Journal of International Economics 104 (2017) 157–165

Contents lists available at ScienceDirect

Journal of International Economics

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

Sovereign debt signals☆

Toan Phan

Department of Economics, University of North Carolina at Chapel Hill, United States

ARTICLE INFO

Article history:
Received 12 March 2013
Received in revised form 6 October 2016
Accepted 22 November 2016
Available online 1 December 2016

JEL classification:
F34
F4
G32

Keywords:
Sovereign debt
Private information
Signaling
Lack of commitment
Foreign direct investment

ABSTRACT

This paper develops a theory of sovereign borrowing, where the interaction between the asymmetry of information and the lack of commitment for repayment leads to a novel signaling motive for the issuance of sovereign debt. If the government is more informed than foreign investors about a fundamental of the domestic economy, then debt provides the government an option to credibly signal good news in the future by repaying. Thus, the government has an incentive to issue debt, even in the absence of the traditional consumption smoothing or tilting motives.

1. Introduction

Why do governments issue sovereign debt? In a standard sovereign debt model, a government borrows to smooth or tilt consumption and spending; for instance, a government may borrow to prevent domestic consumption from falling in bad times (see, inter alia, Eaton and Gersovitz, 1981 and Arellano, 2008). However, can this be the reason behind all instances of sovereign borrowing? For many countries, issuing sovereign bonds is a costly way to raise funds, as the interest rate is usually high due to the risk of default, and there are substantial consequences to the investment in the private sector should the country have to default on its debt in the future (Arteta and Hale, 2008, Das et al., 2010, and Fuentes and Saravia, 2011). Thus, it is not immediately clear why, for instance, the Irish government issued several billion euros in new bonds to the international credit market between 2012 and 2014 when there was no clear need for raising funds, as the government had accumulated almost 20 billion euros in liquid assets (Quinn et al., 2013 and Atkins and Wigglesworth, 2014). Some have argued that the Irish government may have used the debt issuance to have an opportunity to signal foreign investors about improvements in domestic political and economic institutions, especially after a period of economic and political uncertainty following the global financial crisis (e.g., The Telegraph, 2013 and Atkins and Wigglesworth, 2014). Some have also argued similarly that the Chilean government may have issued bonds in 2001, despite having had a long period of public sector surpluses since 1986, in order to have an opportunity to send positive signals about the domestic economy and facilitate the private sector's access to foreign investment (Cifuentes et al., 2002).

This paper revisits the motives for sovereign borrowing from the perspective of a government that has private information and cannot commit to repaying. I show that the interaction between the asymmetry of information and the lack of commitment leads to a novel motive for sovereign borrowing.

1.1. Model overview

Consider a small open economy with a benevolent government that can issue non-contingent sovereign bonds to competitive

☆ This paper was previously titled "Sovereign debt cycles".
E-mail address: phan@unc.edu.

http://dx.doi.org/10.1016/j.jinteco.2016.11.005
0022-1996/

risk-neutral foreign creditors. The government cannot commit to repaying debt in the future and there is no sanction nor exogenous cost of default. Firms in the economy employ domestic labor and rely on foreign capital, and their productivity is subject to a shock to economic fundamentals.

I assume that the government has private information about the fundamental shock. Specifically, it observes the realization of the shock, but foreigners do not. This fundamental shock represents, for instance, a change in the quality of domestic economic or political institutions that support business and investment, about which the government may have some private information. Then I show that debt is useful as a signaling device: it provides the government an option to repay in the future, when repayment is a costly and thus credible signal about the hidden fundamental shock.

Intuitively, given the information asymmetry, foreign capital investment critically depends on foreigners' belief about the realization of the shock. Foreigners rationally update their belief after the government's repayment or default decision. I show that there is a Perfect Bayesian Equilibrium in which the government uses the repayment of debt as a costly signal of the fundamental shock in order to attract foreign investment. Thus, sovereign debt is sustainable even in the absence of sanctions and exogenous default costs. The endogenous cost of a default is that it makes foreign investors more pessimistic about the country's fundamentals, leading them to reduce investment in the private sector. This prediction is consistent with the documented association between sovereign defaults and subsequent declines in foreign investment in the defaulting countries' private sector (Arteta and Hale, 2008, Das et al., 2010, and Fuentes and Saravia, 2011).

More importantly, the model demonstrates how a government may use sovereign debt purely as a signaling instrument. By assuming that the government is risk-neutral and discounts the future at the same rate as foreigners, I shut down the traditional consumption-smoothing or tilting motive for sovereign borrowing. The model shows that sovereign borrowing can still improve the country's welfare, because debt provides a signaling option. In the model, the government chooses an optimal level of debt issuance in order to balance a trade off between a costly signal and a costly default: a larger stock of debt provides a stronger signaling option but is also associated with a higher risk of default. Furthermore, I show that the stronger the distribution of economic fundamentals is (in the first order stochastic dominance sense), the more the country benefits from the signaling option, and thus the higher the level of debt issuance will be in equilibrium.

In summary, the model establishes a mechanism through which the government benefits from using debt as a signaling instrument. The mechanism complements the consumption-smoothing and titling motives that are well-known in the literature. From the perspective of the model, the Irish government in the aforementioned anecdote may have used debt issuance as a signal. Following the 2008 crisis, Ireland experienced a period of political instability that led to a dissolution of the Dáil (lower house). A general election held in 2011 led to "the most momentous watershed in Irish politics since 1932", and the dominance of Fianna Fail (the Republican Party) was eventually replaced by a new winning coalition, whose ability to implement economic and institutional reforms remained uncertain (The Economist, 2011). Amid this uncertainty, the return of Ireland to the international credit market could have provide an opportunity for the Irish government to repay in the future and send important signals to foreign investors that the economic recovery is on track. In general, the model implies that signaling motives may be relevant when there is a large degree of information asymmetry about the government, for example when a new type of government enters office.

1.2. Related literature

This paper is related to a large and growing literature on sovereign debt.[1] It is particularly related to the sovereign debt models with private information in Cole et al. (1995), Cole and Kehoe (1997, 1998), Alfaro and Kanczuk (2005), Catão and Kapur (2006), Sandleris (2008), Catão et al. (2009), D'Erasmo (2010), and Phan (2015). As in these papers, my model shows that under information asymmetry, sovereign debt is sustainable because a default has a negative effect on foreign investors' belief about the economy. Among them, the two most related papers are Sandleris (2008) and Cole et al. (1995). The former provides a model of debt repayment as a costly signal of a private fundamental. The latter provides a model in which there are two alternating types of government, a patient type and an impatient type; in equilibrium, the patient government can use debt repayment and default settlement as costly signals of its type. Building on Cole et al. (1995), Alfaro and Kanczuk (2005) provide a quantitative model with contingent debt service and adverse selection. By keeping the assumption of alternating government types but removing the assumption of information asymmetry, Hatchondo et al. (2007) build a quantitative model where a default episode may be triggered when an impatient government takes office.

Overall, most papers in the literature consider the motives for borrowing a side issue, and often motivate borrowing by the need for consumption smoothing, or by an assumption that certain public investment must be financed by debt. In contrast, the key distinction of my paper is its focus on the signaling motives for sovereign borrowing. To the best of my knowledge, the signaling motive for sovereign borrowing in this paper has not been discussed nor formalized in the literature.

The rest of the paper is organized as follows. Section 2 provides a benchmark finite-horizon model where debt repayment is a costly signal. Section 3 provides extensions: Section 3.1 extends the model into the infinite horizon and Section 3.2 further allows for default settlement. Section 4 concludes.

2. Benchmark model: debt as an option to signal

This section formalizes the idea that a government may use sovereign debt as a signaling instrument, because debt repayment is a costly and thus credible signal of the country's economic fundamentals. Sovereign debt therefore provides a future signaling option. Overall, the model shows that in an environment with private information and a lack of commitment, the signaling option sustains not only the demand but also the supply of debt.

2.1. Environment

To demonstrate the idea in the clearest possible manner, this section focuses on a two-period model, while Section 3 extends this model to the infinite horizon. There is a small open economy that has a unit mass of identical households and a benevolent government. The government issues sovereign bond to a unit mass of risk-neutral competitive foreign creditors whose opportunity cost of funds is $1 + r$, where $r > 0$ is the world's risk-free interest rate. Furthermore, a unit mass of risk-neutral competitive foreign direct investors provide capital to a unit mass of competitive firms inside the country that employ local labor.

There are two periods, $t = 0$ and $t = 1$. The government's objective is to maximize the utility of the representative household

[1] Early models of sovereign borrowing include Eaton and Gersovitz (1981) and Bulow and Rogoff (1989). Recent surveys of the literature include Wright (2011), Tomz and Wright (2012), and Das et al. (2012).