Towards a Political-Economic Theory of Domestic Debt

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1. INTRODUCTION

There is a large literature on why countries choose to issue debt rather than financing expenditures by current taxation. If Ricardian Equivalence holds and taxes are non-distortionary, then it doesn't matter whether government expenditures are financed by debt or taxes. When taxes are distortionary, debt can be used to smooth taxes and the associated distortions when the desired path of government expenditures is not smooth (Barro [1979]). In the absence of Ricardian Equivalence, issuing debt rather than levying taxes may reflect short-run stabilization considerations. The choice of whether to use taxes or debt may will also reflect concerns about the effects on private investment and capital accumulation, with debt possibly crowding out private capital accumulation (as in Diamond [1965]). A government may also issue debt in order to influence or constrain the decisions of future governments (Lucas and Stokey [1983], Persson and Svennson [1989]).[1]

Though the literature on the effects of and reasons for issuing debt is literally voluminous, there is almost no attention to the question of *where* the debt should be placed, that is, to the question of whether debt should be issued to domestic residents or abroad. That is, when a government finances some of its expenditures by issuing debt rather than by levying taxes, what considerations enter into whether the debt should be issued to domestic or foreign holders? And, what are the implications of a given amount of debt being held by foreign residents rather than domestic residents?

The first reaction of many economists would be that it doesn't matter. It doesn't matter whether a government issues domestic or foreign debt, the argument would run, not because they are literally equivalent, but because who ultimately holds the debt is independent of where the

government issues it. With highly integrated world capital markets, who ends up holding the debt is independent of whether it was issued in the City, Wall Street, or La Bolsa.

I think dismissing the question is incorrect for at least two reasons. First, independent of what determines the geographical allocation of the debt, whether or not the holders are citizens of the issuing country may make a crucial difference in how the debt is treated, specifically on the incentives to repay the debt. Second, governments *do* have a fair amount of control over whether debt is held by domestic or foreign residents. (Consider interest differentials sometimes observed on basically identical instruments issued at home versus abroad.) The most obvious way is via capital controls on either inflows or outflows. Restrictions on the ability of domestic residents to purchase assets abroad would seem the most relevant here, so that debt issued abroad cannot be held by domestic residents. There are less direct means of exercising control over who holds the debt as well. Though domestically-held and domestic-currency-denominated debt need not be synonymous (see below), debt denominated in domestic currency may be more attractive to domestic residents than to foreigners, perhaps because of the possible liquidity it provides. Differential tax treatment is another way of segmenting the market. In short, I will begin with the premise that governments have some control over whether debt is held at home or abroad. The purpose of this paper is to highlight the role of political determinants, specifically the importance of the very different political rights enjoyed by domestic residents versus foreigners, in the decision of where to issue debt.

Before considering the political economy of domestic debt, let me quickly review some other possible determinants of where debt should be issued. One consideration is the possible differential effects of domestic versus foreign debt in crowding out domestic capital accumulation.

Interestingly, the first (and arguably still the most influential) paper to present a fully worked out general equilibrium model of the effects of government debt on capital accumulation, namely Diamond (1965), is one of the few papers to address the welfare implications of where debt is issued. Basically, when domestic debt and capital are perfect substitutes, domestic issuance of debt crowds out capital accumulation directly for any level of saving, in addition to any effects it has via changing equilibrium factor prices and derived saving. Foreign debt has no direct effects, but can nonetheless affect capital accumulation via its effects on the share of income transferred abroad and hence on domestic factor prices, thus affecting domestic desired saving.

The effect of domestic versus foreign debt on capital accumulation is clearly a key consideration when the government decides it is optimal to finance current expenditures via issuing debt. As important as the question of crowding is, the Diamond model does not really give us a complete theory of domestic versus foreign debt. First, the issue raised above concerning the market "undoing" the government's decision seems especially important when we consider crowding out. Even if the government can segment the market for its own debt, domestic firms may be able to float issues abroad. Thus, if increased issuance of government debt at home leads to more crowding out, firms will go abroad to make up for this, so that net capital flows and domestic investment are largely unaffected. In the absence of any effects on capital accumulation, the government in Diamond's world is indifferent about where it issues debt.

Another answer to the question of how domestic debt differs from foreign debt has to do with the *denomination* of the debt, that is, whether it is denominated in domestic currency (that is, nominal) or in foreign currency (that is, real). Domestic debt is often taken to be synonymous with domestic-currency-denominated debt, foreign debt with foreign-currency-denominated debt.

Under this view, the question of why a government would want to issue domestic debt becomes a question of why a government would want to issue nominal debt. Arguments for the optimality of nominal debt over real debt often turn on the nature of shocks a country may face (Bohn [1988]) or on the tradeoff between flexibility in responding to shocks, including stochastic financing needs, on the one hand, and reducing the temptation of time-inconsistent devaluing the debt on the other (Calvo and Guidotti [1990]).

As argued above, governments may issue domestic currency debt to make it attractive to domestic holders, that is, to segment the markets. But, there is no reason to equate domestic-currency debt with domestically-held debt. Some countries issue domestic-currency-denominated debt abroad; in other countries, governments issue foreign currency liabilities specifically designed to be held by domestic residents. Since many countries can choose where to place the debt independently of its currency denomination, a theory of domestically held debt is not identical to a theory of domestic currency debt.

Different regulations concerning debt depending on the country of issue, specifically different tax implications, may play a role. The Eurodollar market provides a good example of the implications of different regulatory treatment of identical assets issued onshore and offshore. The argument here is not be that one country gives favorable tax treatment to any debt issued in that country, but that special legal treatment or favorable tax treatment might lead countries generally to favor issuing debt domestically rather than abroad. Many countries do in fact tax foreign source income more heavily than domestic income, so that tax treatment may well play a role in the preference of where to issue debt (and to help segment markets). However, I don't pursue this here, for I am not convinced that biased tax treatment of domestic residents is the

whole story.

A fourth answer given is that the decision of where to issue debt reflects the characteristics of the domestic capital markets, including both the supply of domestic saving at different interest rates and the level of development of the domestic capital market. Countries in which capital markets are poorly developed or the supply of domestic saving is low (these of course are not independent) may be forced to go abroad to place significant quantities of debt. Here too, I think this plays a role, but is far from the complete answer. It does not really address the question of why countries may choose to issue domestic rather than foreign debt, but is more an argument of why countries may be forced to issue foreign debt when domestic markets cannot absorb a desired debt issue. Moreover, it says nothing of why governments that have the option of issuing debt either domestically or abroad may choose to do the former.

Related to an answer concentrating on the characteristics of domestic capital markets is the argument that countries tend to issue domestic debt because more familiarity with the domestic market, and, hence, lower transaction costs. That is, even when a country has access to well-functioning capital markets at home and abroad, better knowledge of the home market means lower costs at home. More generally, there may be a "home bias" in placing debt. This home bias seems like the mirror image of the home bias in portfolios of asset holders which has recently attracted significant attention. Although many explanations have been given for home bias in portfolios, including better knowledge of home markets by investors, none has been fully satisfactory. Greater familiarity with the domestic capital market may also play a role, but would appear to be a weak basis for a really satisfactory theory of where debt is issued.

The main thesis of this paper is that a crucial difference between domestic and foreign debt

is that the *political* rights of the holders differ substantially. Specifically, their ability and interest to "punish" the government for taking actions that are detrimental to the value of the debt are vastly different. A difference in the political rights of domestic and foreign residents implies that effective cost of borrowing at home and abroad may differ substantially, with the composition of the debt reflecting the politically determined terms of borrowing. Countries that differ in the political costs they face of reneging on either domestic or foreign debt may then have very different debt compositions.

Foremost among these differences is the ability of domestic residents to vote on government policies (either by casting ballots at the polls or by throwing rocks in the streets). Hence, the effective interest rate paid on domestic debt should reflect the preferences of those who hold the debt. In contrast, policies toward foreign debt would not be directly influenced by their implications for the welfare of foreigners. In the eyes of domestic voters, there may also be a distinction between the repayment promise implicit in different types of government obligations to its citizens. Hence, assets which are economically identical could trade at different prices if they are seen as having different political standing.[2]

The notion that different types of debt have a different "political standing" depending on the identity of the claimant may be applied to foreign debt as well. Differences in terms of the identity of the *issuer* of foreign debt are already well appreciated, with the distinction made between sovereign and non-sovereign debt. On the claimant side, a government (or an international organization) holding debt of another government will have available to it a different set of remedies in response to non-payment of debt than will a private holder. They will have a different set of incentives as well, since their interests extend well beyond (and may not even

include) profit maximization. Governments may also differentially repudiate debt of other countries.

Although many papers have considered political determinants of the level of debt, few derive the equilibrium level of debt in a fully specified model of political-economic general equilibrium. Two that do are Tabellini (1991) and Aghion and Bolton (1990), in which the amount of existing debt which is repaid is endogenous, resulting from the political equilibrium, rather than being exogenously assumed. In these models policy must be supported by the current electorate, according to the prevailing political decision-making mechanism. Tabellini (1991) considers an intergenerational model of debt issuance and repayment in a closed economy. Generations are linked by altruism, with parents caring about children and children caring about parents. Children would prefer that no debt is issued, since it acts as a transfer from them to the older generation, whose utility they value less than their own. However once debt is issued, children of richer parents (that is, children of parents who hold a disproportionate amount of the debt and therefore would be net losers from a repudiation) form a coalition with rich parents to support repayment of the debt. In Aghion and Bolton (1990), there are two parties vying for election, a right-wing party which represents the interests of relatively rich voters, and thus is seen as less likely to repudiate the debt, and a left-wing party which represents the interests of poorer voters. Aghion and Bolton consider the strategic use of debt to influence re-election probabilities, such that a right wing party in power may find it optimal to issue more debt in order to increase their chances of re-election.

In this paper I consider a similar political-economic equilibrium considering *both* domestic and foreign debt, where the political constraints on repudiation of foreign debt will be important

in determining the nature of the domestic political equilibrium. Formally, the basic structure of the model is one where economic and political factors determine the effective cost of borrowing at home or abroad, and, with the ability to segment markets, the government acts like a discriminating monopsonist in placing its debt. The model is highly stylized, in an attempt to highlight what appear to be the most important effects. The paper should be seen as preliminary, a step towards a political-economic theory of domestic debt. The plan of this paper is as follows. In the next section, I present basic components of a political-economic model of domestic and foreign debt. In section three I consider optimal composition of the debt based on the interaction of political and economic factors. Section four presents conclusions.

2. A BASIC ECONOMIC MODEL

Consider a two-period endowment economy without capital. There are restrictions on private domestic residents borrowing and lending abroad, so that government bonds are the only domestic saving instrument.[3] To model simply the premise that the government can influence who holds the debt, assume further that foreigners cannot borrow from or lend to private domestic residents. Hence, the government acts like a discriminating monopsonist in financing its expenditures. The government can issue either domestic or foreign debt, which are denoted b and f respectively, in per capital terms. In order to focus on the political penalties that foreign governments may choose to impose on the domestic government in the case reneging on foreign debt, I assume that all foreign debt f is issued to foreign sovereign governments. In the first period, the government issues debt to finance government spending, so that its constraint is

$$b + f = g, \qquad \textbf{(1)}$$

where government spending g is also measured in per-capita terms.[4] In the second period the government repays the principal and interest, financing these payments by a tax which is uniform across all individuals. Denoting by R and Q the realized interest factors on domestic and foreign debt respectively, the second period government budget constraint can be written

$$Rb + Qf = \tau, \qquad \textbf{(2)}$$

where τ is tax per capita, which may be either distortionary or non-distortionary. By "realized" interest factors, I mean the interest factor inclusive of any repudiation.

This stylized formulation of the government's constraints is meant to capture a number of characteristics of the domestic debt question that appear important. First, debt is often used to postpone taxation. Second, the repudiation rates on domestic and foreign debt, and hence the *ex post* rates of return need not be equal. Third, though taxes may differ across individuals according to their income, the differences in tax rates across individuals is generally less than the differences in their asset holdings.

Individuals live two periods and differ in their first period endowment α, where α is distributed in the population according to a cumulative distribution function $A(\alpha)$, defined (for simplicity) over $(0,\infty)$. Individuals have identical second-period endowments ω, where ω is assumed to be at least as great as any second-period tax liabilities. Individuals derive utility from consumption in both periods, as well as from government spending g. It is assumed that utility is linear in second-period consumption, this assumption leading to an extremely simple saving

function. The individual's problem is to maximize a utility function of the form

$$u(c_1) + c_2 + \gamma(g) \tag{3}$$

subject to the budget constraints

$$\begin{aligned} c_1 &= \alpha - s \\ c_2 &= Rs + \omega - \Delta(\tau), \end{aligned} \tag{4}$$

where saving s is constrained to be non-negative, and R is the interest factor. (I assume perfect foresight.) The term $\Delta(\tau)$ represents the possibility that taxes are distortionary, which would imply that $\Delta(\tau) > \tau$ when $\tau > 0$, where Δ is an increasing, convex function of τ. (I ignore for now any penalties associated with repudiation of the debt, which will be introduced in the next section.) The linearity of the utility function leads to a very simple saving function of the form

$$s(\alpha, R) = \max(0, \alpha - z(R)), \tag{5}$$

where $z(R)$ is defined by

$$u'(z) = R. \tag{6}$$

Hence individuals with first period endowment $\alpha \leq z$ simply consume all their endowment in the first period, while those with $\alpha > z$ consume z in the first period and save the excess. For a concave first-period utility function, an increase in R will shift up the linear saving function so that at higher R, some individuals who previously had zero saving will now have positive saving. It is assumed that the government cannot repudiate selectively on the debt, for example reneging on a

greater fraction of interest payments for larger holders. This is motivated by the assumption that once the debt is issued, the government doesn't know the identity of the domestic holders.

Domestic capital market equilibrium is represented by the condition that the sum of individual saving is equal to the stock of debt (expressed in per capita terms), namely

$$b = \int_{\alpha = z(R)}^{\infty} s(\alpha, R)\, dA(\alpha) = \int_{z(R)}^{\infty} (\alpha - z(R))\, dA(\alpha). \quad \textbf{(7)}$$

Consider as a baseline the case of a small open economy facing an interest rate R^*, at which foreign lending is perfectly elastic. Suppose that there are no restrictions on capital flows and that there is no default, so that R and Q are both equal to the exogenous R^*. Assume further that taxes are non-distortionary. Combining equations (1) through (5), the utility function of an individual with endowment α may be written

$$U = u(\alpha - s(\alpha, R^*)) + R^* s(\alpha, R^*) + \omega - \tau + \gamma(\tau / R^*). \quad \textbf{(8)}$$

The desired level of government spending is independent of α (so that there is unanimity on this decision) and is given by the solution to

$$\gamma'(g) = R^*. \quad \textbf{(9)}$$

The interpretation of this condition is simply that the government spends until the marginal value of spending is equal to its cost, which is the interest cost (plus principal) of financing a deficit. Equation (7) will determine the level of aggregate domestic saving, and hence domestic debt, as a function of R^*, so that foreign issuance of debt will be a residual, namely

$$f = g - b = (\gamma')^{-1}(R^*) - \int_{z(R^*)}^{\infty} (\alpha - z(R^*))\,dA(\alpha)\,. \qquad \textbf{(10)}$$

Intuitively, since government expenditure is paid for by issuing debt, the optimal level of expenditure is given by marginal benefit equal to the world interest factor, which is the cost of debt. Where the debt is issued simply reflects the economic characteristics of the capital markets. Specifically, the level of domestic financing is determined by the amount of domestic saving forthcoming at the world interest rate; with perfect world capital markets, foreign issuance makes up the difference between desired expenditure and domestic saving.

This solution is actually a bit more general. Suppose the government can segment markets, but still faces an interest factor R^* abroad. If the domestic interest factor is chosen simply to minimize the cost of financing g as given by (9), (rather than reflecting political considerations, as it will below), the government will find it optimal to set $R = R^*$, yielding the same solution as in the case with perfect capital mobility.

3. POLITICALLY DETERMINED BORROWING COSTS

In this section I consider the determination of domestic and foreign interest factors (and hence the division of debt between domestic and foreign) when political factors are important. Foreign and domestic debt are inherently different in that the holders have very different political rights relative to the domestic government. Domestic holders of the debt can vote on how their assets are treated; foreign holders cannot vote, but can punish repudiation *ex post*. Hence, the domestic interest rate will represent the aggregation of preferences of domestic residents whose

interests concerning treatment of the domestic debt will differ, one from the other, depending on their financial situation. The foreign interest rate will similarly reflect preferences of domestic residents, though here concerning relative costs of using domestic versus foreign debt to finance spending. The costs of using foreign debt will include any penalties assessed if, *ex post*, the country pays an interest factor other than R^*. These penalties will themselves reflect political decisions of foreign lenders.[5]

Based on these political factors, we can derive a political-economic equilibrium, which will be found in three steps. First, the individual maximization problem is solved (consistent with market clearing) for any fiscal policy. Second, each individual's desired policy is derived, which in this case means desired spending and the desired degree of repudiation of the debt. Third, these preferences are aggregated via the political decision mechanism to find the equilibrium level of debt and repudiation.

Let's consider these political costs more specifically. Consider first domestic debt. Each voter will have a preferred realized or *ex post* interest factor R, which will depend on his own saving. A lower R will affect all savers equally in terms of aggregate interest payments, but will hurt them differentially according to the level of their saving. If the decision were made in the second period, when the stock of domestic debt b is given, an individual with saving below the economy-wide average b would be in favor of full repudiation of both principal and interest ($R = -1$).[6] When taxes are distortionary, individuals with saving enough above the average would be in favor of high R, with the level depending on distortions rise as the level of taxes rise.

More realistically, repudiating existing debt (by paying a low R *ex post)* would adversely affect a government's reputation and make it difficult to borrow in the future. In terms of the

model, repudiating debt in any period would lead to the expectation that the realized interest factor will be low in subsequent periods, implying low domestic saving and hence low *b*. Government spending would have to be financed by other means, so that the immediate tax saving effected by repudiation would most likely imply higher borrowing or tax costs in the future. In their decisions of how to treat existing debt, voters would take into account that repudiating the debt would adversely affect reputation and hence might cause credit markets to dry up. A full formal treatment of reputation would require a multiperiod model, preferably with uncertainty about the government's objectives. Since I think the effect on saving of the decision of how to treat debt is crucial in a political model, but that a full modeling of reputation will make this treatment too complicated, I will make the following simplifying assumption. The interest factor is determined in the first period by aggregation of individual preferences, and the government credibly commits to whatever interest rate emerges from the political process.

In the case of foreign debt I consider a different way to model time consistent behavior, namely, that there are perfectly anticipated penalties on paying an interest factor below R^*, where these penalties could take various forms. Since my goal here is to illustrate the effect on domestic decisions of a foreign government imposing low penalties for less than full repayment of the debt (reflecting the foreign government's political considerations), I will consider a simple modeling of penalties. If the realized interest factor Q is below R^*, then there is a penalty $P(R^* - Q)$ per dollar of debt f, which is assessed *ex post*. It is assumed that $P(\ )$ is an increasing, weakly concave function of $R^* - Q$, and that $P(0) = 0$. Hence, foreign funds are borrowed at R^* in the first period, Q is repaid in the second period with a penalty (perhaps non monetary) P per dollar. The effective cost of foreign debt will reflect both Q and P, where both P and Q are correctly

anticipated from the first period. Penalties could be combined with a borrowing constraint, such that borrowing is constrained to be no greater than some $\bar{f}$, but I will assume for simplicity that there is no such constraint. (This approach could be used for domestic debt as well.) My interest in using this approach for foreign debt is that the repudiation decision will be driven by the costs associated with repudiation, and that significant differences between countries in these costs will reflect political, rather than economic, considerations.

Suppose further that taxes are distortionary, that is, the cost of a dollar of taxation in the second period is $\Delta(\tau) > \tau$. The cost of taxation over and above the income effect may be both a standard sort of distortionary cost (say $\Delta_1(\tau)$ where $\Delta_1(\tau) > \tau$) and a political cost (say $\Delta_2(\tau)$ which will be positive for τ sufficiently high). If these political costs are borne by individuals (such as riots in the streets when taxes become too high), the individual maximizes an objective function including both Δ_1 and Δ_2. If these are costs borne by the government (says in a system where the incumbent attaches a private value to staying in office), the individual's utility function would be $U = u(c_1) + c_2 - \Delta_1(\tau) + \gamma(g)$, while the government would maximize $U + \Delta_2(\tau)$ of the relevant voter or voters.

The saving decision will be described by (5) and (6). The utility function of an individual with endowment α may be written

$$U = u(\alpha - s(\alpha, R)) + Rs(\alpha, R) + \omega - \Delta(\tau) + \gamma(g) - P(R^* - Q)f, \qquad \textbf{(11)}$$

where the last term represents the total penalty on foreign borrowing. f is given by the first-period government budget constraint (1), τ is given by the second period government constraint (2), $b(R)$ is defined by (7). An individual voter will have political preferences over g, Q, and R,

as given by the values of these policy variables which maximize (11) subject to (1) and (2). The timing set out above implies that R is chosen in the first period and Q is chosen in the second period (relative to the "promised" R^*). The assumptions of a perfectly anticipated penalty for choice of $Q < R^*$ and commitment to a choice of R means we can think of maximization of utility as of the first period.

Differentiating (11) with respect to g, one obtains the preferred level of government spending g for an individual with endowment α, which is given by the solution to[7]

$$\gamma'(g) = \Delta'[\tau]Q + P, \qquad \textbf{(12)}$$

As in the earlier model, the government spends until the marginal value of spending is equal to its cost, namely the foreign interest cost of financing g. Now, however, the cost per dollar of foreign debt (the right-hand side of (12)) is the sum of the distortionary cost of repaying Q and (when $Q < R^*$) the per unit penalty P. This sum reflects two factors in the cost of financing which were absent in the reference model, as in (9). First, the nature of penalties for reneging will determine the total cost of foreign debt, where some reneging will be optimal to lower the per unit cost below R^*. (See the discussion following (13) on the equilibrium level of repudiation of foreign debt.) Given tax considerations, a country which faces a low cost of repudiating its foreign debt will choose not only higher foreign borrowing to finance its expenditure, but higher government expenditure as well. Second, payment of principal and interest (whether at R^* or below) must be financed by distortionary taxation. Thus, given the cost of foreign borrowing, government expenditure will be lower since it must be financed by distortionary taxation. (This is a standard result in public finance theory.)

The preferred value of Q for an individual with endowment α is found by differentiating (11) with respect to Q (see footnote 6 on why α matters) , yielding

$$P'(R^* - Q) = \Delta'[\tau]. \qquad \textbf{(13)}$$

This has a simple interpretation. Given the cost per dollar of foreign debt as the sum of the distortionary cost of repaying Q and (when $Q < R^*$) the per unit penalty P, Q is chosen to minimize the per unit cost of foreign debt. Thus, at the margin the increase in the penalty from choosing lower Q is just equal to the saving on taxes, including their distortionary effect. (Remember that $\Delta'(\tau) > 1$.) Political factors enter into the determination of Q in two ways. First, the nature of the $P(\ )$ function will reflect decisions of foreign lenders. A decision to impose low penalties for nonrepayment or to make rescheduling of foreign debt relatively easy would imply a low value of Q relative to R^*. Foreign governments correctly anticipate the incentive to pay less than R^* as a function of the penalties they impose for less than full repayment. (Alternatively, sufficiently strong penalties for non-repayment, such that $P'(0) > \Delta'(\tau)$, will induce full repayment.) Second, as indicated above, the function $\Delta(\tau)$ should include the political costs of high taxation. Hence, choice of Q will reflect balancing both economic and political costs.

The determination of the equilibrium penalty P in (13) and the foreign interest factor Q is illustrated in Figure 1. The equilibrium penalty is given by the point at which the slope of the penalty function is equal to $\Delta' > 1$, which also determines Q relative to R^*. In the figure, these values are denoted P^e and Q^e. In equilibrium the penalty P^e will be greater than zero as long as the slope of the $P(\ )$ function is greater than Δ' at $R^* = Q$. Note further that the foreign interest cost $Q + P/\Delta'$ is below R^* as long as P^e is positive.

The preferred domestic interest factor of an individual with endowment α is found by differentiating (11) with respect to R, subject to (1) and (2) and the relevant Δ, yielding

$$\frac{\partial U}{\partial R} = s(\alpha, R) - \Delta'(\tau) b(R) - \Delta'(\tau) b'(R)(R - Q) + P b'(R) = 0. \qquad \textbf{(14)}$$

As before, note that when domestic debt is repaid, it must be repaid by distortionary taxes. Using (7) to eliminate the terms in $b(R)$ and denoting the preferred domestic interest factor of an individual with endowment α by $\check{R}(\alpha)$, one sets R equal to $\check{R}(\alpha)$ in (14) to obtain

$$\check{R}(\alpha) = (Q + \frac{P}{\Delta'}) + \frac{s(\alpha, \check{R})/\Delta'(\tau) - b(\check{R})}{-z'(\check{R})(1 - A(z(\check{R}))}. \qquad \textbf{(15)}$$

(Remember that $z'(R)$ is negative and 1 - A(z) is the fraction of the population which saves.) The first term in parentheses on the right-hand side is the interest factor on foreign debt "adjusted" both for the penalty that must be paid per unit of debt if $Q < R^*$ and for the fact that paying Q and R requires use of distortionary taxes while (by assumption) paying P does not. As indicated above, this quantity reflects political factor both in the decision of foreign governments to impose penalties and in the decision of the domestic government to incur them. The other term on the right-hand side of (15) reflects the differential between the domestic and foreign interest factors which is preferred by an individual with endowment α. To understand this term (and thus the preferred domestic interest factor) intuitively, suppose temporarily that taxes are non-distortionary (so that $\Delta'(\tau) = 1$), and consider an individual with zero saving ($\alpha < z$). In a rational expectations equilibrium, his preferred interest factor is *not* zero, even though any positive payment on the domestic debt is a transfer of income away from him. A zero interest factor

would imply zero domestic saving and zero domestic debt, so that all government spending would have to be financed by foreign borrowing at the world interest cost. (Remember our assumption about commitment to rule out time inconsistent equilibrium.) He would prefer a domestic interest factor that is positive (but less than $Q + P$) to induce positive domestic saving, so that part of desired government spending can be financed at a cost lower than the foreign cost. More generally, as long as an individual's saving is less than the economy-wide average, he prefers a domestic interest factor less than the foreign interest cost, due to the implicit income transfer. On the other hand, an individual whose saving is above the economy-wide average is willing to have a per-unit cost of government spending g above the foreign cost, since the excess represents a transfer to him. An interior preferred interest factor for every type of saver thus represents trading off the benefit (cost, if saving is below the average) of the transfer implicit in higher interest rates against the cost (benefit) of financing some government spending with domestic debt. With distortionary taxation, $\Delta'(\tau) > 1$, it is clear from (15) that an individual with a given level of saving prefers a lower interest rate than when taxes are non-distortionary.

Having found the preferred equilibrium domestic interest factor for each type of saver, the realized equilibrium domestic interest factor R will reflect the political mechanism by which preferences are aggregated. A simple case would be majority rule, where voters vote their economic interests. Voters as indexed by their endowments with preferences over equilibrium rates of return satisfy the conditions of the median voter theorem, so that the equilibrium interest factor is that preferred by the median voter. Denoting median endowment by α^m, the realized interest factor is given by the solution R to

$$R = \left(Q + \frac{P}{\Delta'(\tau)}\right) + \frac{s(\alpha^m, R)/\Delta'(\tau) - b(R)}{-z'(R)(1 - A(z(R))} . \qquad \textbf{(16)}$$

where α^m is given by $A(\alpha^m) = 1 - A(\alpha^m)$. The equilibrium level of domestic debt is then given by equation (7), with foreign debt a residual $f = g - b$.

Alternative political mechanisms for aggregating the preferences defined by (15) would yield a different equilibrium interest rate and a different level of domestic debt in equilibrium. For example, limited suffrage, where voters below a certain income level are effectively disenfranchised would yield a higher domestic interest factor (for a given income distribution), as would a political system in which richer voters have more weight, perhaps reflecting the power of political contributions or lobbying.

The model has a number of reasonable (and testable) predictions on the nature of the equilibrium when decisions over debt reflect political factors, even in the simple median voter model. One main determinant of the equilibrium solution is the level and the distribution of income. Given the world interest cost, a richer country would finance more of its spending by domestic debt. A country with an income distribution skewed to the left would finance more of its spending via foreign borrowing than one with a more equal income distribution but the same average income.

A second key determinant of equilibrium borrowing is the severity of penalties for non-repayment. A lower penalty for (any degree of) repudiation will imply not only a lower Q, but also a lower overall cost of borrowing, that is, a lower $Q + P/\Delta'$. Via (12), this implies higher desired government spending, and, via (16), a lower domestic interest factor R in a median voter

model, everything else equal. A lower *R* means lower aggregate domestic saving and debt. Hence, a lower world interest cost implies that the amount a small economy borrows abroad increases, both from the side of desired government expenditure and from the side of lower desired domestic financing of spending. Therefore, a country that expects to face a low effective foreign interest rate, reflecting the expectation that it won't be forced to repay its foreign debts in full, will be characterized by high government spending, a high government budget deficit, low domestic saving, and thus a high trade balance deficit. Put another way, the political feasibility of reneging on foreign debt would induce a set of policy choices which would make the domestic economy look mismanaged in terms of a number of macroeconomic indicators. The same conclusion would apply to very lenient foreign assistance programmes. If a country perceives that a foreign government or international organization will continue to give aid in spite of past policy failures (essentially a low *P*), it will perceive an easy source of low cost funds from abroad with the same implications for economic mismanagement at home.

This characterization seems quite descriptive of many countries in the African French franc zone (CFA), who financed their government spending with grants or loans which were never repaid from France. Until recently, France was willing to funnel money into these countries for presumably political reasons. In terms of the model, these countries knew they faced a very low effective foreign interest cost, implying high government expenditures, heavy foreign debt, and large trade balance deficits, as above. (These countries are discussed in Bruno and Easterly (1995).)

If the government were to face a previously unanticipated financing need, the results of this section indicate that it would be met on all three margins: domestic taxes will be raised and

the realized interest factor will be reduced for both foreign and domestic debt. How the adjustment will be divided among these three margins will depend, among other things, on the political costs associated with each type of adjustment. If the political costs of one type of adjustment are seen as very high, the adjustment to a shock will take place on the other margins. For example, in economies in which raising taxes is extremely costly (where this may include political costs Δ_2) or where the perceived penalty for not making foreign interest payments is low, governments will tend to renege on foreign debt; in economies where taxes can be raised with relatively low cost to the populace and the government in power or where the cost of reneging on foreign debt is perceived to be high, governments will honor their foreign obligations and impose higher taxes on domestic residents or be expected to repudiate domestic debt. The political costs of imposing adjustment costs on domestic residents will depend on the mechanism by which political preferences are aggregated, that is, who are the decisive group of voters. (Remember that voters also have preferences over τ, which enters into (16).)

These results also have implications for the effect of the consequences of the burden of the debt on monetary policy, though not via the intertemporal government budget constraint, as in Sargent and Wallace (1981), as is often discussed. Debt in the model has been exclusively real. In fact, as indicated above, nominal debt (that is, domestic currency denominated) usually comprises a far greater fraction of domestic debt than of foreign debt. For most small countries, foreign debt is exclusively denominated in foreign currency. The obvious implication is that inflation is an obvious way to renege differentially on domestic and foreign debt, that is to choose different values of R and Q. The effectiveness of inflation in reducing the fiscal obligations of a country will depend on how the composition of the debt is divided between (nominal) domestic

debt *b* and (real) foreign debt *f*. But this division will reflect political constraints, as indicted above. Moreover, if individuals vote according to how governments are expected to protect the value of their assets and if the degree to which individual portfolios are likely to be harmed by inflation differs substantially across segments of the population, the ability of monetary policy to pass the test of political acceptability will depend crucially on the composition of the debt. A political model of the sort sketched here would thus be crucial in assessing the feasibility of a government's monetary policy.

4. CONCLUSIONS

In this paper I have presented some of the components of a political theory of domestic debt. Obviously it is only preliminary. I have tried to keep the model simple in order to highlight what appear to be important determinants of debt in a political-economic model. A key determinant was the relative political cost of repudiating foreign versus domestic debt, though far more work needs to be done here. The usefulness of a political model is in its ability to help explain actual incidents, some of which were mentioned above.

Notes

1. An excellent summary of many of these arguments may be found in Barro (1995).

2. In the wake of a stock market crisis in 1983, the Israeli government effectively converted outstanding shares of major banks into a government obligation with a specified real payoff at maturity. These shares subsequently traded at yields significantly in excess both of their face return and of regular indexed government debt of identical maturity, indicating a perception that the government was more likely to renege on the former than on the latter. To take another example, in the United States many people are convinced that the government will effectively renege on some of its Social Security obligations, while still honoring other obligations. In both cases it is argued that the government will find it politically easier to renege on some obligations than on others.

3. I assume that because of high enforcement costs, there is no borrowing or lending *between* individuals in the economy.

4. A major type of government debt where primarily political considerations will determine the extent to which it is repudiated is government pension obligations.

5. One should also consider the incentive of governments to change policies to attract a foreign inflow, policies such as liberalizing capital markets. For example, Bartolini and Drazen (1996) consider a model of endogenous government policy under asymmetric information, where investors use observations of current policy to infer the course of future policy. In this context, they consider how changes in the world interest rate affect domestic policy choices.

6. As Takatoshi Ito has correctly pointed out to me, an important issue for the politics of domestic debt, which is absent here, is intergenerational redistribution. Intergenerational redistribution, for example, was central to the Tabellini model. I omit it not because I think it is unimportant, but because most of the points I want to make are more easily exposited in a model with only a single generation.

7. Since individuals with different levels of saving prefer different equilibrium values of R, they will prefer different levels of taxation. If $\Delta(\tau)$ is convex in τ, there will, in general, no longer be unanimity over individuals with different endowments on desired Q or g. In this specific case, we can still use the median voter theorem, however, since the simplicity of the model means that preferred values of τ are ordered in the same way as preferred values of R.

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