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Does sovereign risk matter? New evidence from eurozone corporate bond ratings and zero-volatility spreads

Christian Klein, Christoph Stellner*

University of Kassel, Henschelstr. 4, 34109 Kassel, Germany

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ABSTRACT

In this paper, we empirically examine if sovereign risk matters for corporate bonds in developed economies. Using a unique panel data sample of 897 corporate bonds from eleven countries within the Economic and Monetary Union (EMU), we investigate sovereign and corporate ratings as well as zero-volatility spreads (z-spreads). In the time period from March 2006 to June 2012, we find sovereign risk to be a significant driver of corporate risk. The effect is stronger for companies with domestic revenue structure, for companies that are (partly) owned by the government, and companies active in the utility and transportation sector. Interestingly, the impact of sovereign risk on corporate risk during the acute European sovereign debt crisis period decreases if ratings are examined, but increases if z-spreads are utilized. Rating agencies seem to take a more differentiated view on individual company risk during the sovereign debt crisis, while institutional investors might want to reduce their exposure to a country in financial distress as a whole, regardless of whether sovereign or corporate bonds are held.

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1. Introduction

The analysis of sovereign risk—the risk that a country will default on its debt—and its impact on corporate risk has been subject to an increasing number of empirical examinations (e.g. Borensztein, Cowan, & Valenzuela, 2007; Cavallo & Valenzuela, 2010; Dailami, 2010; Dittmar & Yuan, 2008; Durbin & Ng, 2005; Grandes, Panigo, & Pasquini, 2007). These studies have mainly focused on emerging market economies, since the United States (US) and most developed countries in Western Europe have been perceived as bearing negligible sovereign risk in the past. This perception has significantly changed since the beginning of the sovereign debt crisis of the Economic and Monetary Union (EMU) in 2010, with deteriorating sovereign ratings and widened credit spreads for several countries within the EMU.

Studies that have focused on developing countries have highlighted the important role of sovereign risk when determining corporate risk. These studies focus on either sovereign ratings and their link to corporate ratings (e.g. Borensztein et al., 2007; Ferri & Liu, 2002) or the influence of sovereign bond primary (at issue) or secondary spreads on corporate bond spreads (e.g. Cavallo & Valenzuela, 2010; Dailami, 2010; Dittmar & Yuan, 2008; Grandes et al., 2007).

Our study contributes to existing research in several ways. This is the first study that uses z-spreads instead of conventional yield spreads for corporate and sovereign bonds. Therefore, we are able to account for the term structure of interest rates, which is critical for the reliability of results. The use of conventional yield spreads is one of the major drawbacks from previous studies and leads to the unrealistic implicit assumption of a flat yield curve.¹ Second, this is the only study to our knowledge that focuses exclusively on developed countries' bond markets when examining the influence of sovereign risk on corporate risk. There are several reasons why the EMU is the ideal—and probably only—framework within which to address our research questions. Since the corporate and sovereign bonds in our data sample are all denominated in Euro, we do not have to control for risks arising from different currencies for bonds from different countries, and thus can study the effect of sovereign risk on corporate risk more directly. In addition, there have been very divergent developments of sovereign risk in the EMU countries over the time period considered. This—in contrast to a sample focusing only on countries with negligible sovereign risk—is a prerequisite for conducting our study. Third, we draw our conclusions from both ratings and z-spreads, which allow for a more comprehensive view when examining how sovereign risk transfers to corporate risk.

* Corresponding author. Tel.: +49 89 28857394; fax: +49 3212 6308830.
E-mail addresses: klein@uni-kassel.de (C. Klein), christoph.stellner@web.de (C. Stellner).

¹ Cavallo and Valenzuela (2010) use option-adjusted spreads (OAS) for corporate bonds but not for individual sovereign bonds as they utilize Emerging Market Bond Index (EMBI) spreads.

We also include a battery of control variables and explicitly control for liquidity. These enhancements in the empirical setup help to overcome the methodological drawbacks of previous studies, as outlined by [Grandes et al. \(2007\)](#). Although it is not the main objective of this paper, our study also adds to the growing literature focusing on the decomposition of the credit spread.

This paper investigates the following research questions: How important is sovereign risk in determining corporate bond ratings and corporate bond z-spreads in developed countries? How robust are these findings to the inclusion of bond-specific, firm-specific, country-specific and global control variables that have explained corporate bond ratings and credit spreads in previous studies? Has the importance of sovereign risk increased or decreased over time, especially with regard to the acute sovereign debt crisis that started in early 2010 with the first Greek bailout package? Are companies in different countries (e.g. in Southern European crisis states) affected differently by sovereign risk? What company-specific characteristics influence the effect of sovereign risk on corporate risk?

Theoretically, there are several linkages between sovereign and corporate risk, and several channels via which sovereign risk can spill over to the private sector (see e.g. [Ciocchini, 2002](#); [Durbin & Ng, 2005](#); [Borensztein et al., 2007](#); [Dailami, 2010](#)). First of all, the government and a company within the same country depend on the same underlying macroeconomic risk factors, and are therefore jointly subject to the direction and intensity of the economic development in that country (see e.g. [Ciocchini, 2002](#); [Durbin & Ng, 2005](#)). There might be a contagion effect if investors' reduced risk appetite for securities issued by distressed sovereigns also translates to corporates and dries up liquidity in both sectors (see [Dailami, 2010](#)). Insurance companies or banks could be forced to liquidate holdings in sovereign and corporate bonds if the sovereign rating falls below a certain internal or regulatory-determined threshold rating (see [Ağca & Celasun, 2012](#); [Office of the Comptroller of the Currency, 2008](#)). Transfer risk describes how actions taken by a distressed sovereign may directly affect corporates and their ability to fulfill their debt obligations, thereby transferring (part) of the sovereign solvency problems to the private sector (see [Durbin & Ng, 2005](#); [IMF, 1991](#)). Sovereigns might introduce foreign exchange controls (which impacts debt service on foreign-currency-denominated debt) or the socialization of private assets (see [Ciocchini, 2002](#); [Durbin & Ng, 2005](#)). In addition, they might be forced to significantly reduce their demand for products and services provided by corporates, increase taxes or cut subsidies.

The implications of transfer risk translate to major rating agencies' guidelines, which impose the concept of a sovereign ceiling. The strictest definition of sovereign ceiling states that a company may never have a higher rating than the sovereign. In its original interpretation the sovereign ceiling relates to foreign-currency-denominated debt issues, and transfer risk to the risk of foreign exchange controls imposed by the government in the case of sovereign default (see [Grandes & Peter, 2005](#)). As it is not the main purpose of this study to test for a sovereign ceiling we use the more general definition of transfer risk outlined in the previous section. The principle of the sovereign ceiling was followed strictly until 1997, when exceptions were made for several Latin American countries. Companies in these countries tapped dollarized capital markets, and foreign exchange controls—considered the main theoretical foundation of the sovereign ceiling according to [Borensztein et al. \(2007\)](#)—became less likely. A Standard and Poor's publication on the sovereign ceiling for the EMU, as of June 14, 2011, is of special interest for our study. It states that companies in the EMU are less exposed to sovereign risk compared to companies in other regions, mainly due to “increasing integration... [and] lesser foreign exchange risk than outside the EMU.” The maximum rating differential between non-sovereign issuer and related sovereign is six notches (see [Standard & Poor's, 2011](#)).

Despite the (theoretically) lower exposure of EMU companies to sovereign risk compared to other regions, we find that sovereign ratings have significant influence on corporate ratings. Results are robust to the inclusion of a battery of control variables which are affecting corporate

bond ratings and which are grouped into company-specific, country-specific (macroeconomic) and global factors. The impact of sovereign ratings is higher for corporate bonds issued by companies subject to government influence and with a domestic revenue share of more than 50%. We also investigate a sub-period that starts with the beginning of the critical phase of the EMU sovereign debt crisis in early 2010. The influence of government ratings on corporate ratings is lower in this period than in the critical phase of the financial (subprime) crisis after the collapse of Lehman Brothers in September 2008. The share of corporate ratings that are higher than corresponding sovereign ratings is also the highest in the sovereign debt crisis phase starting in early 2010. Interestingly, we find no significantly higher influence of sovereign ratings on corporate ratings for Southern European crisis countries (Greece, Italy, Portugal and Spain).

Due to the strong correlation between corporate bond ratings and corporate bond spreads (see also [Borensztein et al., 2007](#)), we also expect sovereign bond spreads to contribute to explaining corporate bond spreads. For every corporate bond in our sample, we carefully select the corresponding sovereign bond with the closest maturity and collect daily z-spreads from Bloomberg.² Indeed, we find sovereign bond z-spreads to have a statistically highly significant influence on corporate bond z-spreads. Again, the influence is more pronounced for companies subject to government influence and with a domestic revenue share of more than 50%. Interestingly, and in contrast to our analysis of corporate bond ratings, the influence is higher during the sovereign debt crisis critical phase starting in early 2010. It seems that investors also consider corporate bonds issued by companies with corresponding sovereigns in distress to be disproportionately risky. They withdraw money from both (sub-)asset classes, while rating agencies seem to undertake a more sophisticated evaluation of corporate risk. In line with these findings, we also find that sovereign z-spreads have a higher influence on corporate z-spreads for Southern European crisis countries. Our results also clearly indicate that the effect of sovereign risk has to be considered in any study that models corporate bond credit spreads.

The remainder of the paper is organized as follows. In the next section, we review the relevant literature, separated into several streams that affect different parts of our research question. In [Section 3](#), we describe our dataset, the setup of empirical tests and empirical findings. Our paper ends with a conclusion and summary in [Section 4](#).

2. Related literature

There are several papers that examine the influence of sovereign risk on corporate risk either theoretically or by investigating ratings, spreads or combinations of both. Empirical studies mainly focus on emerging markets, since the US and most countries in Western Europe have not been subject to significant sovereign risk until recently.

[Ciocchini \(2002\)](#) jointly models the interest rate on public and private debt. He shows that fundamental factors affecting interest rates on sovereign debt also affect interest rates on private debt, either directly or indirectly, via interest rates on sovereign debt. With regard to specific country-level risk indicators, [Ciocchini, Durbin, and Ng \(2003\)](#) find in a related study that the degree of corruption increases yield spreads of emerging market bonds. [Mu, Phelps, and Stotsky \(2013\)](#) investigate what (county-level) factors drive sub-Saharan government and corporate bond market capitalization. Among others, they find the size and development of the economy, financial markets and quality of institutions to be country characteristics that favor corporate bond markets. While focusing on the effect of capital market governance on the cost of capital, market liquidity and efficiency from an equity market perspective, [Daouk, Lee, and Ng \(2006\)](#) show the importance of this indicator of country development/risk-level on financing conditions. [Das,](#)

² Quarterly averages of z-spreads are used for analyses and panel regressions in this paper.

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