



Sovereign default risk and commitment for fiscal adjustment [☆]



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ABSTRACT

This paper studies fiscal policy in a model of sovereign debt and default. A time inconsistency problem arises: since the price of past debt cannot be affected by current fiscal policy and governments cannot credibly commit to a certain path of tax rates, debtor countries choose suboptimally low fiscal adjustments. An international organization, capable of designing a contract that coaxes debtors into a tougher fiscal stance via the provision of cheap senior lending in times of crisis, can work as a commitment device and improve social welfare.

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1. Introduction

The main role attributed to international institutions such as the IMF during a debt crisis is the provision of liquidity to countries undergoing temporary financial stress due to coordination problems.¹ Arguably, official lending can in this case ward off speculative attacks by catalyzing private lenders and avoiding coordination failures.² However, IMF and EU interventions following the recent European debt crisis do not seem to fit into the typical liquidity provision story. Greece, for one, was not facing temporary financing problems in 2011: with its debt to GDP ratio close to 165% and a nominal deficit of 10% of GDP, it was

deemed insolvent by markets.³ And the logic of catalytic lending does not fit well in this case: private lenders were rushing for the exit at the very same time official financing was flowing in.⁴ This suggests a role for lending by international organizations that goes beyond the traditional liquidity interpretation.

In order to investigate this issue, this paper incorporates fiscal policy decisions in a sovereign default model along the lines of Eaton and Gersovitz (1981) and Arellano (2008).⁵ Those models assume away liquidity problems and are suitable to the study of incentives for sovereign debt repayment. However, most of this literature does not separate “country debt” from “government debt”, which renders them

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¹ The IMF's Articles of Agreement state that one of the IMF's purposes is to provide confidence to members by making the general resources of the Fund temporarily available to them under adequate safeguards, thus providing them with opportunity to correct maladjustments in their balance of payments without resorting to measures destructive of national or international prosperity.

² See, e.g., Rochet and Vives (2004), Corsetti et al. (2006) and Morris and Shin (2006).

³ Back in 2010–11, macroeconomists were asserting that Europe was undergoing a solvency crisis, not a liquidity problem. Feldstein (2010) put it simply: Greece “is insolvent and cannot service its existing debt”. Paul Krugman was quoted stating that “it's basically inconceivable that there won't be some significant losses on present value for bondholders of Greek, Portuguese and Irish debt” (Bloomberg, 2011) and was echoed by Otmar Issing. Earlier in 2011, Nouriel Roubini said: “I am afraid that Greece, more likely than not, isn't just illiquid, but insolvent” (Roubini blog, 2011).

⁴ In December 2010, Greek debt in private hands amounted to roughly 285 billion euros, but in December 2012 this had been reduced to 105 billion. During the same period, official lending increased from less than 30 billion to nearly 185 billion — mainly from the European Stability Mechanism (ESM). Official lending did not catalyze private lending, it substituted for it.

⁵ There are now many papers building on this framework. Recent references include Aguiar and Gopinath (2006), Alfaro and Kanczuk (2005), Cuadra and Saprizza (2008), Guimaraes (2011), Mendoza and Yue (2012) and Yue (2010).

inappropriate to study fiscal adjustment issues.⁶ We assume that sovereign debt is paid out of the government's currently available resources and focus on fiscal policy decisions. One key implication of the model is that fiscal policy in debtor countries suffers from a time inconsistency problem. In consequence, senior official lending coupled with fiscal conditionalities can work as a commitment device for fiscal adjustment that benefits the borrower. In our view, the way events unfolded in the recent European debt crisis sits well with this alternative interpretation.

In the model, a tighter fiscal policy reduces the amount of borrowing necessary to repay maturing debt. Lower borrowing needs make it less likely that the debtor country will default in the future, which in turn leads to cheaper borrowing in the present. The lower odds of default associated with higher taxation lead to higher expected payments to creditors and lower expected output losses for debtors. Creditors, for their part, are assumed to be competitive and always break-even in expected terms, so in equilibrium, the benefits from higher tax rates accrue to the debtor.

The problem, however, is that the time-consistent fiscal policy is suboptimal. Whenever the debtor government chooses fiscal policy, there is a stock of outstanding debt that was issued in the past at a given price. High tax rates reduce the incidence of default and thus positively influence debt prices, but since past debt is sunk that bears no benefit to the government's budget – even though debt prices react in secondary markets. Therefore, compared with the solution under commitment, there is too little fiscal adjustment and too many default episodes in equilibrium. The excessive default incidence is priced in by creditors, so the debtor would like to pledge higher taxes in the future; only it cannot credibly do so since its incentives for fiscal adjustment once debt has been sold become weaker.

In theory one could devise private contracts to address this time inconsistency problem. For example, the debtor country could issue bonds stipulating transfers from the bond holder to the debtor in bad states of nature, conditional on tough fiscal policies having been implemented. This would in principle provide the necessary incentives for fiscal adjustment. Trouble is, this contract wouldn't be workable in practice. The bond holder and debtor would have to know and agree that a certain state of nature had materialized, and the creditor would have to determine if the proper level of fiscal adjustment was accordingly implemented. The fundamental problem is that transaction costs and free-riding problems would prevent a market-based solution to the time inconsistency issue.

However, an international lender of last resort with seniority could implement a similar contract. An institution like the IMF faces no free-riding problem and would arguably have the proper incentives to evaluate the state of the indebted economy and the implementation of fiscal policy decisions. It could then lend resources to debtor countries in distress at subsidized rates upon observing tougher fiscal policies in place – an arrangement that resembles the conditionalities imposed by the IMF on debtors. The financial aid in times of crisis would provide debtors with the appropriate ex-post incentives for fiscal adjustment. Owing to the IMF's seniority status, private creditors become junior lenders when the institution gets involved and hence are the ones who end up footing the bill of IMF's subsidized lending. Hence, this arrangement mimics a transfer from creditors to the debtor conditional on tough fiscal policies.

IMF loans are usually conditional on countries meeting some fiscal targets. At first blush, the stringent fiscal packages requested by the IMF may look like undue international meddling in sovereign countries' fiscal choices. However, in the model, ex-post incentives to tighten fiscal policy enhance total welfare ex-ante by diminishing the probability of

costly defaults, and since that is reflected in bond prices, the welfare gains go to the borrower itself.

The model implies that following a shock that renders debt default a concrete possibility, fiscal policy would be too lax due to the time inconsistency issue, which would lead to excessively high default risk and interest rates. The model also highlights the role that could be played by a third party able to commit to lend money at subsidized rates in exchange for tougher fiscal policy in the debtor country. A deal along those lines would lead to a lower jump in market interest rates after the shock and, importantly, would improve the debtor's welfare.

In our view, this model-based narrative closely resembles the unfolding of events in the case of the recent European crisis. The aftermath of the Lehman Brothers event in 2008 led to lower growth perspectives and ability to repay debt, turning sovereign default into a real possibility. In the following quarters, peripheral European countries could still borrow at relatively low interest rates: markets acknowledged an implicit arrangement between borrowers and official institutions, so they were expecting fiscal tightenings and, possibly, transfers to debtors.⁷ Expectations were indeed fulfilled: painful fiscal adjustments were implemented by this set of European nations after 2009. Finally, after 2011, when debt repayment faltered even with the extra fiscal effort, financial support flowed in from the European Community, the IMF and the European Central Bank in a variety of ways. At least qualitatively, official intervention in the European case matches the normative prescriptions from the model.

While the baseline model is simple, the results extend to more realistic settings. In particular, we show they are robust to the inclusion of a negative relation between output and tight fiscal policy and still hold when fiscal policy rigidities are included in the model. Additionally, we show that short-term debt attenuates the commitment problem, thus providing another rationale as to why emerging economies borrow short term.

The paper is organized as follows. Section 2 describes the model and Section 3 derives the results on time inconsistency. Section 4 shows how an international organization can help to overcome the problem. Section 5 discusses IMF lending and some developments in the Euro zone debt crisis under the light of the model and Section 6 presents the extensions. Conclusions are in Section 7.

2. The model

2.1. Environment

Consider a stochastic endowment economy governed by a benevolent sovereign able to access international capital markets and levy domestic taxes. The government maximizes its citizens' utility, assigns no weight to foreign creditors' welfare and cannot commit to repay its maturing debt. Time is discrete. The representative consumer in the debtor country has utility:

$$U = \sum_{t=s}^{\infty} \beta^{t-s} (u(c_t) + g_t)$$

where β is the time-discount factor, c_t is consumption in period t , $u(\cdot)$ is a strictly increasing and strictly concave function, and g_t is government spending. Hereafter, time subscripts are omitted to simplify the notation. Both c and g have to be non-negative.

⁶ One important exception is Cuadra et al. (2010). Their model also analyses fiscal policy in a model of sovereign debt and default, but their objective is different. They develop a quantitative model that accounts for procyclicality in fiscal policy in emerging markets. Andreasen et al. (2013) also separate "country debt" and "government debt", but they focus on political economy issues. There are also papers studying how the possibility of default (and the actual default) affect fiscal policy, but differently from here, the results from those papers rely on distortionary taxation (see, e.g., Pouzo and Presno, 2014).

⁷ This tacit agreement and its impact on market prices were noted by the popular press. A newspaper article in November 2009 stated that "the implicit guarantee from Europe's biggest economy convinced bond markets that there was no need to fear a sovereign default" and added that "any bailout would probably come with draconian conditions" (New York Times, 2009). Along the same lines, Reuters (2009) commented on "markets' calm over soaring debt in Euro zone members" and pointed to an implicit guarantee by the European Union.

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