



Financial stability in Europe: Banking and sovereign risk[☆]

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ABSTRACT

We analyze the link between banking sector quality and sovereign risk in the whole European Union over 1999–2014. We employ four different indicators of sovereign risk (including market- and opinion-based assessments), a rich set of theoretically and empirically motivated banking sector characteristics, and a Bayesian inference in panel estimation as a methodology. We show that a higher proportion of non-performing loans is the single most influential sector-specific variable that is associated with increased sovereign risk. The sector's depth provides mixed results. The stability (capital adequacy ratio) and size (TBA) of the industry are linked to lower sovereign risk in general. Foreign bank penetration and competition (a more diversified structure of the industry) are linked to lower sovereign risk. Our results also support the wake-up call hypothesis in that markets re-appraised a number of banking sector-related issues in the pricing of sovereign risk after the onset of the sovereign crisis in Europe.

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1. Introduction and motivation

We analyze the link between banking sector quality and sovereign risk in the whole European Union (EU). Sovereign risk characterizes a threat that under severe economic circumstances, governments may be unable or unwilling to repay their debts. Sovereign risk became an important issue with the outbreak of the global financial crisis (GFC). The crisis helped to unveil macroeconomic and fiscal imbalances in the Eurozone that subsequently led to the heightened sovereign risk of many of its members (Beirne

and Fratzscher, 2013). The link between the quality of the banking sector and sovereign risk in Europe can be directly quantified: banks in the EU hold on average 9% of their total assets in a form of sovereign debt: government bonds (ECB Statistical Warehouse; Gennaioli et al., 2014).

The above facts are directly linked to an important channel for how banking sector quality potentially affects sovereign risk when governments are forced to step in: large and important banks are vital to countries and when they become seriously troubled, a cost-effective solution might be to bail them out because bankruptcy would exert costly and damaging effects on the economy (Gerlach et al., 2010). However, funds for a rescue package increase government indebtedness and consequently sovereign default risk increases (Campolongo et al., 2011; Reichlin, 2014; Acharya et al., 2014). Indeed, during the GFC and the ensuing European sovereign debt crisis many European governments heavily supported their banks and the banking sector has become increasingly interconnected with sovereign risk (European Commission, 2012; Correa

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et al., 2014; Cabrera et al., 2016).¹ The other channel linking the banking sector and sovereign risk is adjustments in banks' balance sheets and the consequent effect on aggregate liquidity (Adrian and Shin, 2009). The balance sheet dynamics affects the short-term funding available in the economy: the lack of credit, with some delay, affects a government's fiscal position and consequently sovereign risk increases (Correa et al., 2014).

Analyzing the link between banking sector quality and sovereign risk matters for a number of reasons. One is the further enlargement of the Eurozone and the integration of its financial markets. Shocks in one country might propagate in an unpleasant way across other EU members. In this respect, Breckenfelder and Schwaab (2017) show that a bank-risk surprise in one EU country can affect the credit risk of other EU sovereigns. In addition, the quality of the banking sector is important for the effectiveness of the macroprudential policies (Beirne and Friedrich, 2014). Further, following the global financial crisis, the traditional understanding of sovereign risk—the probability that a country will not pay its debts—have probably become too constricted as connections among public and private debt, fiscal balances, and the financial sector seem to be more complex. Understanding the link between the banking sector and sovereign risk is also important from an investment perspective. Stock market investors perceive sovereigns and domestic banks as markedly interconnected, partly through government guarantees (Correa et al., 2014). Domestic banks are natural creditors of domestic firms but often they become recipients of foreign funding as well. Further, when domestic sovereign risk becomes pronounced foreign creditors willing to extend loans to domestic firms have to proceed in two steps: first, they judge the sovereign risk and then they consider the creditworthiness of the firm itself (Cooper and Argyris, 1998).

The literature linking various parameters of the banking sector directly to sovereign risk is not extensive.² Gerlach et al. (2010; p.1) “seek to understand what factors have been driving (the sovereign bond yield) spreads” in the euro area. They show that the size of the banking sector relative to GDP, when interacted with the risk factor, tends to negatively affect sovereign risk. Specifically, at a time when aggregate risk is high, countries with large banking sectors with low equity ratios exhibit larger spreads of sovereign bond yields. This result is intuitively appealing because high aggregate risk increases the probability of bank default, which translates into a risk for public budgets that is subsequently reflected in increased sovereign risk. Gerlach et al. (2010)'s analysis covers most of the Eurozone countries (as of 2010) but leaves out Luxembourg, Cyprus, Malta, Slovakia, and Slovenia. Gómez-Puig et al. (2015) aim to identify and trace inter-linkages between sovereign risk and banking risk in ten euro area countries.³ They use an indicator of banking risk based on the Contingent Claim Analysis literature and 10-year government yield spreads over the German Bund to proxy sovereign risk. Based on a dynamic Granger causality approach they show that causal links tend to increase during financial crises and that contagion runs predominantly from banks to sovereigns.

¹ The volume of state aid provided to the EU banking sector between October 2008 and January 2012 is estimated by the European Commission (2012) at approximately 1.6 trillion euro (about 13% of the EU GDP). Buch et al. (2016) provide evidence of the determinants of the volume of bank sovereign debt exposure and the impact of sovereign bond exposure on at-risk banks in Germany.

² There also exist studies showing that sovereign risk is affected or determined by factors not related to banking. These include macroeconomic fundamentals (Frenkel et al., 2004; Remolona et al. (2008a), terms of trade (Hilscher and Nosbusch, 2010), constitutional rule (Kohlscheen, 2010), financial market returns (Ang and Longstaff, 2013), and the sovereign's public finances (Corsetti et al., 2013).

³ They include Austria, Belgium, Finland, France, and the Netherlands as the center and Greece, Ireland, Italy, Portugal, and Spain as the periphery.

Further, Erdem Aktug et al. (2013) assess the link between the banking sector and sovereign risk based on their hypothesis that more competitive and sophisticated financial systems are less prone to panics or bank runs, and consequently will be associated with superior sovereign credit ratings. They show that banking sector characteristics such as concentration in the banking system, the liquidity of bank assets, and the size of the financial system are significantly related to sovereign credit ratings. Kallestrup et al. (2016) use consolidated banking statistics of the Bank for International Settlements (BIS) and construct a simple risk-weighted measure of the foreign exposure of the banking system in 15 European countries (plus Japan and the U.S.). They show that the foreign asset holdings of the largest banks, as well as their riskiness, are important determinants of the CDS premia of the sovereigns in which the banks reside. Pagano and Sedunov (2016) provide evidence that the systemic risk of financial institutions in European countries and sovereign risk are interrelated, and that shocks to these links are stronger and longer lasting than international risk spillovers.

Another strand of the literature related to our analysis connects sovereign risk with bank bailouts. Acharya et al. (2014) analyze the link between bank bailouts and sovereign credit risk based on the two-way feedback between financial and sovereign credit risk. They use data on the credit default swaps (CDS) of the Eurozone countries and their banks over 2007–2011. They show that the announcement of bailouts is associated with the widening of sovereign CDS spreads while bank CDS spreads narrow. An increase in sovereign credit risk upon bailout then depends on the pre-bailout debt of the sovereign and the pre-bailout level of financial sector distress. Based on the CDS rates, the effect of bank bailouts on sovereign risk is also analyzed, for example, in Attinasi et al. (2011), Sgherri and Zoli (2011), Ejsing and Lemke (2011), and Alter and Schueler (2012), who provide similar descriptive evidence as Acharya et al. (2014). In a related empirical work, Banerjee et al. (2016) analyze the effectiveness of large scale bailouts during the European sovereign debt crisis and show that before the first Greek bailout, the sovereign and financial sectors exhibit a two-way feedback effect, but the pattern disappears during all later bailouts. In this respect, Fratzscher and Rieth (2015) show that recent bank bailout policies in the EU have reduced solvency risk in the banking sector, but partly at the expense of raising the sovereign risk.⁴

A related change of the pattern in sovereign and bank interdependencies is shown in Yu (2017), who analyses the dynamic linkage between European sovereign and bank CDS spreads from 2006 to 2012. She shows that risk initially transferred from banks to sovereigns soon led to a reverse spillover due to deteriorating fiscal conditions. De Bruyckere et al. (2013) analyze contagion between bank and sovereign default risk in Europe over the period 2007–2012 based on excess correlation between CDS spreads at the bank and sovereign levels. They show that banks with a weak capital buffer, a weak funding structure, and less traditional banking activities are particularly vulnerable to risk spillovers that might increase sovereign risk. Finally, Klinger and Teplý (2016) assess the link between financial system and sovereign debt crises by analyzing sovereign support to banks and banks' resulting exposure to the bonds issued by weak sovereigns that is reflected in the higher CDS spreads of these sovereigns.

Despite the fact that the literature linking the state of the banking industry with sovereign risk is not extensive, it provides, along with related literature, a clear message: economic health and sound finances are prerequisites for low sovereign risk. In this sense, the

⁴ The quantification of the potential losses to the government that could arise from bank failures (in absence of bailouts) based on the banking sector contingent liability index (BCLI) is developed in Arslanalp and Liao (2015) and illustrated on a sample of 32 advanced and emerging market economies from 2006 to 2013.

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