



## Credit default swaps and the market for sovereign debt



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### ABSTRACT

In this paper, we analyze the determinants and effects of credit default swap (CDS) trading initiation in the sovereign bond market. CDS trading initiation is associated with a 30–150 basis point reduction in sovereign bond yields, with greater yield reductions accruing to higher default risk economies. For countries with high default risk, rated B or lower by Standard and Poor's, CDS initiation is also associated with significant price efficiency benefits in the underlying market. CDS trading initiation is more likely following increases in local equity index volatility, index spreads for regional and global CDS markets, or depreciation of the local currency relative to the US dollar, and decreases in a country's ability to service foreign debt. Our results are robust to selection bias controls based on these factors.

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### 1. Introduction

Once lauded as one of the most significant and important financial innovations of the last decade, credit default swaps (CDS) have come under increasing criticism.<sup>1</sup> In May 2011, concerns over negative CDS effects in the sovereign bond market led German regulators to ban naked CDS positions in Eurozone sovereign bonds. On July 2, 2011, the European Union Parliament voted in favor of a similar ban on sovereign bond CDS positions. Given the surprisingly little academic analysis on the interaction between the sovereign bond and CDS markets, the potential repercussions of such regulatory measures are difficult to assess. Industry and academic experts have suggested that it is unlikely that CDS trading could have a significant impact on sovereign bond yields due to the relatively small proportion of notional value protected by CDS contracts.<sup>2</sup> Beyond these

observations, our understanding of the potential effects of CDS trading on the sovereign debt market is limited.<sup>3</sup>

In this paper, we utilize an event-study framework and analyze the impact of CDS trading initiation on sovereign bonds issued by 41 countries, from both developed and emerging markets. The generalized effects we analyze potentially differ from the specific effects of speculative CDS trading on troubled assets (that were the subject of the Eurozone bans). However, our analysis is a logical first step in advancing our understanding of the interaction between these two markets. Our contribution to the existing literature is to analyze the impact of CDS trading initiation on two key sovereign debt market characteristics not previously considered: price efficiency and borrowing costs. These characteristics speak broadly to the effect of CDS trading initiation on underlying market quality and the aggregate effect on the cost of debt for global governments. Specifically, we address the following questions: (1) What is the effect of CDS trading on the efficiency with which new information is impounded in sovereign bond prices?

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<sup>1</sup> See, for example, Acharya and Johnson (2007) and Stultz (2010) who discuss the criticisms and merits of CDS derivatives.

<sup>2</sup> See, for example, the expert testimony of Robert Pickel, Executive Vice Chairman, International Swaps and Derivatives Association Inc. before the U.S. House of Representatives, April 29, 2010. In that testimony, Pickel notes that sovereign default protection via CDS contracts totalled \$2 trillion USD, or 6% of the overall global sovereign bond market. See also Duffie (2010).

<sup>3</sup> Corporate CDS research is more prevalent. For example, Ashcraft and Santos (2009) find that, in aggregate, CDS initiation has little effect on the cost of debt for corporations, but note economically significant adverse effects for high risk and informationally-opaque firms. Longstaff et al. (2005), Norden and Weber (2004) and Blanco et al. (2005) all document that the CDS market leads the corporate bond market in price discovery. We contrast the corporate and sovereign debt markets and discuss this literature in greater detail below.

(2) How does CDS trading initiation impact the cost of debt for global governments? (3) To what degree do effects vary by country credit rating?

First, we find that CDS trading initiation is associated with improvements in sovereign bond price efficiency. Specifically, we draw on Westphalen (2001) and Collin-Dufresne et al. (2001), and model sovereign bond spreads as a function of local and global business climates, risk-free yield curve characteristics and the local currency–USD exchange rate. We then follow Hou and Moskowitz (2005) and calculate the delay in which new information is incorporated into bond prices by contrasting the  $R^2$  from variants of the pricing model that separately include and exclude five lags of each price factor. The higher the  $R^2$  of the model including lagged price factors relative to the base model, the greater the delay with which new information is incorporated into bond prices. This process allows us to evaluate CDS price efficiency effects separately for each price factor. Comparing the delay measure before and after CDS trading initiation, we find that average price efficiency in the underlying sovereign bond market improves in excess of a matched control in relation to both local and global market information proxies.

Second, our results show that average borrowing costs decrease by approximately 60 basis points (bps) contrasting the 6 month period before and after CDS trading initiation. To measure risk premium effects associated with CDS trading initiation, we relate bond spreads to a CDS trading initiation indicator variable and controls previously shown to be determinants of bond yields.

Finally, partitioning the sample by credit rating, our tests reflect that CDS trading initiation related improvements in price efficiency are most pronounced for, and perhaps even isolated to, countries with bonds in the high default risk partition, ranked B or lower by Standard and Poor's. Likewise, CDS related reductions in borrowing costs are most pronounced for high default risk bonds, with improvements increasing monotonically across the four considered credit risk partitions. On average, bonds in the AAA-AA partition realize a 30 bps reduction in borrowing costs, in contrast to bonds in the B-CCC partition, for which borrowing costs decline by approximately 150 bps.

A potential concern when interpreting the previously discussed results is an endogeneity bias arising from the non-random CDS trading initiation decision. If factors that influence CDS trading initiation likelihood jointly influence bond characteristics, features common to bonds at the time of CDS trading initiation could be spuriously attributed as initiation effects. To mitigate these concerns, we utilize a logit model to identify factors that are common to bonds at the time of CDS trading initiation. We find that increases in local equity market volatility, the depreciation of the local currency relative to the US dollar, the spreads of regional and global CDS indexes and decreases in a country's ability to service USD-denominated debt are the strongest predictors of sovereign CDS trading initiation. Our results are robust to inclusion of these factors as additional controls via the Heckman (1997) two-stage selection bias control process.

In sum, we find that the impacts of CDS trading initiation on sovereign bonds appear to be broadly positive but depend, at least in part, on country-level characteristics. In general, CDS trading initiation is associated with improvements in the quality of the sovereign debt market, enhancing price informativeness. Our results also suggest that borrowing cost reductions are more pervasive, but are similarly most pronounced for high default risk countries.

These results are broadly consistent with sovereign CDS trading initiation mitigating barriers to investor participation for high risk countries via expansion of the available risk-return space and creation of hedging opportunities. However, they contrast findings of similar studies focused on the corporate bond market, reflecting differential effects for markets dominated by unique investor sets. Das et al. (2014) find that corporate bond markets become less

efficient, experience greater pricing errors and realize lower liquidity following CDS trading initiation. Ashcraft and Santos (2009) examine the impact of CDS trading initiation on the cost of corporate debt and fail to find any evidence of a reduction in borrowing costs for the average borrower. However, they do document a significant, adverse effect for higher risk and informationally-opaque firms, which they relate to a reduction in the usefulness of the lead bank's retained share to resolve information asymmetry problems. Subrahmanyam et al. (2014) find that the credit risk of reference firms increases following CDS trading initiation, which they attribute to creditor's aversion to restructuring.

We focus our analysis on sovereign debt, which differs in several key aspects from the corporate, investment-grade debt commonly examined in the literature. First, sovereigns are among the largest borrowers in the world, with greater liquidity and larger debt issues than their corporate counterparts. Correspondingly, sovereign issuers have greater activity in the CDS market (Ammer and Cai, 2011). Thus, to the extent that CDS trading initiation effects may exist, they are likely more pronounced, or perhaps differ in the sovereign debt market due to less binding liquidity constraints. Second, countries in financial distress do not enter bankruptcy and assets are not liquidated. In the event of default, the debt contract is restructured, typically resulting in substantial haircuts for debt holders (Shleifer, 2003). Thus, the risk structure of sovereign debt is quite unique to the corporate context. Third, corporate debt is predominantly held by insurance companies (Massa and Zhang, 2012); in contrast, sovereign debt is held more broadly by a unique investor clientele including commercial and investment banks, central banks and sovereign governments (Acharya et al., 2014). Different investor sets with unique incentives are likely to respond differently to the availability of CDS markets. Finally, the credit ratings of the bonds in our sample range from AAA to CCC. This greater range in credit risk provides the opportunity for broader and unique cross-sectional analysis than was possible in prior analyses, which have typically focused on investment-grade debt.

Research focused on the impact of CDS trading on the sovereign bond market is relatively sparse, and it is mostly devoted to price discovery in the CDS and underlying sovereign debt markets (Ammer and Cai, 2011; Chan-Lau and Kim, 2004). Our contribution to this literature is to examine the associated effect of CDS trading initiation on price efficiency and borrowing costs, two characteristics of the sovereign debt market not previously considered. Our findings should be of interest to global financial market regulators contemplating the use of bans in the sovereign CDS market. Constraints on CDS trading have the potential to reverse the benefits we note and reduce the overall quality of the sovereign debt market.

The remainder of the paper is organized as follows. Section 2 reviews the related literature and presents our hypotheses in greater detail. In Section 3 we describe the data and report summary statistics. Section 4 examines the determinants of CDS trading initiation likelihood, which is a precursor to our primary analysis. In Sections 5 and 6 we report our results and in Section 7 we provide concluding comments.

## 2. Hypotheses and related literature

A considerable body of literature examines the informational role of the CDS market. For example, Hull et al. (2004) and Ismailescu and Kazemi (2010) report that credit rating announcements are anticipated by the CDS market. Longstaff et al. (2005), Norden and Weber (2004) and Blanco et al. (2005) show that the CDS market takes a lead role in debt market price discovery relative to investment-grade, corporate bonds. Furthermore, Acharya and Johnson (2007) find that information (exclusively bad news) flows from the CDS market to the stock market for entities that have high CDS premiums. Similarly, Norden and Wagner (2008)

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