## 10. A 'SOVEREIGN SUBSIDY' – ZERO RISK WEIGHTS AND SOVEREIGN RISK SPILLOVERS

Josef A. Korte<sup>1</sup> and Sascha Steffen<sup>2</sup>

## Abstract

European banking regulation assigns a risk weight of zero to sovereign debt issued by EU member countries which makes it an attractive investment for European banks. Eventually, they invest too much and accumulate too much leverage. We propose a new measure that quantifies to what extent banks are undercapitalized due to zero risk weights which we call a 'sovereign subsidy'. Using sovereign debt exposure data recently published by the European Banking Authority (EBA), this column describes the build-up of this subsidy over the March 2010 to June 2013 period for domestic as well as cross-country exposures. Moreover, we investigate whether zero risk weights help to explain contagion in the Eurozone measured as the co-movement of sovereign CDS prices.

## **10.1.** MOTIVATION

Policymakers and academics have recently started to address severe distortions caused by the way banks are regulated in Europe. One of the most apparent flaws in banking regulation is the general application of zero risk weights for sovereign exposures<sup>3</sup>. In general, Basel capital requirements stipulate that banks have to hold capital for *all* asset classes either based on a given regulatory risk weight or based on internally modeled default probabilities. However, this key idea of the Basel Accord has not been followed in the Capital Requirements Directive (CRD) of the European Union. Consequently, EU banks usually employ a zero risk weight for sovereign debt and thus do not hold capital against any of the sovereign exposures to EU member states<sup>4</sup>.

<sup>&</sup>lt;sup>1</sup> Goethe University Frankfurt, Department of Economics and Business Administration, Grueneburgplatz 1, 60323 Frankfurt am Main, Germany, josef.korte@finance.uni-frankfurt.de

<sup>&</sup>lt;sup>2</sup> University of Mannheim and Centre for European Economic Research (ZEW), L7 1, 68161 Mannheim, Germany, Email: steffen@zew.de.

<sup>&</sup>lt;sup>3</sup> There are other benefits associated with holding sovereign debt (for example, no exposure limits). We do not discuss those in our paper.

<sup>&</sup>lt;sup>4</sup> Under the standardized approach, the CRD stipulates a zero risk weight for exposures to the European Central Bank and to member states' sovereign debt issued in the domestic currency of that member state. While banks that use the IRB approach in theory have to hold capital against sovereign exposures, Nouy (2012) for example shows the IRB approach does not necessarily produce a positive risk weight for sovereign exposures. The probability of default (PD) applied to sovereign portfolios is not subject to a floor (contrary to the PD for other exposures). Hence, the IRB approach could result in a zero risk weight for sovereign exposures. Importantly, banks can also choose to switch to the standardized approach when assessing the capital requirements for their sovereign debt portfolio following the IRB permanent partial use – an exemption which banks usually operating under IRB indeed make frequent use of. Hence, the vast majority of banks eventually employs a zero risk weight for sovereign debt and consequently does not hold capital against any of the sovereign exposures to EU member states.

This regulatory treatment of sovereign debt contradicts the spirit of the Basel accords (Hannoun, 2011; Nouy, 2012). More importantly, it makes investments in risky sovereign debt particularly attractive (Acharya and Steffen, 2013; Battistini, Pagano and Simonelli, 2013). If sovereign risk materializes (as happened in the European sovereign debt crisis), banks might experience a substantial capital shortfall and might even require capital backstops by their domestic sovereigns.

We quantify the dimension of capital savings due to zero risk weights. Moreover, we discuss the economic implications associated with this regulatory treatment as it is an important determinant of the co-movement of sovereign CDS spreads within the Eurozone.

## **10.2.** BANK LEVEL EXPOSURES TO SOVEREIGN DEBT

The European Banking Authority (EBA) has conducted several assessments of banks' exposures towards sovereign debt and capitalization over the March 2010 to June 2013 period. After 2 stress tests in 2010 and 2011, the EBA continued to assess EU banks and to disclose a substantial amount of data in an effort to increase transparency regarding the solvency of the European banking sector. The data comprises individual sovereign bond holdings of 62 major European banks (91 in earlier tests) at seven reporting dates. As exposure data is available for only 54 banks throughout over all reporting dates, we evaluate the development of sovereign exposures for this subsample<sup>5</sup>.





Figure 1 shows that the sovereign exposure of the 54 largest European banks amounted to EUR 1.5 to 2 trillion over the last four years. Interestingly, the sovereign exposure of the banking sector did not decrease but rather increased as the sovereign debt crisis unfolded. The exposure is not just significant in absolute euro amounts, but also comparing it to the tier 1 capital of the respective bank. On average, sovereign bond exposures account for more than 200% of banks' tier 1 capital. Some banks even have sovereign exposures as high as 15 to 20 times their regulatory capital. Interestingly, non-domestic sovereign debt makes up between 40 to 50% of total sovereign exposures on European banks' balance sheets.

High exposures to domestic and non-domestic sovereigns is not just a phenomenon of banks in a few countries. The overall development of banks' sovereign exposure as well as the share of non-domestic sovereign debt, however, is very different for banks located in the GIIPS (Greece, Italy, Ireland, Portugal and Spain) or core-European countries. As Figure 2 shows, banks in peripheral countries increased their exposures by around 50% since 2009, mainly driven by domestic sovereign debt that accounts for approximately 80% of total exposures. Banks from the non-GIIPS countries did not significantly increase their exposures over time and have a much larger share (around 50%) invested in non-domestic sovereign bonds.





sure relative to tier 1 capital. Non-GIIPS banks, in contrast, hold a large percentage of cross-country sovereign debt with still high exposures relative to tier 1 capital. Large banks from core countries such as Germany and France hold sovereign exposures exceeding 100% of their tier 1 capital. Panel B of Figure 3 shows that GIIPS banks increase domestic sovereign bond exposures consistent with an increase in 'home bias' of GIIPS and non-GIIPS banks; also non-GIIPS banks substantially reduce their cross-country exposure but exposures overall remain high relative to tier 1 capital.





#### Figure 3. Panel B. Sovereign Exposures as of June 2013



## **10.3.** The sovereign subsidy

In Korte and Steffen (2014), we propose a new measure that quantifies the sovereign subsidy due to zero risk weights. We assign risk weights to each sovereign exposure and compute the corresponding risk weighted assets that are not adequately reflected in banks' capital. We call the latter the "sovereign subsidy" and use alternative methods to compute the appropriate risk weights for the sovereign exposures. Our main measure is similar to the EBA stress test methodology and uses the rating of a country, the corresponding probability of default, and the Basel approach to compute risk weights for sovereign debt.

Constructing this measure for the 54 banks that were part of all EBA exercises (Figure 4), we document that this subsidy accumulates to approximately EUR 750 billion as of June 2013. This corresponds to almost 100% of banks' tier 1 capital, on average – an exposure that is not adequately reflected in banks' capital position! Figure 4 also shows that the sovereign subsidy has nearly doubled over the last four years. This is only in part due to increasing sovereign exposures, but mostly driven by deteriorating sovereign credit risk and correspondingly increasing risk weights.





The EBA published the RWA that banks report for their sovereign debt exposure for Q4 2012 and Q2 2013. Based on this, we calculate the 'actual risk weights' that banks apply to sovereign debt. On average, this risk weight is 1.4%.

# 10.4. ZERO RISK WEIGHTS AND CONTAGION WITHIN THE EUROZONE

As the sovereign subsidy considers risks that are not adequately reflected in a bank's capital, it measures a potential capital shortfall if the creditworthiness of a country deteriorates. A bank with a larger non-domestic sovereign subsidy may thus require a larger public backstop by its respective government<sup>6</sup>.

Therefore, as domestic banks' non-domestic sovereign exposure increases or becomes riskier, so does the contingent liability of the domestic sovereign. Consequently, a sovereign's risk is not only immediately linked to the risk of other EU sovereigns through the CDS market and other linkages, but also through the (implicit) bailout guarantees of the sovereign for its domestic banking sector. Zero risk weights thus create a channel through which sovereign risk can be transmitted among EU member states.

In our recent paper, we document that changes in a value-weighted non-domestic European Sovereign CDS Index indeed co-move with changes in sovereign CDS spreads. More importantly, this co-movement is amplified the larger the (nondomestic) sovereign subsidy of a country's domestic banking sector is, consistent with larger expected bailout costs in case of a sovereign default. These results hold controlling for other determinants of CDS spread changes, bond yield changes as alternative measure for sovereign risk as well as for credit ratings and CDS implied sovereign subsidy measures. They also hold when controlling for alternative channels of sovereign risk spillovers such as mutual bailout responsibilities and other linkages between member states. Exploring exposures to non-EU members as a falsification test, we find an insignificant effect of the sovereign subsidy on sovereign CDS spreads. Moreover, we find that the effect also becomes insignificant for non-domestic exposures to EU member states after the September 2011 capital exercise by the EBA when banks were required to build up a sovereign capital buffer.

### **10.5.** CLOSING THE SOVEREIGN GAP

Using recent EBA data, we document that domestic and non-domestic sovereign exposures are an important phenomenon for banks across Europe. Current regulatory capital requirements, however, leave banks severely under-capitalized given the riskiness of their sovereign bond portfolios which amplifies risk spill-

<sup>&</sup>lt;sup>6</sup> To the extent that there is a credible TBTF guarantee, the sovereign subsidy can be viewed as a put option on the sovereign's creditworthiness with a strike price at the face value of the exposure.

over within the Eurozone and increases the implicit bailout costs of the banking sector.

The implementation of Basel III through the CRD IV does not attempt to adequately address this problem. However, the additional capital requirement for sovereign debt holdings that has been introduced by the EBA' capital exercise in September 2011 could be a first step in this direction. Adequate risk weights for sovereign debt should be applied and be part of prudential capital regulation. As there is a large contingent capital shortage due to the zero risk weight, replacing it for a more risk-adequate treatment of sovereign exposures would most likely require an additional capitalization effort for banks and additional sovereign backstops.

## REFERENCES

- ACHARYA, V., ENGLE, R. and PIERRET, D., 2014, "Testing Macro-prudential Stress Tests: The Risk of Regulatory Risk Weights", *Journal of Monetary Economics*, forthcoming.
- ACHARYA, V. and STEFFEN, S., 2014, "The 'Greatest' Carry Trade Ever? Understanding Eurozone Bank Risks", *Journal of Financial Economics*, forthcoming.
- BATTISTINI, N., PAGANO, M. and SIMONELLI, S., 2013, Systemic risk, sovereign yields and bank exposures in the Euro crisis, unpublished working paper.
- HANNOUN, H., 2011, Sovereign Risk in Bank Regulation and Supervision: Where Do We Stand?, Conference contribution, Financial Stability Institute High-Level Meeting, Bank for International Settlements.
- KORTE, J. and STEFFEN, S., 2014, Zero Risk Contagion Banks' Sovereign Exposure and Sovereign Risk Spillovers, Working Paper.
- NOUY, D., 2012, "Is Sovereign Risk Properly Addressed by Financial Regulation?", *Financial Stability Review* (16), pp. 95-106.