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Journal of International Money and Finance

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Credit-risk valuation in the sovereign CDS and bonds markets: Evidence from the euro area crisis

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A B S T R A C T

JEL codes:

G10
G14
G15

Keywords:

Sovereign credit default swaps
Sovereign bonds
Credit spreads
Price discovery

We analyse the extent to which prices in the sovereign credit default swap (CDS) and bond markets reflect the same information on credit risk in the context of the current crisis of the European Monetary Union (EMU). We first document that deviations between CDS and bond spreads are related to counterparty risk, common volatility in EMU equity markets, market illiquidity, funding costs, flight-to-quality, and the volume of debt purchases by the European Central Bank (ECB) in the secondary market. Based on this we conduct a state-dependent price-discovery analysis that reveals that the levels of the counterparty risk and the common volatility in EMU equity markets, and the banks' agreements to accept losses on their holdings of Greek bonds impair the ability of the CDS market to lead the price discovery process. On the other hand, the funding costs, the flight-to-quality indicator and the volume of debt purchases by the ECB worsen the efficiency of the bond market.

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1. Introduction

In recent years many studies have analysed the relationship between credit default swaps (CDS) and bond spreads for corporate as well as for emerging sovereign reference entities.¹ However, the relation between sovereign CDS and bond markets in developed countries has not attracted much interest until very recently, mainly for two reasons. First, sovereign CDS and bond spreads in developed countries have been typically very low and stable given the perceived high credit quality of most issuers (see Table 1). Second, trading activity in this segment of the CDS market was typically low.

However, the global financial crisis that followed the collapse of Lehman Brothers in September 2008 triggered an unprecedented deterioration in public finances of the world's major advanced economies in a peacetime period. Since 2010, some countries in the euro area, including Greece, Ireland, Portugal, Spain and Italy, have faced some episodes of heightened turbulence in their sovereign debt markets. Against this context, the levels of perceived credit risk and the volume of trading activity in the sovereign CDS markets in many advanced economies have increased.

The existing literature on credit risk has paid some attention to investigating the relationship between the corporate bond market and the corporate CDS markets, but only a few papers have studied whether the empirical regularities identified in the corporate markets, including those related to price discovery, are also found in the case of sovereign reference entities. The aim of this paper is to shed light on these latter issues within the context of the recent episodes of sovereign-debt crises in several countries in the European Monetary Union (EMU).

Specifically, we analyse the theoretical equivalence relation between the sovereign bond yield spread (with respect to a risk-free benchmark) and the corresponding CDS spread.² Abstracting from market frictions and other contractual clauses, both spreads should reflect the same information on the credit risk of a given reference entity and therefore should be equal. In other words, the *basis*, defined as the difference between the CDS spread and the corresponding bond spread, should be zero. If the basis differs from zero, the differences should be purely random and unrelated to any systematic factor. Moreover, in such a frictionless scenario, both spreads should incorporate the credit-risk information in a similar way, i.e., both markets should be equally efficient in terms of the process of credit-risk price discovery.

The current European sovereign debt crisis poses a particularly interesting scenario to test for the previous hypotheses. In particular, we analyse the differences in the informational content of the EMU sovereign bond and CDS spreads. First, we study the possible causes of the deviations between the bonds and the CDS spreads. We find that the counterparty risk indicator has a negative and significant effect on the basis, especially after September 2008, when some of the most active protection sellers began to face financial difficulties. Funding costs have a negative effect on the basis due to their stronger effect on the demand for bonds relative to the demand for CDS, as the latter require less funding to take on the same risk position. A higher degree of liquidity in the bonds market relative to the CDS market has a positive effect on the basis given that *ceteris paribus* a more liquid bond implies a lower bond yield and spread. The effect of the common volatility in the EMU equity markets, proxied by the series corresponding to the first common component of the volatility of the EMU countries stock market indexes that is obtained from a principal component analysis (PCA), affects the basis positively and significantly. This suggests that the CDS market reacts more to changes in the EMU stock markets' volatility than bond market does. The demand of safer assets instead of risky assets (flight-to-quality), proxied by the product of the decreases in the correlations between the returns of risky and safe assets and the volatility for the European stock market, has a negative effect on the basis. This effect is due to the increase in the bond spreads that is motivated by the lower yields of the German bonds and the lower demand of riskier bonds. The volume of debt purchased by the European Central Bank (ECB) in the secondary market that has taken place since May 2010 increases the basis significantly. These purchases exert a negative effect on bond spreads. The fact that such an effect is not present (or is weaker) in the

¹ We discuss the related literature in Section 2.

² The results are obtained using the German bond as a proxy of the risk-free asset, as in, e.g., Geyer et al. (2004), Bernoth et al. (2006), Delis and Mylonidis (2010), Favero et al. (2010), Foley-Fisher (2010), and Palladini and Portes (2011), among others.

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