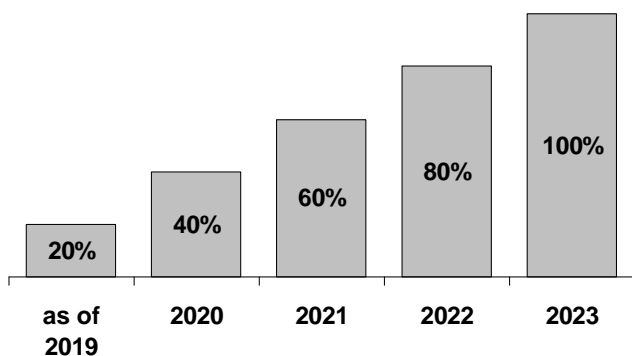
The results show that the desired regulation objectives are achieved, even if a more exact and – where necessary – "strict" calibration is of course not ruled out.

4.8 Proposals on structuring the phase-in

The new regulation could enter into force beginning 2019 following full implementation of Basel III/CRD IV. An adequate lead time would make it easier for institutions – especially those that currently have high to very high exposures – to adjust their balance-sheet structures and business models.

During this period, the full extent of the individual and total allowances and the capital requirement would be calculated and reported to the bank supervisory authorities. However, the capital backing actually needed would be subject to a phase-in: the regulatory capital requirement should increase over five years in increments of 20% each. This would enable a smooth transition.

Fig. 15: Phase-in: step-by-step rise of capital requirement over 5 years



Source: own representation

However, no exceptions are envisaged for portfolio exposures that were entered into before the day on which the new regulations come into force ("grandfathering"). A series of observations and comparable examples from the past speak against this:

The experience gained from the phase-in relating to the elimination of the *Anstaltslast* (institutional liability) and *Gewährträgerhaftung* (guarantor liability) of public-sector credit institutions in Germany make it seem likely that such a regulation would create strong incentives to incur even greater sovereign debt in the banking sector until the new regulation takes effect. Thus sovereigns would be tempted to issue very long-dated debt instruments and to park these at banks. Credit institutions would try to acquire as many long-dated bonds and/or loans with grandfathering as possible that are not subject to the new restrictions ("pre-stocking").

If the new, stricter rules were applied solely to new business (i.e. not to bonds and loans already held in banks' portfolios), the markets for such instruments would dry up since banks would strive to hold them until final maturity so as not to have to grant the "privilege" of zero weighting along with the security. The effect would multiply if similar regulations were to be introduced for other instruments, such as insurance policies.

A phase-in period of up to five years would seem sufficient to avoid general grandfathering for existing portfolio holdings.

5 Open issues and need for discussion

A number of issues needs to be discussed in more detail in connection with the proposals made here. They range from general economic repercussions to details of the regulatory framework. The key points are as follows:

Implementation issues:

- Weighting of indirect sovereign exposures, e.g. with bank assets backed/secured by sovereign exposures and/or positions covered by ECA.
- Weighting of exposures to municipal creditors and/or companies.

Impact on banks/investors:

- Possible repercussions on capital costs and profitability of credit institutions – e.g. the net effect of higher systemic stability and/or lower risk premiums on the one hand, and reduced profits for banks resulting from lower earnings from carry trades on the other³¹.
- Nevertheless, a positive effect on bank earnings from sovereign debt instruments, provided that governments have to pay premiums that are better adjusted to risk in the future.
- Implications for the supply of credit for non-government borrowers ("real economy") – suppression or expansion?
- Possible indirect repercussions, e.g. scope and nature of portfolio shifts for institutional investors in response to or in anticipation of the new banking regulation.

Impact on sovereigns and duties of regulators:

- Impact on the (relative) financing costs and the borrowing behaviour of sovereigns, such as knock-on effect of measures on interest rate levels and demand for loans from sovereigns, as well as potentially greater difficulties in bond placements.
- Need for accompanying regulations, including introduction of a systematic procedure for sovereign insolvencies and/or

wider proliferation of collective action clauses, as agreed by the Eurogroup in 2010³² for new government bond issues.

- Similar regulations and/or measures to eliminate similar privileged treatment of sovereign debt, e.g. in the insurance industry, in tax law and – last but not least – in monetary policy.

In addition, some fundamental questions arise from the proposals made in this paper and the conclusions to be drawn from it:

- Banks and sovereigns with a good credit quality would in future receive strong incentives to redeploy sovereign debt instruments of countries with a higher credit risk ("risking up"). As a result, financing problems affecting an unstable country could lead to greater contagion effects in the future, since it is no longer primarily local banks that hold a significant exposure to this country, but more and more so banks in other eurozone countries. A regional "encapsulation" of the problem, as in the case of Cyprus, would no longer occur. Implementation would require the risk strategy to be adapted.
- Banks in countries with high risk premiums for sovereign exposures have, by contrast, comparatively smaller incentives to invest in low-interest exposures to more stable EMU countries or in Eurobonds, since this would reduce their carry and the opportunities for capital accumulation. They would be tempted to continue to invest in high-interest exposures, albeit not in exposures in their home country, but in exposures in other, less stable EMU member states.
- A beneficial effect could be expected if better cross-border diversification of bank sovereign portfolios would give rise to an equally cross-border concern – also on the part of national governments – for a more stability-oriented fiscal policy across the entire EMU. A pan-European concern for financial discipline is currently being curtailed by the strong financial nexus between governments and "their" national banking sector.
- Supervisory authorities would above all have to allow banks in countries with "good" credit quality to increase the overall risk in their portfolios by diversification ("risking up") and at the same time abandon national ring fencing, for example in

³¹ For the banks of the southern EMU countries (GR, IT, ES, PT), the rating agency Fitch forecasts that diversification into low-interest, ECB-eligible assets would trigger a decline in average yields from sovereign portfolios of 50 bp and a decline in operating results (before loan loss provisions) of 4.2%; see FitchRatings (2014).

³² See Eurogroup (2010).

liquidity regulations. This is a key prerequisite in order to "break up" the sovereign-bank nexus. The Single Supervisory Mechanism (SSM) within the Banking Union has paved the way for significant progress in this regard.

- In addition, a change in institutions' risk and asset allocation policies is required. Diversification on their asset side would also lead to a reallocation of economic capital. This could have implications for the financing of the real economy, provided that banks' capitalization remains constant.
- It would seem even more important that regulators identify interdependencies towards regulatory liquidity requirements and coordinate the way the new rules governing the diversification and limitation of sovereign exposures are structured (consistency check).

6 Summary and conclusion

The analysis of sovereign exposures on the basis of published individual bank data has shown that there are large differences between the credit institutions of selected countries. It also made it clear that it is not sufficient to just include bond exposures, since loans to sovereigns often account for a significant share of a bank's total exposure.

With regard to the new regulatory liquidity requirements for banks, it would also appear inappropriate only to remove the exemptions for sovereign debt instruments in the large exposure regulation, since blanket application would be too restrictive, not risk sensitive and thus not incentive-compatible. The proposal put forward here thus envisages a combination of capital backing for sovereign exposures in combination with risk-sensitive allowances.

A credit institution's eligible capital plays a key role here. The approach is also indicator-based in that a country's debt-to-GDP ratio and the share a credit institution holds in a country's total government debt (factor S) serve as central variables. This additional factor counteracts excessive concentrations in a country's creditor structure and therefore also mitigates contagion effects and chain reactions in the financial system. Micro and macro-prudential instruments are thus combined with one another.

Concentration on a small number of variables in combination with elements of a binding regulation makes the proposal transparent and straightforward in terms of implementation. A review of a typical balance sheet using plausible dimensions revealed that the proposed regulation seems realistic. Also, the sample calculations on the basis of concrete individual bank data have shown that it would be effective, i.e. would lead to a clear-cut regulatory capital requirement for every institution that has not sufficiently diversified its portfolios. This would create strong incentives

- for credit institutions to reduce exposures – in particular to their home country – and/or to better diversify exposures to countries within the eurozone;
- for sovereigns to decrease their debt-to-GDP ratio and to increase diversification within their creditor structure, i.e. to

be less reliant on sovereign debt being allocated in their domestic banking system than they have been until now.

If an EMU member state were to run into financial difficulties, the risks would therefore be distributed among a larger number of banks within the eurozone, which means that the risks of contagion would be lower. Financial cohesion would be strengthened within and throughout the EMU, above all in relation to mutual financial discipline on the part of governments and banks/investors. More risk-appropriate premiums for sovereign debt instruments would also lead to better capital allocation among banks. Not only the individual credit institutions, but also public finances and the financial system would become more crisis-resistant.

All in all, the regulation proposal would therefore seem an effective way of achieving the posited regulation objectives (see p. 13) and breaking the strong interdependency that exists between banks and sovereigns (with the associated negative ramifications). It is in line with the proposals that have already been outlined by regulatory authorities (ESRB, Deutsche Bundesbank).

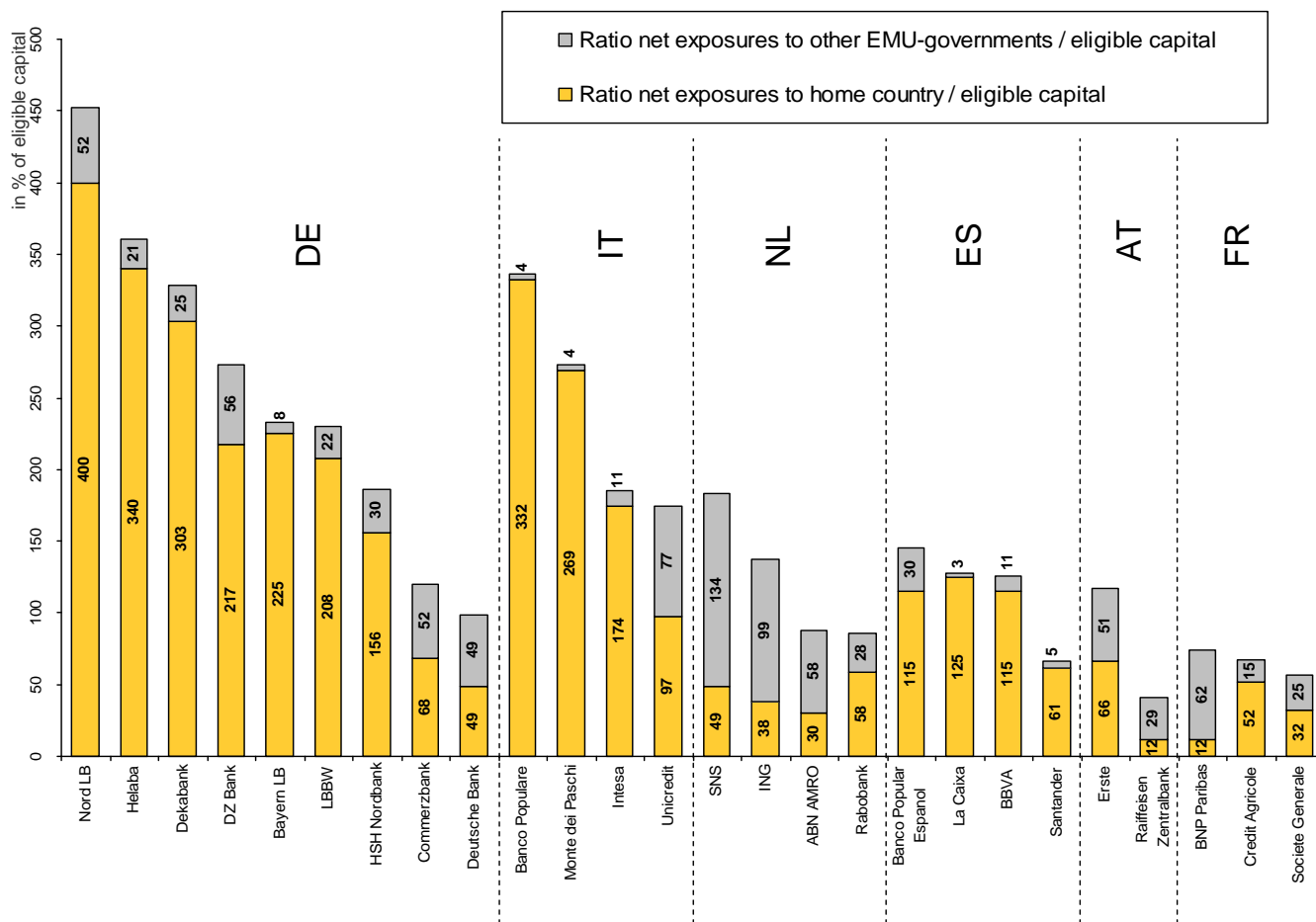
Introducing such a regulation would, however, require extremely careful prior analysis of the implications and requirements by means of targeted impact studies so as to avoid structural breaks, above all in the financing of the economy by banks. Based on these impact studies, supervisors and regulators will be able to conduct a precise calibration of the parameters involved. This also applies to the scope of the regulation, e.g. smaller credit institutions and the group of creditors and/or issuers (such as municipal authorities and municipal corporations). Last but by no means least, however, it will call for extensive and in-depth discussion of several topics. One of these will be the requirements and consequences of such a regulation, especially with regard to monetary and fiscal policy within the European Union.

Annex 1: Empirical findings: sovereign debt with banks – individual institution data in multi-country comparison

The problem of a close sovereign-bank nexus is analysed below on the basis of quantitative data. The exposures of 26 institutions from several eurozone countries are examined, including not only national market leaders but also other significant entities (see box p. 31)

The highest S/E ratios vis-a-vis the central governments of their respective home countries were exhibited by Germany, Italy and Spain (see Fig. 5 in Section 2). In all three countries, the institutions with the highest S/E ratios had values over 200%. In Germany in particular, ratios exceeding 300% were achieved at three public banks; in the most extreme case (NordLB), the ratio even reached 400%.

Fig. 16: Net exposures to public sector of home country and the rest of euro zone in % of eligible capital



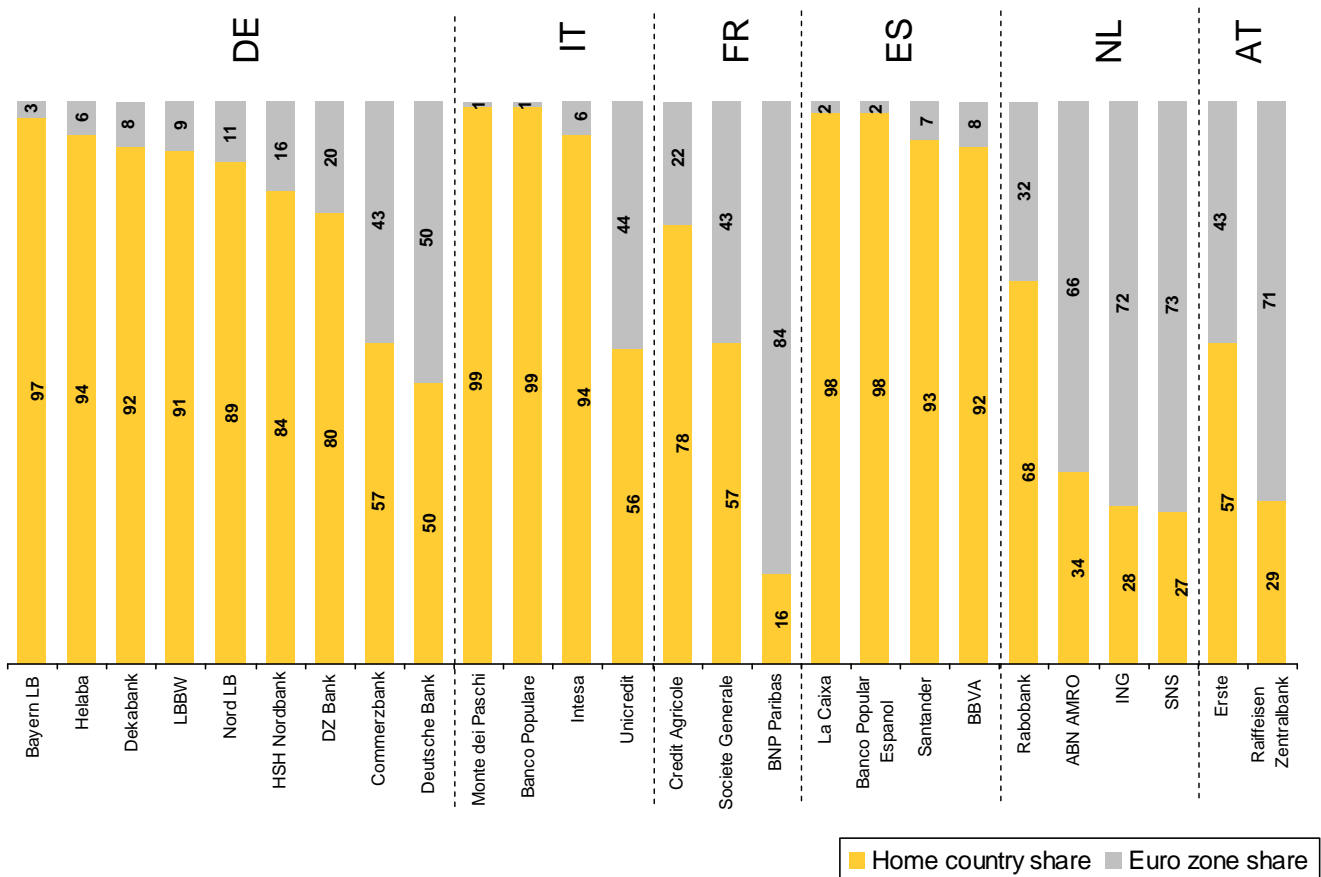
Sources: ECB Comprehensive Assessment 2014; own calculation

If exposures to other eurozone countries are added to those to the respective home country ("total EMU exposure"), there is still a strong concentration in the public sector of the home country in question. Thus, monetary union has so far not led to any noticeable diversification in sovereign exposures.

Banks that are active in smaller countries or in several markets within the eurozone (e.g. Unicredit, BNP Paribas, Société Générale, Deutsche Bank), already demonstrate a broader diversification in sovereign exposures (securities and loans). Another institution worth mentioning is the ING Group headquartered in the Netherlands, which has distributed approximately one third of its exposure to the core countries where it conducts its business (Netherlands, Germany and Belgium).

Figure 17 below depicts net exposures to the eurozone, differentiated according to home country and the rest of the eurozone as percentages.

Fig. 17: net exposures to the eurozone, differentiated according to home country and the rest of the eurozone as percentages



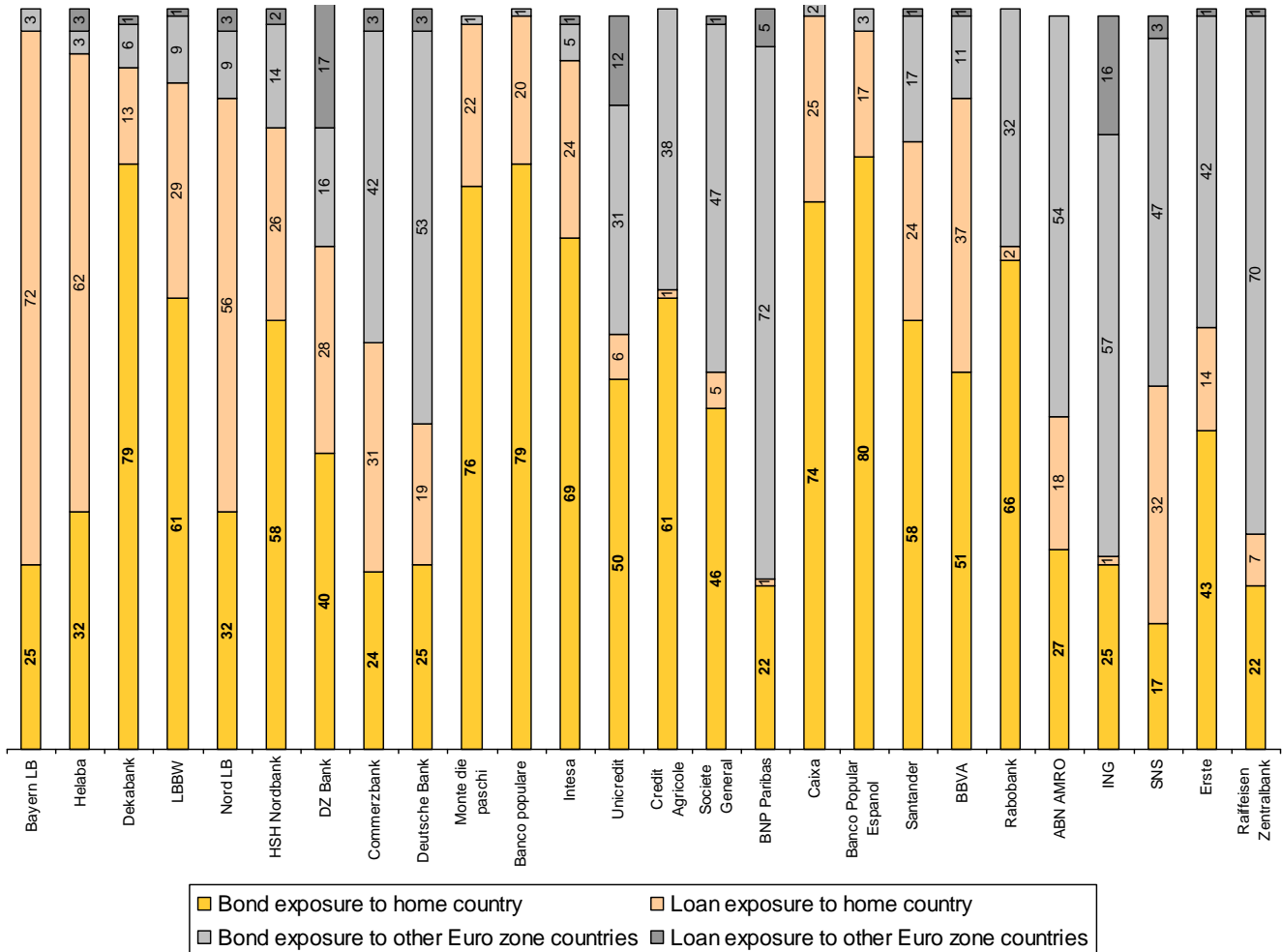
Sources: ECB Comprehensive Assessment 2014; own calculations

Banks in the Netherlands and Austria are already more broadly diversified in the eurozone.

French bank BNP Paribas, which at end-2013 largely reduced its risk towards the French state by means of hedging transactions and collateral provisions, warrants particular mention. On the basis of the data available, however, it is not possible to draw any conclusions on the reasons and/or strategy behind this reduction.

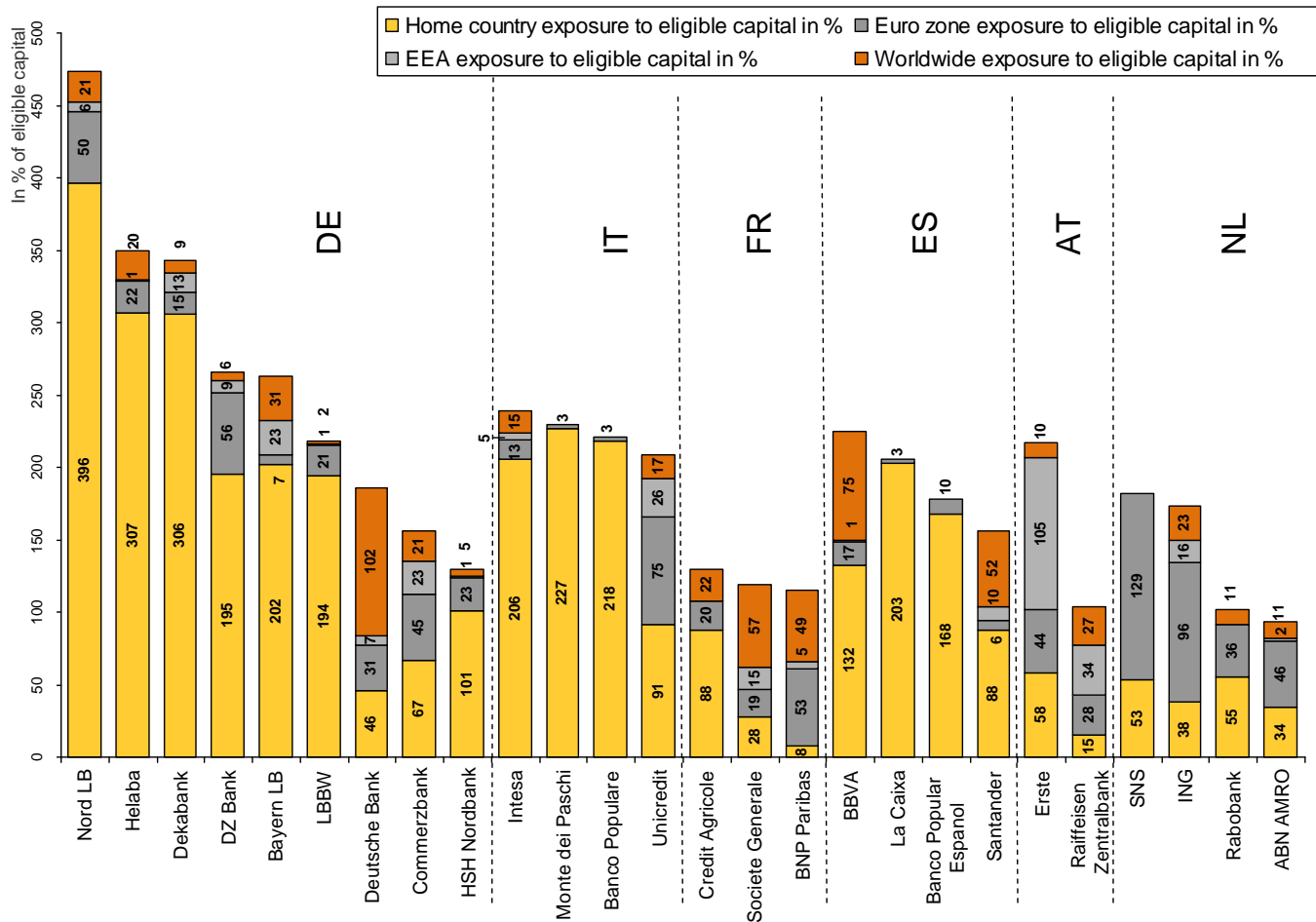
When exposures are analysed in terms of product, bond exposures are most prevalent. In Germany, Spain and Italy, however, large proportions were also allocated in the form of bilateral loans.

Fig. 18: Gross exposures to home country and the euro zone – percentage distribution by product group



Sources: ECB Comprehensive Assessment 2014; own calculations

Banks in Germany have the highest proportion of loans. Landesbanken have issued two-thirds or more of their exposure to the public sector in the form of loans. This demonstrates how important it is for a new regulation to take a consolidated view across all product types so as to prevent individual states from circumventing specific provisions. Exposures to other eurozone countries are on the other hand built up by banks largely through bonds. Exceptions to this rule are banks that have strong local ties in multiple countries, such as ING (in Belgium) and Unicredit (in Germany and Eastern Europe).

Fig. 19: Net exposures to public sector in per cent of eligible capital – differentiated by member-state groups

Sources: ECB Comprehensive Assessment 2014; own calculations

An analysis of the "rest of world excluding EMU member states" reveals that significant exposures exceeding one third of eligible capital exist only at multinational banks. These exposures are in turn distributed among several countries, as evidenced by the banks' diversified business models.

Data source, delimitations, calculation method

This analysis was based on the Comprehensive Assessment of the European Central Bank and the EBA, carried out as of the reference date 31 December 2013 and published on 26 October 2014: <https://www.bankingsupervision.europa.eu/banking/comprehensive/html/index.en.html>

These results enable a transnational analysis of exposures on the basis of uniform figures. The exposures of the institutions comprise all exposures to public bodies on a central, regional and local level (general government). Influences from internal risk models are excluded, since the figures were determined prior to this. The exposures were calculated across all products for both securities and credit receivables and reduced by applicable hedging transactions (e.g. credit default insurance). To facilitate comparison between the institutions analysed, net exposures are as a rule examined in relation to eligible capital. In the following, this factor shall be referred to as "S/E" (public sector loans to eligible capital). It expresses what percentage of its eligible capital an institution has allocated to one or several public lenders of a particular country.

Annex 2: Leveraged bank balance sheets and their limitation – no panacea

Major credit institutions in the European Union already calculate a leverage ratio between relevant business activities and Tier 1 capital³³. Currently, a leverage ratio of 3.0% (i.e. up to 33x capital) is used as a guide, which is however still aligned by the EU authorities following an observation period. A distinction is made not according to the exposures' risk content, but according to business volume. In so doing, the legislator subjects a bank's exposures – including exposure to sovereigns – to a minimum capital ratio.

For example:

The figure below outlines the interdependencies between capital adequacy requirements and the leverage ratio. In both cases, the bank would have a capital ratio of 10.0% and identical equity capital. However, the public finance bank has a much worse leverage ratio than the other bank (3.0% versus 6.0%). Thus, in absolute terms, the public finance bank can build up twice the business volume of its "smaller competitor" without breaching legal provisions. It has only reduced the "risk concentration" of its balance sheet. Moreover, the public finance bank could theoretically allocate the entire volume to the central government of an EU country.

Fig. 20: Leverage Ratio – Bank balance sheet with and without public finance

Bank without Public Finance		Bank with Public Finance	
Loans to companies 100	Equity 6 Debt 94	Loans to companies 100 Loans to EMU members 100	Equity 6 Debt 194
Business volume:	100	Business volume:	200
RWA:	60	RWA:	60
CET 1 Ratio:	10%	CET 1 Ratio:	10%
Leverage Ratio:	6%	Leverage Ratio:	3%

Source: own representation

As a result, while the leverage ratio limits banks' business activities, it does not create any incentive for them to diversify their business volumes, especially with regard to public finance exposures.

³³ EUR-Lex (2014).

Annex 3: Data used (1)

Eligible Capital (EC) and Top 5 EMU exposures of selected SSM banks (31.12.2013)

in Mio. Euro

	EM	Top 1	Top 2	Top 3	Top 4	Top 5
DE-Deutsche Bank	54.091	DE 26.556	NL 7.622	FR 5.718	AT 4.357	IT 4.066
DE-Commerzbank	31.831	DE 21.741	IT 9.621	ES 2.480	AT 1.525	NL 1.180
DE-LBBW	17.033	DE 35.049	IT 2.300	ES 718	PT 252	FR 121
DE-Bayern LB	14.924	DE 33.521	FR 480	IT 463	AT 92	ES 40
DE-DZ Bank	14.010	DE 30.405	ES 2.573	IT 2.437	FR 869	AT 601
DE-Helaba	9.659	DE 32.845	ES 988	FR 262	IT 228	BE 136
DE-Nord LB	9.618	DE 38.492	IT 1.417	AT 1.237	BE 694	LU 446
DE-HSH Nordbank	7.462	DE 11.624	FR 676	IT 585	AT 357	BE 313
DE-Dekabank	4.231	DE 12.811	FR 384	BE 329	IT 173	LV 86
IT-Unicredit	56.230	IT 54.271	DE 26.601	AT 12.814	FR 1.601	SK 755
IT-Intesa	43.147	IT 75.072	SK 2.425	ES 1.382	SI 332	DE 269
IT-MPS	9.295	IT 25.024	ES 217	PT 167	BE 55	LV 10
IT-Banco popolare	5.716	IT 18.947	ES 208			
FR-Credit Agricole	80.733	FR 42.323	IT 5.488	DE 2.537	BE 2.531	AT 588
FR-BNP Paribas	77.072	BE 18.347	IT 12.983	FR 9.059	DE 6.361	NL 4.240
FR-BPCE	51.454	FR 67.602	IT 5.754	BE 1.799	NL 951	ES 943
FR-Societe Generale	48.256	FR 15.536	DE 4.783	IT 2.385	ES 1.394	AT 958
FR-Credit Mutuel	39.218	FR 14.786	IT 3.546	DE 1.913	ES 674	BE 471
ES-Santander	63.219	ES 38.367	PT 2.808	IT 1.387	NL 115	FI 13
ES-BBVA	45.028	ES 51.791	IT 2.769	NL 934	FR 543	PT 375
ES-La Caixa	28.970	ES 36.070	FR 551	IT 114	DE 73	BE 10
ES-Banco Popular	8.844	ES 10.157	IT 223	PT 38		
NL-ING	41.655	DE 17.874	NL 15.745	BE 14.961	FR 3.652	IT 2.059
NL-Rabobank	37.899	NL 22.139	FR 5.195	DE 4.406	FI 436	AT 141
NL-ABN Amro	19.917	NL 5.932	FR 4.713	BE 2.183	DE 1.556	AT 1.284
NL-SNS	2.277	DE 1.265	NL 1.117	FR 619	BE 376	IT 326
AT-Erste Bank	14.410	AT 9.567	SK 5.849	DE 652	SI 229	IT 129
AT-RZB	12.314	SK 1.962	AT 1.442	FR 468	IT 362	NL 302
PT-CGD	7.625	PT 9.164	FR 212	ES 59	SK 43	BE 15
PT-BCP	4.997	PT 5.997	IE 208	IT 50	ES 44	BE 11
PT-Banco BPI	3.291	PT 5.163	IT 1.058			
SI-Nova Ljubljanska	1.061	SI 947	BE 87	AT 55	DE 32	FR 20
SI-Nova Kreditna	435	SI 999	BE 41	DE 30	AT 27	FR 26
SI-SID	336	SI 167	SK 17	ES 3	IT 1	

Source: ECB Comprehensive Assessment, 26.10.2014

Anhang 3: Data used (2)

Data on sovereign debt as of 31.12.2013

Country	D-2-GDP R in %	Debt in EUR m
Belgium	104,5	413.246
Bulgaria	18,3	7.532
Czech Republic	45,7	68.152
Denmark	45,0	114.099
Germany	76,9	2.159.468
Estonia	10,1	1.888
Ireland	123,3	215.550
Greece	174,9	319.133
Spain	92,1	966.181
France	92,2	1.949.475
Croatia	75,7	32.759
Italy	127,9	2.069.841
Cyprus	102,2	18.519
Latvia	38,2	8.876
Lithuania	39,0	13.637
Luxembourg	23,6	10.669
Hungary	77,3	77.717
Malta	69,8	5.241
Netherlands	68,6	441.039
Austria	81,2	261.978
Poland	55,7	222.926
Portugal	128,0	219.225
Romania	37,9	54.170
Slovenia	70,4	25.428
Slovakia	54,6	40.178
Finland	56,0	112.664
Sweden	38,6	164.420
Great Britain	87,2	1.792.797

Source: Eurostat, access: 15/3/2015

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List of abbreviations used

CET 1	Core equity Tier 1
CRD IV	Capital Requirement Directive IV
CRR	Capital Requirements Regulation
CRSA	Credit risk standard approach
D-2-GDP R	Debt-to-GDP ratio
EC	Eligible capital
ECA	Export credit agency
ECB	European Central Bank
EFSF	European Financial Stability Fund
ESM	European Stability Mechanism
ESRB	European Systemic Risk Board
EXIA	Amount exceeding individual allowance
EXTA	Amount exceeding total allowance
FN	Footnote
GDP	Gross Domestic Product
HQLA	High quality liquid assets
IAW	Individual allowance
IEX	Individual exposure
IRBA	Internal rating-based approach
MFI	Monetary financial institution
NBER	National Bureau of Economic Research
NCB	National central bank
PP	Percentage point(s)
GQ	Quantitative easing
RC	Regulatory capital
S	Scaling factor for creditor/investor concentration
SSM	Single Supervisory Mechanism
TAW	Total allowance
TEX	Total exposure
T-LTRO	Targeted large tender reserve operation

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Editor

Commerzbank AG

Group Communications, Public Affairs

Phone +49 69 136-29278

publicaffairs-research@commerzbank.com

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