



## Impact of international and local conditions on sovereign bond spreads: International evidence

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### Abstract

This paper examines the effect of international and domestic factors on the sovereign bond spreads for 22 developed countries in North America, Europe and Pacific Rim regions. First, for all the regions the impact of global factors on the sovereign bond spreads is more intense than regional factors. Second, the findings confirm that for the bond spreads of each region over its domestic government bonds, the countries' local fundamentals are better determinants of the spreads compared to the spread over US government bonds as a safe haven. Third, the influence of worldwide factors in the Eurozone compared to other regions bond spreads is less. Fourth, the relationship of the market sentiment and the investor risk aversion with the sovereign bond spreads of all regions is positive. Equity market volatility plays significant role in yield spreads in international bond markets.

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### 1. Introduction and motivation

Fixed income securities play a critical role in constructing a well-diversified portfolio. They provide capital stability, income, liquidity and diversification to other risky assets such as equities and properties. On the other hand, including bonds of different countries to the portfolio that has the appropriate hedging of currency risk could create more benefits. Levy and Lerman (1988) found that at every size of mean return up to 11 percent the global diversified portfolio of bonds has a lower risk magnitude than the matching stock portfolios. This advantage comes from imperfect correlations across the bond issuers to investors since different countries may have

dissimilar interest rate fluctuations, inflation and economic cycles (See (Grubel, 1968)). However in developing markets the bond yields may be also associated with changing or unstable political regimes and may show more volatility and uncertainty. Eichler (2014) analyzes the bond markets in 27 emerging countries and discovers that the governments with lower quality have higher bond yield spreads. Government bond yield spread also has been used as a sovereign risk indicator in the literature (See Eichler, 2014; Bruha and Koncenda, 2017).

A number of papers deal with bond spreads of different parts of the world and the factors that are able to influence them. The majority of the studies investigate emerging markets (See Kamin and Kleist, 1999; Rowland and Torres, 2004). Some studies concentrate on European countries (See Dewachter, Iania, Lyrio & Perea, 2015; Tamakoshi & Hamori, 2014; Costantini, Fragetta, & Melina, 2014; António and Nunes, 2015) and others analyze developed countries (See Arslanalp & Poghosyan, 2014; Poghosyan, 2014).

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However, the findings of different studies indicate different factors as the main determinants of sovereign yield spreads. This might be as the result of using different samples (countries and time periods), considering dissimilar variables and applying various econometric models. We participate in the literature by employing a panel data on 24 developed countries in North America, Europe and Pacific Rim to study the sovereign yield spreads. In this study we intend to find out answers to a few questions. First, which elements determine the sovereign yield spread of bonds on the secondary bond markets for the different countries and regions? The answer to this question will help find which factors can determine each country's capital costs or cost of borrowing. Second, do the results change if we compute the sovereign yield spreads of the sample countries over their local government bonds instead of the U.S. treasuries? The answer to this question can help future studies in calculating the accurate yield spreads. Third, which countries and regions are highly exposed to international variables, especially US financial factors? Finally, do sovereign yield spreads in Eurozone countries behave differently compared to those of other regions? The answer to this question is an important issue about the further development of the Euro and the Eurozone. We define a number of hypotheses to answer the mentioned questions and analyze the factors that found to be significant in the literature.

The paper is organized as follows. Following the brief introduction in section 1, section 2 reviews the extant literature. In section 3, we analyze the hypotheses, variables and methodology. Section 4 indicates our findings and empirical discussions. We present our conclusion in section 5.

## 2. Literature review

Dungey, Martin, and Pagan (2000) study the long-bond spreads between the USA and five countries - Australia, Japan, Germany, Canada and the UK. They address advanced economies in these countries during 1991–1999. Dufrense, Goldstein and Martin (2001) study the factors that determine the corporate bonds credit spreads from July 1988 to December 1992. The relationship between credit spreads and squared levels of the term structure, firm leverage and changes in business are meaningful and negative. The results indicate that there is a negative influence of the variations in VIX index and changes in the slope of implied volatilities of options on S&P500 futures. Finally they conclude that the impact of aggregate factors on credit spreads is more crucial than firm-specific factors.

Baek, Bandopadhyaya, and Du (2005) examine the factors that determine the Brady bond stripped yield spreads of Argentina, Brazil, Mexico, Philippines and Venezuela during 1992–1997. They define a measure of the market's attitude toward risk appetite index (RAI) using quarterly data; they find negative and significant coefficients for real GDP growth, international reserves to import ratio and changes in the real exchange rate. An increase in the (RAI) decreases the yield spreads in their sample data. The results also illustrate that the relationship between the inflation rate and one-lagged

dependent variable with the bond spreads is positive. In conclusion, the findings suggest that liquidity, solvency and economic stability variables are important determinants of the market premium of country risk.

Weigel and Gemmill (2006) analyze the influence of the variations in worldwide, regional and local factors on Distance-to-default index for Argentina, Brazil, Mexico, Philippines and Venezuela during the period 1994–2001. Applying a structural model, they find significant and positive coefficients for the global interest rate, US stock returns, regional stock market returns, country stock returns and international reserves with credit spreads. The relation of credit spreads with regional stock market volatility and regional investment sentiment are negative. In conclusion, they present that the impact of the international and regional factors on the Distance-to-default variable is more intense than the local factors.

Hilscher and Nosbusch (2010) analyze the influence of worldwide and country-specific factors on emerging market sovereign credit risks from 1994 to 2007. They calculate the EMBI<sup>1</sup> yield spreads over the US treasuries. They find a positive and meaningful relationship between bond spreads and VIX Index, country's term of trade and debt to GDP ratio. On the other hand, they find significant and negative coefficients for the default history and the ratio of reserves. The coefficients of US default yield spread, aggregate liquidity and US interest yield stay insignificant. In addition, they include the credit ratings and regional effect dummies to the model respectively, and these dummies increase the explanatory power of the model.

Jubinski and Lipton (2012) applying an AR (1)-GARCH (1, 1) model, investigate the effect of implied and contemporaneous stock market volatility on treasury yields, corporate bond yields and yields over treasuries. They use the daily changes of the variables from September 2002 to December 2008. The results indicate a significant and negative relationship between variations in VIX Index and the treasury and corporate bond yields and no significant relationship with the changes in the yield spreads over treasuries. They mention that by increasing the expected volatility in the equity market, investors will maintain more US treasuries and high quality corporate bonds. This fact will drive the bond price up and decline the yields.

Maltritz (2012) examines the factors that determine the sovereign bond spread of EMU members using a Bayesian Model Averaging (BMA) during the period 1999 to 2009. He computes the bond spreads over the 10-year maturity of German bonds. The highest inclusion probabilities belong to the budget balance to GDP ratio and term of trade growth each with 100% (negative sign), market sentiment with 99% (positive sign), and trade balance with 80% (positive sign) and openness with 73.1% (negative sign). He also finds positive signs for inclusion of total government debt to GDP ratio, average interest rate, GDP growth, inflation variation, capital

<sup>1</sup> JPMorgan Emerging Market Bonds Index.

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