Sovereign bond markets with political risk and moral hazard

Christopher Dylan McGee*

Assumption College, 500 Salisbury Street, Worcester, MA 01609, United States

Abstract

A model of interest rates on sovereign bonds with default risk is presented. The model accounts for interaction between interest rates and default risk. Multiple equilibria and stability issues are examined. The model explores the level of debt that markets will tolerate in a context where there is uncertainty about output growth, fiscal discipline, real exchange rates, and IMF intervention. The effect of likely IMF assistance on the debt ceiling is shown to be large.
© 2005 Elsevier Inc. All rights reserved.

1. Introduction

The role of interest rates as a potential cause of sovereign default is well established. Higher interest rates make it more costly to roll over existing debt or borrow additional funds. This in turn leads to acquisition of more debt to cover interest payments. It is also well established that interest rates on sovereign debt will rise whenever the risk of default appears to increase. Hence, it is clear that causality runs in both directions between the interest rate and the chance of default. This feature is often described as a vicious cycle, whereby market sentiment can become self-fulfilling and multiple equilibria may exist. It is an endogeneity pattern that is often cited, but it has not been modeled sufficiently. Previous models have failed to treat uncertainty about political willingness to repay as a central issue. I present a model that focuses on uncertainty about the degree of fiscal contraction which policy makers are willing

---

* Tel.: +1 508 767 7579; fax: +1 508 767 7382.

   E-mail address: cmcgee@assumption.edu.

endure. Specifically, there is a maximum threshold for the primary fiscal surplus that can be achieved to stabilize debt levels and preclude default. The model endogenizes the interaction between interest rates and political feasibility of repayment. The model illuminates a variety of short-term and long-term issues regarding sovereign debt. The primary policy implication involves the moral hazard stemming from International Monetary Fund assistance to debtors.

Section 2 reviews some previous literature in order to motivate my modeling approach. Section 3 presents a simple version of the model and explores its implications concerning: multiple equilibria, stability of equilibria, and debt ceilings. Section 4 presents the general specification of the model by incorporating GDP growth, partial recovery of principle under default, and real exchange rate shocks. Section 4 also presents an example of the model calibrated to Mexican data. Section 5 incorporates IMF assistance into the model, and illustrates potentially substantial moral hazard problems.

2. Review of literature and motivation for the model

A key question in the sovereign debt literature is why governments are able to borrow in the first place. Namely, what are the costs of default, which allow lenders to reasonably expect repayment? A seminal paper in the debt theory literature by Eaton and Gersovitz (1982) focused on inter-temporal consumption smoothing as a motive for maintaining creditworthiness. In their model, output alternates between two levels, and the country borrows to finance consumption in the low output period. The willingness to avoid default is based on the additional discounted utility stemming from continued access to funds. The Eaton and Gersovitz framework is theoretically elegant, but it is only tractable in its deterministic form. Allowing uncertainty in the model requires several simplifying assumptions, including that there is no growth and no savings. In addition, the model does not apply to a scenario where debt levels rise and then stabilize at a long-run level. The framework in the present model allows for greater uncertainty, and applies to countries that have a deficit bias, which persists until markets impose a long-run credit ceiling. In this context there is limited scope for consumption smoothing after reform. However, the incentive to maintain a reputation for creditworthiness may still be a reason for avoiding default. This is because a default with partial recovery of principle may still require additional financing, and penalty rates for that new financing can limit the benefits of default. In combination with other reasons to avoid default, the uncertain prospect of a premium on future borrowing may support a willingness to adopt fiscal reform. Specifically, if other penalties preclude full repudiation of debt, then concerns about creditworthiness will be relevant.

Another cost associated with default is losses due to trade sanctions. Bulow and Rogoff (1989) emphasize the threat of trade sanctions as the main reason why debtor nations will repay. They use a game theoretic approach to model negotiations between banks and the debtor. This determines the amount of repayment that lenders can expect. The threat of trade sanctions seems a plausible justification for default aversion. Full repudiation of debt might provoke significant sanctions. A default with partial repayment would provoke lesser sanctions. Bulow and Rogoff view the threat of trade sanctions as an alternative to concerns about maintaining creditworthiness for the purpose of consumption smoothing. They argue that alternative means to achieve consumption smoothing are available, so that reputational concerns are not a factor. Critics of the Bulow and Rogoff approach question the feasibility of such alternatives, as well as the historical evidence for trade sanctions (e.g., Cline, 1995, English, 1996; Cole & Kehoe, 1998). Cole and Kehoe (1998) present a model where loss of reputation spills over to create