



Empirical analysis of the international public covered bond market

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ABSTRACT

Public covered bonds are one of the most important refinancing instruments for banks providing loans to public sector entities and have often been considered almost default-risk-free in the past. Due to the financial crisis following the collapse of Lehman Brothers and in particular due to the sovereign debt crisis, however, this notion has changed in several countries. Against this background, we provide the first study investigating factors influencing risk premiums in the international public covered bond market on a bond-individual level. We show that bond-specific and macroeconomic factors, as well as the recent economic crises and monetary policy measures by the ECB, affect risk premiums. While the two crises had an increasing effect, the first covered bond purchase program lowered risk premiums of public covered bonds. Since the cover pools consist of loans to (mostly domestic) public sector entities, we further show significant differences in the influencing factors between bonds issued in different countries.

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1. Introduction

While central governments regularly issue bonds to obtain money from the capital market, a large share of local and regional governments (LRGs) in European countries has to rely on bank loans as the primary source of funding since their funding needs are generally too small for obtaining money from the capital market by direct bond issuance. For banks providing such loans to LRGs, one of the most, if not the most important refinancing tool is public covered bonds (Berninger, 2016). Thus, public covered bonds play a key role in refinancing LRG funding needs, and according to Grossmann et al. (2014), they contribute to lower LRG funding costs. Since these funding costs depend on the refinancing costs of the banks providing the loans, among others, it is important to know the factors influencing these banks' refinancing costs. Against this background, we investigate what factors influence risk premiums of public covered bonds in several different countries and denominated in several different currencies.

Public covered bonds have often been regarded as almost default-risk-free in the past because investors considered them as substitutes for government bonds. One reason for this is that creditors of LRGs often expect LRGs to be bailed out by the central government in times of financial distress (Jenkner and Lu, 2014). However, due to distortions in the financial markets affecting the international banking world (e.g., the financial crisis following the collapse of Lehman Brothers) and in particular due to the awareness that the quality of government debt might differ between different countries and might (in some countries) contain substantial default risk, as seen during the recent sovereign debt crisis, the notion of public covered bonds being entirely risk-free has partially changed. Therefore, for issuing banks, it becomes increasingly important to know the factors influencing risk premiums of public covered bonds in order to control their refinancing costs. Since the cover pools consist of loans to (mostly domestic) public sector entities, it is highly likely that there exist differences in factors influencing risk premiums between public covered bonds issued in different countries, and for LRGs, it is crucial to know these influencing factors since they directly affect their funding costs.

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We are the first to thoroughly investigate factors influencing risk premiums in the international public covered bond market. We show that in addition to being affected by bond-specific factors, risk premiums of public covered bonds are also affected by several country-specific macroeconomic factors. In doing so, we explicitly show significant international differences between covered bond markets, and we show increasing effects of the recent financial crisis and the sovereign debt crisis on risk premiums of public covered bonds. Furthermore, we investigate the effects of two covered bond purchase programs enacted by the European Central Bank (ECB). We show that while the first program led to lower risk premiums, a similar effect cannot be verified for the second program.

In addition to public covered bonds, there also exist covered bonds backed by either residential or commercial property mortgages (mortgage covered bonds).¹ Previous studies investigating risk premiums of covered bonds often investigate both covered bond types together. Several of these studies focus on the German Pfandbrief market. Some studies consider yield spreads between covered bonds and German sovereign bonds (*BUNDS*) to exist largely due to liquidity differences (Kempf et al., 2012; Koziol and Sauerbier, 2007). Other studies investigate whether factors other than illiquidity have an effect on risk premiums (Breger and Stovel, 2004; Herbert and Birkmeyer, 2002; Herges, 2000; Rees, 2001). Prokopczuk et al. (2013) investigate the German Pfandbrief market and show that the quality of the cover pool significantly affects risk premiums of covered bonds and that there exist significant differences between mortgage and public covered bonds in Germany. Moreover, there exist studies of the international covered bond market (Volk and Hillenbrand, 2006; Packer et al., 2007; Bujalance and Ferreira, 2010; Prokopczuk and Vonhoff, 2012). However, all these studies either investigate only country averages or only mortgage covered bonds or they leave out macroeconomic variables.

In summary, there exists no study investigating public covered bonds separately from mortgage covered bonds, but due to the different types of collateral, it is likely that there exist different factors influencing risk premiums for these two covered bond types in the international market. Risk premiums in the international covered bond market have thus far often been investigated only based on country averages, leaving out covered bond-specific influences. However, as mentioned above, particularly during the recent sovereign debt crisis, default risk of public debt and thus, the quality of public covered bonds' cover pools varied significantly between different countries, leading to differences between public covered bonds issued in different countries. Therefore, the literature lacks a comprehensive study of bond-individual risk premiums of public covered bonds issued in different countries that considers possible covered bond-specific and macroeconomic influencing factors and investigates the effects of recent economic crises and monetary policy measures by the ECB.

Our analyses make the following contributions to the literature. We provide the first study investigating factors influencing risk premiums in the international public covered bond market on a bond-individual level. By using a broad dataset with more than 70,000 observations between 2006 and 2012 of 560 public covered bonds issued in ten different countries and eight different currencies, we provide a detailed overview of factors influencing risk premiums in the international secondary public covered bond market. In doing so, we show the influences of covered bond-specific factors, macroeconomic variables, and exogenous events such as the ECB's purchase programs on risk premiums.² To the best of our knowledge, we are the first to investigate the long-term effects of the recent sovereign debt crisis and the covered bond purchase programs by the ECB on risk premiums in the international covered bond market at a bond-individual level.³ In our empirical analysis, we show substantial differences regarding the influencing factors for public covered bonds issued in different countries or different currencies. Particularly for the German Pfandbrief market, we find differences in influencing factors compared to public covered bonds issued in other countries that can be linked to German sovereign debt having been seen as *safe-haven investments*. Furthermore, we are the first to use the threshold regression method for panel data developed by Hansen (1999) to determine the borders between the pre-crisis period, the financial crisis, and the sovereign debt crisis. Other studies determine these borders solely based on specific incidents. However, as there are several economically justifiable borders, the appropriate points in time are difficult to define that way. Using threshold regressions solves this problem and leads to statistically substantiated borders. Naturally, we check the obtained borders for economic reasonability to exclude statistical artifacts. Finally, we are the first to use fixed and random effects estimations to analyze covered bond risk premiums, leading to unbiased estimates of the effects of the explanatory variables.

The organization of the rest of the paper is as follows. In the next section, we present fundamentals about the international public covered bond market and derive several research questions we want to investigate in our empirical analyses. In the third section, we describe our dataset. We present the results of our analyses in the fourth section before we provide a short conclusion with a summary of the results in Section 5.

¹ Mortgage loans secured by ships or planes are also possible types of collateral (Grossmann et al., 2014), but their market share is negligible (ECBC, 2013, 2014, Ch. 5).

² We use the asset swap spread as a proxy for the risk premium. Because the asset swap spread measures the credit risk of a bond over LIBOR or an equivalent interbank interest rate, it might be argued that it does not describe the true risk premium of a bond. Nevertheless, there are good reasons to use this proxy as a measure for the risk premium. First, it is generally difficult to find risk-free rates of interest because even government bonds are not entirely risk-free. Second, the asset swap spread is frequently used in the empirical literature, leading to good comparability with our results. Third, data availability is very much better than for other measures of risk; thus, we use it as the dependent variable in our regression analyses.

³ The effect of the sovereign debt crisis on individual bond risk premiums has heretofore only been investigated for the German Pfandbrief market (Prokopczuk et al., 2013). For a few other countries, the effect has only been investigated on an index level together with the effect of the first covered bond purchase program by the ECB, leaving out bond-specific factors and in particular, not differentiating between covered bonds with different types of collateral (Beirne et al., 2011).

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