Journal of Economic Behavior and Organization 152 (2018) 36–46

Contents lists available at ScienceDirect

Journal of Economic Behavior and Organization

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

Biased signaling and yardstick comparisons in a sovereign debt market

Benedikt Mihm

Faculty of Economics and Management, Chair in Economic Policy, University of Magdeburg, Postbox 4120, Magdeburg D-39016, Germany

ARTICLE INFO

Article history:
Received 7 August 2017
Revised 5 May 2018
Accepted 7 June 2018

JEL classification:
D80
E60
F34

Keywords:
Sovereign debt
Behavioral bias
Signaling
Yardstick comparisons

ABSTRACT

This paper develops a sovereign debt model in which governments are privately informed about their likelihood of default but can themselves have a biased perception of this likelihood. I show that in this setup government borrowing acts as a signal that is only partially informative about fundamental default probabilities, and bond prices do not necessarily reflect true credit risk. I also show that in a two country version of the model correlations between the two countries induces yardstick comparisons, and the borrowing decision of one government affects the bond price received by the other. Whether the information spillover increases or decreases the distortion created by the bias depends on the extent to which borrowing signals reinforce each other.

1. Introduction

The market for sovereign debt occupies a central role in the global financial system. Sovereign bonds are usually viewed as relatively safe and highly liquid, and one would generally expect well-functioning markets for such assets. However, there are also a number of peculiar features of the market for sovereign debt. First, while there are many buyers and sellers in the market, there is only a small number of issuers of sovereign debt, so that market power and strategic considerations may affect the interaction between issuers and other market participants. Second, sovereign debt is primarily sold as non-collateralize bonds and legal enforcement of the debt contract is tough and uncertain. Third, the enforcement problem leads to credit risk but as default is an rare event for most countries, estimating default likelihoods is difficult both for issuers of debt and other market participants.

This paper develops a model to explore some of the effects of these features of the sovereign debt market on government borrowing and bond prices, and relates the results to the puzzling behavior of bond prices leading up to the recent euro zone debt crisis. In the model, a government borrows from risk neutral investors with a likelihood that it will not repay. The government can be either safe or risky depending on the likelihood of repayment with the government's type being private information. However, while the government knows more about its default probability than investors, the government can be biased in the sense that it misperceives its own likelihood of default: a risky government can perceive itself to be safe and vice versa. This biased perception captures that the rarity of defaults means that even better but not fully informed governments may make systematic mistakes in estimating there likelihood.

E-mail address: mihm@ovgu.de

https://doi.org/10.1016/j.jebo.2018.06.008
0167-2681/

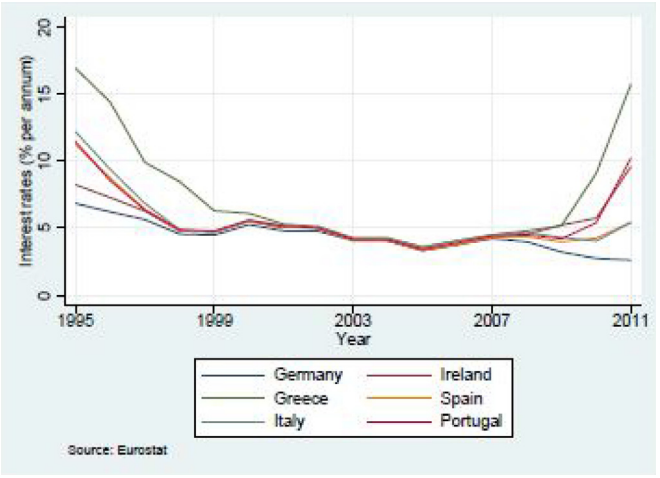

Fig. 1. Long term interest rates GIIPS and Germany, 1995–2011.

In the game between the issuer of sovereign debt and other market participants, I first show that there is a separating equilibrium in which a risky government borrows more than a safe government. The higher likelihood of default means that the risky government likes to borrow more, and a safe government can signal its type by choosing a low enough debt level. This separation can occur even though the safe government receives a higher price for its bonds and the risky government therefore has an incentive to be seen as safe. Importantly, while the equilibrium bond prices received by the two types differ, they only partially reflect the difference in default probabilities as investors take into account that the bond supply can come from a biased government. Moreover, while the government selects to receive its (perceived) correct bond price, the fact that it can be biased means that the price it receives does not reflect its true type.

It is interesting to consider what additional information investors might use to evaluate the credit worthiness of a government. Gande and Parsley (2005) suggests that one important source of information may be cross country comparisons. They show that news spillovers can have significant effects in sovereign bond markets, with credit rating changes in one country affecting the bond prices of other similar countries. In a two country version of my model a positive correlation in default probabilities can also generate information spillovers, as investors can infer information about the credit worthiness of one government from the bond supply of the other. This feature introduces a form of yardstick comparisons to the sovereign debt context, as previously studied in the literature on industrial organization (Shleifer, 1985) and political economy (Besley and Case, 1995).[1]

Intuitively, one might expect the information spillover to reduce the distortion created by the bias, as investors have additional information to update beliefs. The second result of the paper is to show that this intuition is only partially correct. Specifically, when the governments of both countries signal the same type (either safe or risky), bond prices with yardstick comparisons are closer to those that would obtain under full information. If, on the other hand, the two governments signal that they are different types the bond prices with yardstick comparisons are further from those that would obtain under full information. The effect of yardstick comparisons on bond price therefore depends on whether signals reinforce each other or not.

The results of the paper can help explain a puzzling feature of bond pricing in the euro zone leading up to the recent sovereign debt crisis, with very small bond price differentials between member countries coinciding with large differences in their borrowing behavior. To illustrate, Fig. 1 shows long term interest rates of crisis hit countries and representative unaffected country Germany, and Fig. 2 shows the debt to GDP ratio of the same set of countries. Surprisingly, there is almost complete convergence of interest rates despite large differences in the state of public finances (see also Honkapohja, 2014). The results of the paper are consistent with this pricing anomaly. When government borrowing differs between countries signals contradict each other and yardstick comparisons act to narrow the bond price spread. Essentially, a safe government's borrowing behavior makes investors believe that the risky governments might have overestimated their true default risk, and a risky government's behavior makes investors believe that the safe governments might have underestimated their true default risk. As a result, when public finances differ the bond price spread between the countries is smaller with yardstick comparisons than it otherwise would be.

[1] Shleifer (1985) formalizes yardstick competition as a way to regulate firms when they have correlated private cost information. Since the regulation of firms plays no role in my framework, I use the more general term yardstick comparisons to describe information spillovers that arise because investors use the borrowing of one government to assess the potential of bias of another.