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# The determinants of sovereign credit spread changes in the Euro-zone☆

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ABSTRACT

Using a database of Euro-denominated government bonds covering the period from January 2000 to December 2010, this paper provides an empirical analysis of the determinants of government credit spreads in the Euro-area. The analysis is divided into two sub-periods delimited by the global financial crisis that started in August 2007. We find evidence of a clear shift in the behavior of market participants from a convergence-trade expectation, based on market related factors, before August 2007, to one mainly driven by macroeconomic country-specific variables and an international common risk factor. There is no evidence of a significant role for the liquidity risk before or during the financial crisis period. Overall, our results give support to the Merton-type structural credit risk models and confirm that there are considerable similarities between the factors explaining the dynamics of the credit risk spreads and the factors driving the prices on the government bond markets.



## 1. Introduction

Before the introduction of the Euro, the Euro-zone capital markets, specially the sovereign bond markets, were very heterogeneous. Bond issues were made primarily in domestic currency and there were substantial differences in liquidity and technical, legal, regulatory and supervisory practices

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within the pre-EMU sovereign debt markets. Sovereign issues with quite similar characteristics commonly exhibited high yield spreads.

The introduction of the Euro had different consequences on the yield curves of Euro-zone countries. New euro-denominated debt was issued and, at the same time, all outstanding debt was redenominated in the new currency, leading to the disappearance of currency risk premiums of inflation or devaluation. Markets widely expected that the sovereign risk premiums would narrow, especially those for the long-term interest rates. Since the start of third stage of the EMU and until the beginning of the recent financial crisis, investors believed that without any country-specific risk and with a high standardization of a large Euro-denominated bond market, the different government debt issues of the same maturity would become perfect substitutes. Hence, the liquidity risk would tend to be eliminated and the sovereign credit risk should narrow even further. Effectively, at the short end of the curve, yields converged due to suppression of money market competition and the long term government bond spreads for the Euro-zone countries relative to the German zero bond curve converged and stabilized at very low levels.

Despite the strong convergence of the long term yields on public debt observed in the period of transition for the EMU regime, mainly arising from the convergence of the non-core EMU participants, yield differentials have not disappeared completely. After September 2008, with the intensification of the financial crisis and the deterioration of the Euro-area macroeconomic fundamentals, in particular for the peripheral countries, sovereign bond spreads started to wide significantly. Due to the fact that the US economy has the largest and most mature bond market in the world, the great majority of empirical studies on the determinants of credit spreads are concentrated on the US bond market. However, since the inception of EMU, in January 1999, a large range of empirical literature concerning the determinants of Euro-zone government bond yield spreads has been developed, and increased substantially following the onset of the global financial turmoil in August 2007, and particularly after September 2008.

Credit risk is expected to explain a considerable portion of EMU sovereign credit spreads, even though its role changed over time and especially since the beginning of EMU. Lemmen and Goodhart (1999) work with differentials between redemption yields and swap rates to identify factors that explain the default risk between EU countries. They find a strong significant correlation between credit spreads and the ratio of debt-to-GDP, inflation, government expenditures, and level of taxation. Using a credit risk model, which measures the sovereign credit spreads on 10-year zero-coupon yields estimated on a panel dataset of seven EMU countries, Van Landschoot (2004b) investigates the relationship between sovereign credit spreads and the composition of the government budget. The main finding is that governments with a broader tax base, higher investments, and less spending on consumption, social security and subsidies have significantly lower credit spreads.

Collin-Dufresne et al. (2001) investigate which factors determine the changes of credit spreads on industrial US corporate bonds. They find that the determinants within structural bond pricing models can explain only a small portion of credit spread changes and, therefore, conclude that the credit spreads are mostly determined by a single common factor, that is not covered by the bond pricing model. In their own words, this dominant component is driven by local/demand shocks that are independent of credit and liquidity risks.

Boss and Scheicher (2002) study the determinants of the pricing process in corporate bond markets, focusing the analysis on the Euro-area and, for comparative purposes, in the US. They define credit spreads as the difference between yields of corporate bonds (from industrial and financial issues) and government bonds. Although they identify the presence of a sizeable unobserved explanatory component, they conclude that factors based on yields of German government bonds play an important role in explaining the movements of Euro credit spreads. In addition, they find that stock returns, the volatility of stock returns and liquidity drive a significant influence in credit spread changes.

Huang and Kong (2003) examine the determinants of corporate bond credit spreads using option-adjusted spreads for nine Merrill Lynch corporate bond indexes, and confirm that credit spread changes for high yield bonds are more closely related to equity market factors than to macroeconomic factors.

Codogno et al. (2003) highlight the role of the international risk in determining spreads against Germany, and conclude that the risk of default is small but an important component of yield differentials because it imposes the market discipline in countries' fiscal policies. Bernoth et al. (2004) study