Journal of Monetary Economics 90 (2017) 50–63

Contents lists available at ScienceDirect

Journal of Monetary Economics

journal homepage: www.elsevier.com/locate/jmoneco

Sovereign debt renegotiation and credit default swaps

Juliana Salomao[1]

Department of Finance, University of Minnesota, 321 - 19th Avenue South Minneapolis, MN 55455, USA

ARTICLE INFO

Article history:
Received 4 August 2015
Revised 22 June 2017
Accepted 24 June 2017
Available online 1 July 2017

JEL classification:
F34
F42

Keywords:
Credit default swaps
Sovereign default
Debt renegotiation
Naked ban
Negative basis

ABSTRACT

A credit default swap (CDS) contract provides insurance against default. This paper incorporates the contract into a sovereign default model and demonstrates that the existence of a CDS market results in lower default probability, higher debt levels, and lower financing costs for the country. Uncertainty over the insurance payout when the debt is renegotiated explains why in the data, as the output declines, the CDS spread becomes lower than the bond spread. Finally, my results show that the 2012 CDS naked ban, that decreased the levels of CDS for European countries, is a welfare reducing policy.

1. Introduction

A credit default swap (CDS) contract provides insurance against the borrower's failure to repay debt obligations. On October 18, 2011, the European Union reached an agreement to limit trading of Credit Default Swaps on EU member states. Written into law as EU Regulation 236, it came into effect on November 1, 2012. The regulation bans uncovered positions; those where investors do not have exposure to the underlying bond. The regulators were concerned that CDS contracts would contribute to a decline of sovereign bond prices and increase the probability of settlement failure. As shown in Fig. 1, the market has declined 30% between 2011 and 2013.

The CDS contract is designed in such a way that its payout is not automatically activated by the debt holders' losses during debt renegotiation if no debt payments are missed. The 2012 European debt crisis is the first sovereign crisis in which investors have been able to buy insurance against a country's decision to default, and has highlighted this feature of the contract.[2] In March 2012, Greece renegotiated its privately held debt, and there was high uncertainty about whether the CDS payment would be triggered, and if triggered, whether it would accurately capture the losses inflicted upon creditors.

E-mail address: jsalomao@umn.edu

[1] For helpful comments and suggestions, I thank the referee and the editor, Manuel Amador, Frederico Belo, Pablo Kurlat, Monika Piazzesi and Martin Schneider. I also thank seminar participants at the Stanford Macroeconomics Lunch and Finance Reading Group, Office of Financial Reseach, Federal Reserve Board, Federal Reserve Bank of St.Louis, University of Notre Dame, UCSD, University of Maryland, NYU Stern, University of Toronto, University of Chicago Booth, University of Minnesota Carlson, USC Marshall, PUC-Rio, Federal Reserve Bank of Philadelphia, the World Bank, Federal Reserve Bank of Minneapolis, Duke University (Fuqua), SED Warsaw, University of Houston and Carnegie Mellon University. Support from Kohlhagen Fellowship Fund and the Haley-Shaw Fellowship Fund of the Stanford Institute for Economic Policy Research (SIEPR) is gratefully acknowledged.

[2] In the Argentina 2003 default, the CDS market was very small.

http://dx.doi.org/10.1016/j.jmoneco.2017.06.005
0304-3932/

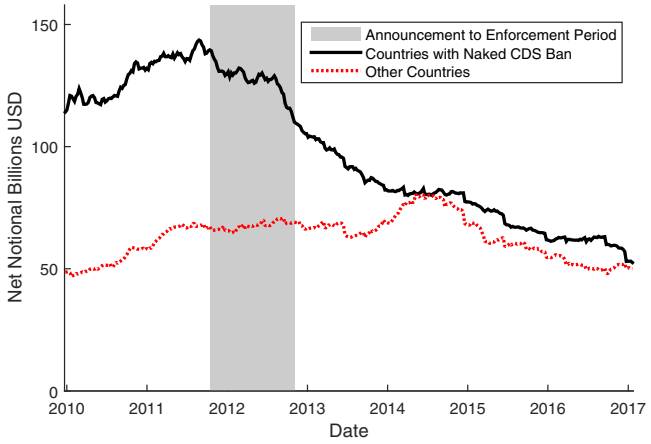

Fig. 1. Sovereign CDS Net Notional. Note: Data on net notional is from ISDA. See supplementary material for the list of countries and per country change.

This paper incorporates a CDS market with payout uncertainty into a standard sovereign debt model to understand the effects of this market on the default probabilities, debt levels, welfare, and prices of the bond and the underlying CDS.

The proposed model is a dynamic endogenous default model with post-default bargaining, long-term debt and CDS contracts. If the country decides not to repay its debt, the country and its lenders enter renegotiation over the share of the haircut on the debt. The presence of CDS changes the bargaining game. By approving the debt haircut, the lenders also accept the uncertainty on the CDS payout versus certain payment if they reject the agreement. Due to these expected losses, the lender becomes a "tougher" negotiator, demanding a smaller haircut as compensation for the expected loss. In equilibrium, the country chooses to default less frequently, making financing cheaper and debt levels higher.

The difference between the price of the CDS and the bond's risk premium is called the CDS-Bond basis. For countries that are not going through a debt crisis, this basis is close to zero. However, when borrowers *are* going through debt crises, the cost of insuring the country's default risk is lower than the premium paid to the lenders for holding the same risk, making this basis negative. This pattern is consistent with the lenders' expectations that the CDS may not pay out even if the bond is not fully repaid.

The effect of the CDS depends on the level of insured debt and the probability of the CDS triggering after an agreement. In the model, the CDS holdings are exogenous and parameterized to match the levels in the data. The model is calibrated on data from Greece and solved for multiple levels of CDS debt coverage and trigger probability functions. The dynamics of the CDS-Bond basis observed during the Greek crisis are used to infer the triggering function. Using this triggering function and assuming that 5% of the outstanding debt is insured, the model quantitatively matches the behavior of the basis during the crisis. Simulation results indicate that at the current CDS-to-debt ratios of 5–10%, the unconditional probability of default and bond spread are both lower than in a zero CDS benchmark. However, for higher levels of CDS coverage, above 50% of the debt, the probability of default and spread are higher than in the zero CDS benchmark. The calibration for Greece reveals that decreasing the CDS-to-debt ratio from 5 to 0% increases the frequency of default from 2.3% to 2.6% per year, with negligible effects on the average debt-to-GDP ratio. If the level of insured debt increases to 60%, the equilibrium debt-to-GDP ratio increases by 55% and the probability of default increases to 7.31%.

The CDS at current levels (5–10% of the debt) is welfare-improving because it allows countries to better smooth consumption by paying lower spreads. The welfare levels of the lender and insurer are unchanged, so the introduction of the CDS at those levels is a Pareto improvement. On the other hand, if the CDS level is too high (50–60%) the welfare of the country decreases. This occurs because the lenders are exceedingly tough in renegotiation and the country must repay a large amount when defaulting, which coincides with states when output is low.

The results also show that the 2012 CDS ban - that lead to a decrease in the levels of this derivative - was not a welfare improving policy for European countries. The level of CDS when European countries were dealing with a situation of low output and high debt was below 10%, so countries would have benefited from a higher CDS covered debt. The decrease in the CDS levels during the crisis lead to higher spreads and higher probability of default, the opposite of what regulators intended with the ban. The ban would have been an important policy if we were observing CDS levels of above 50% during the crisis.[3]

The original model of defaultable debt developed in Eaton and Gersovitz (1981) gave birth to a vast quantitative literature that focuses on explaining the unique characteristics of emerging-market business cycles (Aguiar and Gopinath, 2006;

[3] Fig. 1 in the supplementary materials show the CDS levels relative to the level of external debt.