



Financial sector linkages and the dynamics of bank and sovereign credit spreads[☆]



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ABSTRACT

We show that CDS premiums of sovereigns are significantly affected by the foreign exposures of their domestic banks. Our analysis uses a simple risk-weighted exposure measure which aggregates detailed data on the composition and risk of banks' foreign exposures. A 1 basis point change in our risk weighted exposure measure corresponds to an average change of approximately 0.4 bp in sovereign CDS spreads. Extensive robustness checks confirm that the explanatory power of our measure is not due to common factors in CDS premiums. We also measure the size and riskiness of the sovereign's implicit and explicit guarantees extended to its domestic banking system.

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1. Introduction

The European debt crisis has again demonstrated the importance of bank risk for the understanding of sovereign risk. But to what extent is the effect of the risk of the local banking system measurable in the dynamics of sovereign CDS spreads? In this paper, we use BIS consolidated banking statistics to construct a simple risk-weighted measure of foreign exposures of a banking system and apply it to data from 17 countries. Our measure shows how the size and riskiness of foreign asset holdings of the largest banks are an important determinant, not only of their own CDS premiums but also of the CDS premiums of the sovereign in which the banks reside. Extensive robustness checks confirm that the significance of our measure cannot be attributed to common variation in CDS spreads. We find that our exposure measure is significant in explaining sovereign CDS premiums even after including global CDS indices as explanatory variables.

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Our measure is useful not only because it is simple to compute, but also in that it provides an exogenous source of variation of bank credit risk, which is not affected by the risk of the sovereign in which the bank resides. In other words, while our measure is clearly capturing an important source of credit risk of the bank, it has the advantage that the resulting effect on the sovereign does not give rise to a direct feedback loop from the sovereign back to the bank. This is because we focus on the foreign exposures. The effect of foreign exposures of domestic banks is economically significant in that a one standard deviation change in our risk exposure measure changes sovereign CDS spreads on average by 24 bp, which amounts to a quarter of the average standard deviation for sovereign CDS in our sample. Longstaff et al. (2011) argue that the influence of the US equity and high yield markets on sovereign CDS premiums dominates that of the local stock market. Our results suggest that the risk from the local banking system should be included as a significant local factor. This local risk factor remains significant when we include a global sovereign CDS index, whereas the effect from the US market then disappears.

The risk of the banks as measured by our exposure measure is likely to affect sovereign CDS spreads through implicit or explicit guarantees of the banking system. To explore this, we combine information on the size of the banking system relative to GDP with the riskiness measured both through CDS premiums and bank EDFs. These measures of the size and risk of the guarantees greatly influence sovereign CDS premia, even after controlling for traditional local fiscal measures and global factors.

While our measure is shown to be important for sovereign CDS spreads, we focus also more directly on its impact on bank CDS spreads because of the clear policy implications. In its 2011/2012 so-called capital exercises, the European Banking Authority put a heavy emphasis on bank holdings of sovereign debt with a particular focus on exposures to the so-called GIIPS countries. These exercises were conducted in order to assess the need for additional bank capital buffers. It is worth noting, however, that foreign private exposures are actually a much larger source of foreign exposures of banks. For a large sample of European countries, the private exposures to GIIPS countries in late 2010 were between 4 and 10 times higher than the exposures to GIIPS sovereign debt.¹ Hence, an increased focus on the foreign private exposures in stress tests is clearly warranted.

2. Related literature

There is an extensive literature on the determinants of sovereign CDS spreads and we refer to Augustin (forthcoming) for a review of the rapidly growing literature. Our empirical specification includes local and global factors found in Longstaff et al. (2011). There, the authors show large commonality with the first principal component explaining 75% of variations in sovereign CDS spreads in the period 2007–2010. Most of the commonality in their study is driven by global factors, risk premiums and investment flows rather than local factors. In our sample, the assets of the banking system are on average three times the size of the country's GDP. It is therefore not surprising that in spite of solid macroeconomic fundamentals, the risk of the banking system significantly impacts sovereign CDS premia. Reinhart and Rogoff (2009) provide a thorough account of the role of bank risk in explaining sovereign crises in their comprehensive treatment of financial crises through eight centuries. Reinhart and Rogoff (2011) document the link between the banking crisis and sovereign default in different countries in a historical perspective.

There is also an extensive literature on how sovereign risk may affect the risk of banks. Gennaioli et al. (2014) provide theoretical underpinnings and evidence for the transmission of a sovereign debt crisis to the banking system and the real economy, through the banks' holdings of sovereign debt.

The fact that risk may flow in both directions between sovereigns and domestic banks gives rise to possible feedback loops and this issue is treated thoroughly in Acharya et al. (2015) and in Bolton and Jeanne (2011). Acharya et al. (2015) also carry out an empirical study and our study supplements this in several important aspects. We show that the private exposures of banks – both foreign and domestic – are fundamental to understanding sovereign risk, and not just the bank holdings of foreign and domestic sovereign bonds.² The bulk of banks' foreign exposures is to the private sector and not to sovereigns. This is important, in light of the fact alluded to above that for European countries in our sample, the private exposures to GIIPS countries are much higher in late 2010 than their exposures to sovereign debt. Our focus on the total exposure is also in contrast with Acharya and Steffen (2015), whose main focus is on holdings of sovereign debt. We also supplement the empirical evidence by measuring the riskiness of the exposure both through CDS premiums and EDFs. The large total foreign exposures of banks provide a part of the explanation for the finding of Ang and Longstaff (2013) that sovereign risk seems to flow through the financial markets rather than being directly rooted in macroeconomic fundamentals.

There are other studies focusing on how foreign bank exposures may cause risk to spread across banking systems. Tressel (2010) models the deleveraging of banks in countries whose banks have been exposed to losses in another country. In his calibration, Tressel (2010) also uses the consolidated banking statistics from BIS but he does not focus on the detailed time series of these statistics. Degryse et al. (2010) also use BIS consolidated banking statistics as a basis for simulating how shocks to one country's banking system may propagate through the international linkages and cause contagious defaults. Their focus is not on CDS spreads and their data end in 2006, whereas we cover the current financial crisis all through the end of 2010.

Whether contagion through networks of exposures survives as explanatory variables, once global common factors have been accounted for, is not widely agreed upon. For example, Eichengreen et al. (2012) use dynamic principal component analysis to identify common latent factors underlying the dynamics of CDS premiums for 45 banks in the USA and 8 European countries. In

¹ The underlying data are available by request.

² A recent version of Acharya et al. (2015) has included a measure similar to our BIS measure.

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