Evaluating the Welfare Effects of International Bankruptcy Regimes in a Political Economy Model

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February 14, 2013

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Extended Abstract

Recurrent sovereign debt crises highlight the importance of how international lending arrangements deal with sovereign default. Historically, resolution of sovereign defaults have often taken a long time and imposed large costs on the defaulting country and its creditors (Bi (2008), Benjamin and Wright (2009)). Over the years, there have been periodic calls for institutional changes to make sovereign debt restructuring less costly (Rogoff and Zettelmeyer(2002)). In 2001, the IMF proposed a formal international bankruptcy regime - the so-called sovereign debt restructuring mechanism (SDRM) – which was widely discussed and commented upon but remains unadopted. The current Eurozone debt crisis has led to renewed calls for an SDRM (UNCTAD (2012)).

Our goal in this paper is to use recently developed models of sovereign default to obtain a sharper, quantitative, understanding of the nature of the international bankruptcy regime that best serves the citizens of countries whose governments borrow in international capital markets. The existing (non-quantitative) literature recognizes that an institutional arrangement aimed at reducing the ex-post costs of restructuring must be cognizant of its adverse effects on ex-ante borrowing costs. Indeed, several influential critics of the SDRM pointed out that it may actually be in the interest of a country to have “messy and ugly” restructuring process because these ex-post costs is the reason sovereigns can borrow at reasonable interest rates in the first place (Schliefer (2003), Dooley (2002)). Whether this criticism is valid or not can be addressed in a quantitative sovereign debt model.

We approach the question of the best design of international bankruptcy regimes in terms of a choice of two parameters. One parameter is the output loss endured during restructuring of debt, denoted $\phi$ in our model, and the other is the bargaining power of the lenders in the post-default renegotiation (Nash bargaining) game played between creditors and the sovereign, denoted $\alpha$ in our model. In terms of these parameters, the IMF proposal can be characterized as advocating a low $\phi$ balanced by a high $\alpha$ while its critics advocate sticking with the current regime which can be characterized as one with a high $\phi$ and a low $\alpha$. 
Similarly, the various other proposals surveyed in Rogoff and Zettelmeyer can be broadly viewed as advocating changes in $\phi$ or $\alpha$ in one direction or the other relative to the current regime.

We conduct our analysis in two steps. In the first step, we analyze the optimal choice of $(\phi, \alpha)$ in the context of the standard quantitative sovereign debt model described in Arellano (2008), augmented with post-default Nash bargaining between the sovereign and creditors along the lines in Yue (2010). The calibration of the model follows the calibration used in these papers. The findings from this step of the analysis is that the welfare of the country is substantially improved in a high $\phi$-high $\alpha$ regime. This configuration lowers the borrowing costs of the sovereign the most, both because the frequency of default is lowered and because there is more repayment in the event of default. The factor that is definitive for this finding is the generally high degree of impatience (low $\beta$) required by the model to match both the high level of debt and the high default frequency observed for emerging markets. The high level of impatience means that the country’s welfare is improved if it can pull consumption into the present from the future. A bankruptcy regime that lowers the cost of borrowing is most effective in permitting that. In summary, the quantitative findings are supportive of the critics of the SDRM-type proposals in the sense that for any given $\alpha$, the country’s welfare is improving in $\phi$: the “messier and uglier” the restructuring process, the better.

In the second step of the analysis, we examine whether this finding survives when the degree of impatience displayed by the sovereign is derived from more primitive sources. We do this for two reasons. First, although quantitative sovereign debt models view the sovereign as maximizing the utility of a representative consumer, the imputed discount factor ($\beta$) seems implausibly low to be taken literally as the intertemporal discount factor of people inhabiting the economy. This puts a question mark against welfare findings that lean heavily on low discount factors. Second, there seems to be a common awareness among scholars and policymakers that sovereigns (of both emerging and mature countries) borrow “excessively” because political incentives push incumbent governments to do so. If impatience derives from political incentives, the front-loading of consumption permitted by low borrowing costs
may end up lowering the welfare of the country’s citizen and thus potentially invalidate the criticism of the SDRM proposal noted above.

We adopt the politics-augmented model of sovereign debt and default introduced in Cuadra and Sapriza (2008). These authors embed the well-known model of fiscal policy under political constraints developed in Alesina and Tabellini (1990) into a quantitative model of sovereign debt and default. In this model, the effective discount factor of the sovereign, i.e. the incumbent government, is lower than the discount factor of the people inhabiting the economy because the incumbent government cares only about a subset of the people inhabiting the economy (polarization) and fears losing power in the future (turnover). As shown in Cuadra and Sapriza, this framework has the important feature that for reasonable values of the political parameters (which control the degree of polarization and instability), the model implies almost the same behavior as the standard model but for a higher discount factor. Thus this framework can (partially) resolve the tension between the low discount factor needed for empirical fit and its plausibility as a description of people’s preferences.

To bring this framework to bear on the questions we are interested in however, we need to modify it in two ways. First, we need to augment the model to feature a post-default renegotiation game (in the standard model as well as in Cuadra and Sapriza there is no repayment following default) and we do this. Second, we allow mixed strategies over the choice of debt. This extension is needed to deal with a serious computational issue that afflicts this class of models.

The issue is the following. For the symmetric two-party case we focus on in this paper it is known that the dynamic game between the two parties reduces to a problem of a representative government optimizing with respect to preferences that display nongeometric discounting. For this class of models, it is known that if output volatility is zero (no uncertainty) there can exist a continuum of equilibrium decision rules each of which has points of discontinuity with respect to the state variables (Krusell and Smith (2003)). Roughly speaking, discontinuous decision rules introduce non-concave segments in the value function and these segments, in turn, support the discontinuities in the equilibrium decision rules.
Current practice is to select equilibrium decision rules that are continuous and differentiable (Krusell, Kuruscu and Smith (2002), Judd (2003) and others) or truncation to a finite (but distant) horizon economy (Cuadra and Sapriza). The first approach is not open to us because in default models decision rules are neither continuous nor differentiable everywhere. The second approach is feasible but, arguably, not compelling in a setting where there is no natural end to the planning horizon.

Our approach, instead, is to nip the “discontinuous decision-rules” problem in the bud. When lenders are restricted to lend at the risk-free rate (so they never lend beyond the point where default becomes possible), randomization over the choice of end-of-period debt turns the incumbent government’s decision problem into a convex one and restores continuity of its decision rules. Although a dynamic game can have multiple equilibria for other reasons, our convexification strategy appears to deliver unique mixed-strategy equilibrium decision rules for a wide range of revenue volatility levels, including zero (the case studied in Krusell and Smith). When lenders are permitted to charge a default premium and the sovereign extends its borrowing into regions where default is possible, continuity of decision rules and concavity of the value function is lost again. But, these complications lead to problems regarding existence of an equilibrium rather than multiplicity or indeterminacy and there are known methods for dealing with them (Chatterjee and Eyigungor (2012)), which we employ. In sum, we propose what appears to be a robust way to compute the equilibrium of political economy models with debt and default.

The findings from the second step of our analysis is as follows. To get away from the low discount factor effect, we assume that the discount factor of the citizens is the same as the discount factor of the risk-neutral lenders and choose the parameters governing the political frictions so as to deliver (roughly) the same behavior as the standard model with low \( \beta \). If revenue volatility is zero and there are no political frictions (which means that either polarization or instability, or both, are absent), the equilibrium decision rule is to maintain the initial debt forever. If political frictions are introduced and revenue volatility is kept at zero, the equilibrium decision rule implies accumulation of debt (either gradually or immediately)
until the maximum feasible debt level consistent with the bankruptcy regime is attained (randomization plays a key role in this result). While debt accumulation increases the welfare of citizens who are the beneficiaries of the incumbent government, equally-weighted social welfare is actually lowered and the loss is greater the larger is the amount of debt accumulated. Thus, for any given level of $\alpha$, social welfare is now decreasing in $\phi$. On the other hand, if an incumbent government is given a choice regarding $\phi$ then its optimal choice of $\phi$ (given some $\alpha$) would be strictly positive. It’s strictly positive because starting from a situation of zero debt, incumbent governments always to borrow positive amounts to spend on their constituents. Thus they would prefer to increase their borrowing limit (so to speak) until the current benefit is balanced by the cost imposed by higher interest payments in the future. Therefore, there is a tension between what an incumbent government would view as the optimal bankruptcy regime and what an outside entity – that cares equally about all households inhabiting the economy – would view as the optimal bankruptcy regime. This tension is greater the larger are the political frictions in the economy.

When revenue volatility is added to this mix, two new forces are introduced into the model. First, the ability to issue debt is now more valuable because it allows governments to buffer spending against revenue shocks. Second, the ability to issue debt carries with it the danger that revenue shortfalls can lead to costly default in the future. To analyze the impact of these two effects, it is useful to analyze the effects of revenue volatility two steps. In the first step, assume that incumbent governments are never permitted to borrow any more than future governments can pay back for sure – this means that the costs of default are not actually borne in equilibrium and sovereigns always borrow at the risk free rate. As revenue volatility is increased from zero, the socially optimal bankruptcy cost (for a given $\alpha$) is no longer zero – instead it is strictly positive, reflecting the smoothing benefit of debt. Nevertheless, the tension between the bankruptcy cost that is socially efficient and one that is politically expedient remains: the bankruptcy regime that the incumbent government would prefer features higher costs (“messier and uglier” restructuring) than the socially optimal regime.
Allowing sovereigns to borrow beyond the point where default probability becomes positive reduces the social and political benefits of debt accumulation but does not change the overall picture. It is still the case that the socially optimal \( \phi \) (given \( \alpha \)) is strictly positive and, therefore, permits some level of debt accumulation and the politically optimal bankruptcy regime features higher costs of restructuring the debt. The similarity to the no-equilibrium default case arises mainly because incumbent governments optimally choose to not extend borrowing into regions where the default probability is large.

Over all, our findings suggest that the socially optimal bankruptcy regime is likely to feature lower restructuring costs than the politically optimal bankruptcy regime. To the extent the current regime reflects the political preferences of borrowing countries, a case can be made for an international bankruptcy regime aimed at reducing (but not eliminating) restructuring costs.