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ABSTRACT

This study attempts to analyse how uncertainty about future government spending affects the representative individual's lifetime utility by using a discrete inter-temporal optimizing model. Intuitively, the study shows that the overall effect of a highly positive domestic-debt repayment gap is such that the expected government spending for the next period will go down. The implication of the reduction in government spending due to uncertainty about future debt servicing is that the output and the corresponding investment for the next period will be expected to go down. This outcome is further reinforced by the higher taxes imposed on consumers in an attempt to minimise the next period's domestic-debt repayment gap.

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FISCAL UNCERTAINTY WITH DONOR HERDING AND DOMESTIC DEBT CRISIS

1. Introduction

In this study, we set out to analyse fiscal uncertainty of donor herding behaviour in a low-income country (LIC), which is heavily dependent on foreign aid in order to support its budget. Khamfula, Mlachila and Chirwa (2006) develop a model that shows how a domestic debt crisis can occur in a low-income country following donor herding. The model advocates that for a highly foreign-aid-dependent LIC, a sudden cut in foreign aid, due to donor herding, will potentially lead to a domestic debt crisis if there is no adjustment to expenditures. The political and economic developments that emerge in an LIC over the years of donor herding would present a very strong case to support this theory. The current study seeks to establish that, as a result of donor herding behaviour, there is uncertainty regarding future fiscal policy changes in an LIC in terms of both the time of occurrence and the size. Such fiscal policy uncertainty is bound to occur in a low-income country as a result of donor herding effect in which members of the donor community all behave in the same way.

A number of models have examined the effect of current and future changes in monetary and fiscal policy under perfect certainty about the policy.[1] To our knowledge, nothing has been said by the current literature about donor herding and its effects of fiscal uncertainty. Dornbusch (1984, 1986) has looked at the implications of a model for unexpected fiscal policy and for a gradually ending fiscal shock. In such a model, policy rules are known, and even though the rules can encapsulate well-behaved random errors, rational expectations are correct on average over an arbitrary sample period. Daniel (1989) provides a seminal study that analyses the effects of uncertainty regarding future fiscal policy reversal. Daniel's analysis is founded on the empirical fact that there have been periods in which uncertainty regarding changes in fiscal policy rules appears to have played a dominant role in determining

[1] See, for example, Branson, Fraga and Johnson (1986) and Frankel and Razin (1986).

macroeconomic performance. Bulir and Hamann (2003) have focused on aid volatility; and Lesink and Morissey (1999) have analysed the implications of aid uncertainty on economic growth.

The rest of the paper proceeds as follows. Section 2 explains the reason why donor herding behaviour is justified. Section 3 explains the occurrence domestic debt crisis after donor herding. In section 4, fiscal uncertainty that follows donor herding and domestic debt crisis is related. Section 5 concludes.

2. Why Donor Herding Behaviour?

What are the causes of donor herding behaviour? There are obvious benefits for donors to follow one another due to information asymmetries and the cost of information gathering. If one particular donor has privileged information on, or expertise in, a particular area, such as macroeconomic performance, then it is in the interest of all donors to follow the lead of this donor on macroeconomic issues. For the individual donor, this reduces the cost of seeking information, and it is easier to justify to the electorate the basis for granting or withdrawing of aid.

On the other hand, herding may ultimately also be deleterious in the long run. To the extent that the assisted government does not have a strong political and legislative process to force adjustment in the event of withdrawal of donor assistance, the ultimate result can be the rapid accumulation of domestic debt, in the hope that donors cannot walk away indefinitely (the good Samaritan's dilemma), and will ultimately bail out the country. This moral hazard is costly in the short run to the effect that it may entail costly debt service and high real interest rates, thereby reducing real GDP growth. In the long run, it is costly for donors in that they ultimately bail out the country, crowding out other more productive expenditures,

Donor herding can be triggered by several factors. For countries with IMF-supported programs, the non-endorsement of a country's economic program, for example when the program goes off-track, can entail cutting off of a portion of donor assistance that is contingent upon good macroeconomic performance. In other cases, bad governance and corruption play important roles. It is increasingly accepted that for any successful strategy to advance economic and developmental policies in low-income countries, there should be an atmosphere of good governance. Such issues as democracy, transparency, accountability, decentralization, policy ownership and financial integrity are key components of the process of good governance. In this context, lack of transparency in government financial operations, including accountability in the use of donor aid is often seen as a major cause for triggering donor withdrawal.

Donor herding can occur in both time and space, both in a positive and a negative sense. Donors are often motivated to "promote a champion" in order to show to their electorate and world opinion that the policies they support are producing positive results. To the extent that aid resources are limited, there is a motivation to get "more bangs for the buck" by supporting only a limited number of LIC aid recipients. This leads to donor herding in space (geographically). Donor herding can also occur in time, i.e., during periods of good economic performance, aid is increased and vice versa, in part due to donor conditionality which by design punishes bad behaviour or outcomes, leading to some pro-cyclicality (Bulir and Hamann, 2003, 2005). In our paper, we will concentrate on the latter aspect of donor herding.

3. Domestic Debt Crisis after Donor Herding

Khamfula, Mlachila and Chirwa (2006) show how a domestic debt crisis occurs in the event of *n*-successive-period simultaneous withdrawals of aid by aid-donors from a borrowing LIC. Their model considers a sequence of T periods of non-aid flows to the LIC following donor herding. Thus, from period $t+1$ up to period T, there is no supply of new loans, namely S_{t+1}, S_{t+2},…, S_{t+T}. As a result of ensuing high real interest rates on the domestic financial market, the government will start to default on domestic debt as long as accumulated debt in each period is above some threshold level. In each period, there are three likely outcomes:

$$\psi_{t+k} - \varpi^*_{t+k} = \begin{cases} 0, if\ \psi_{t+k}\ equals\ \varpi^*_{t+k} \\ Negative\ value, if\ \psi_{t+k}\ is\ below\ \varpi^*_{t+k} \\ Positive\ value, if\ \psi_{t+k}\ is\ above\ \varpi^*_{t+k} \end{cases} \quad (1)$$

where ψ_{t+k} is the actual domestic debt accumulated in period $t+k$ ($k = 1, 2,\ldots,T$) and ϖ^*_{t+k} is the level of accumulated domestic debt that the government is able to repay in every period. It is assumed that the actual domestic debt accumulated (ψ_{t+k}) is determined as follows:

$$\psi_{t+k} = f(ri^d_{t+k}, (DS_{t+k}\, x\, ri^d_{t+k})^2) \quad (2)$$

where ri^d_{t+k} is the real interest rate prevailing on the domestic financial market; DS_{t+k} is the dummy variable which takes the value of 1 if there is no supply of foreign aid in period $t+k$ and 0 otherwise; and $(DS_{t+k}\, x\, ri^d_{t+k})^2$ is the square of the interaction variable between DS_{t+k} and ri^d_{t+k}. In equation (2), the actual domestic debt accumulated in period $t+k$, ψ_{t+k}, is a strictly increasing function of the square of the interaction variable, $(DS_{t+k}\ x\, ri^d_{t+k})^2$; that is, $\partial\psi_{t+k} / \partial(DS_{t+k} x ri^d_{t+k}) > 0$, given that $DS_{t+k} = 1$. On the other hand, if $DS_{t+k} = 0$, ψ_{t+k} is a decreasing function of ri^d_{t+k}; that is, $\partial\psi_{t+k} / \partial ri^d_{t+k} \leq 0$.

It can be seen from equation (1) that as long as ψ_{t+k} is equal to or less than ϖ^*_{t+k}, a debt crisis does not occur in the LIC. A debt crisis occurs once ψ_{t+k} is greater than ϖ^*_{t+k}. The first two outcomes will yield if the government of the LIC responds to donor herding by simultaneously reducing its expenditures and borrowing a well-calculated sum of loans from the home financial market. If no reduction to fiscal expenditures is made, then the third outcome (domestic debt crisis) is likely to be faced by the LIC.

4. Donor Herding, Domestic Debt Crisis and Fiscal Uncertainty

The case of sustained availability of donor aid provides perfect foresight and certainty about future consumption and investment decisions in the LIC. The case of donor herding provides important welfare implications since in this situation there is no planned course of government spending on social and economic programmes. The position of foreign investors too is not well defined. Thus, individuals plainly do not foresee perfectly the random paths of government spending and private investment that can affect their future wage income or the payoffs on investments. In the event of donor herding, decisions in the current period can only be made on informed guesses about what is likely to happen later on. Our intention here is to analyse how uncertainty about future government spending, in particular, affects the representative individual's lifetime utility by using a discrete inter-temporal optimizing model.

As pointed out above, Daniel's (1989) study analyses the effects of uncertainty regarding future fiscal policy reversal by using a model in the tradition of Dornbusch (1976). The weakness of the model used by Daniel, however, is that it is not derived from a consistent optimizing framework. We assume that the representative individual, faced with uncertainty, maximizes the following expected value of lifetime utility:

$$U_{t+1} = E_t \left\{ \sum_{s=t+1}^{\infty} \beta^{s-t-1} u(C_s) \right\}. \quad (3)$$

The operator $E_t\{.\}$ is a mathematical conditional expectation – a probability-weighted average of possible outcomes, in which probabilities are conditioned on all information available to the decision-maker up to and including date t. C_s is the period consumption level and β the subjective discount factor. As explained above, it is assumed that the effects of simultaneous aid withdraw start to ensue from period $t+1$. A riskless bond is the only internationally traded asset in this model. We assume for simplicity that the world real interest rate is constant at r^w, so that the following current account identity holds:

$$CA_{t+1} = B_{t+2} - B_{t+1} = Y_{t+1} + H_{t+1} + r^w B_{t+1} - C_{t+1} - E_t(G_{t+1}) - I_{t+1} \quad (4)$$

where B_{t+1} is the value of the economy's net foreign assets at the end of period t, B_{t+2} the value of the economy's net foreign assets at the end of period $t+1$, H_{t+1} the level of debt in the economy in period $t+1$, C_{t+1} the consumption level in period $t+1$, Y_{t+1} the output in period $t+1$, I_{t+1} the value of new investment during period $t+1$ and $E_t(G_{t+1})$ the expected level of government spending for period $t+1$ given the information set prevailing in period t. The value of $E_t(G_{t+1})$ is effectively estimated by the level of government spending for the current period, t; i.e., G_t. The simultaneous retreat by the aid donors will leave the private individual with a guess of what value of government spending the next period requires. The immediate guess or estimate available is the past period's value of government spending.

The expectation operator on G_{t+1} is inevitable since it is assumed that in period $t+1$ government spending is a function of the domestic-debt repayment gap, $\psi_{t+1} - \varpi^*_{t+1}$, given in (1). From equation (2), we know that G_{t+1} is also a function of ri^d_{t+1} and $(DS_{t+k} x\, ri^d_{t+1})^2$. Thus we have $E_t(G_{t+1}) = f[E_t(\psi_{t+1} - \varpi^*_{t+1})]$. Rearranging terms in the current account identity, we have:

$$(1+ r^w)B_{t+1} = C_{t+1} + E_t(G_{t+1}) + I_{t+1} - Y_{t+1} - H_{t+1} + B_{t+2} \qquad (5)$$

By iterative process, the stochastic-setting inter-temporal budget constraint is given as follows:

$$\sum_{s=t+1}^{\infty}\left(\frac{1}{1+r^w}\right)^{s-t-1}(C_s + I_s) = (1+r^w)B_{t+1} + \sum_{s=t+1}^{\infty}\left(\frac{1}{1+r^w}\right)^{s-t-1}(Y_s + H_s - E_{s-1}(G_s)). \qquad (6)$$

Equation (6) involves random variables, and its derivation must rule out Ponzi game outcomes in which debt grows at the rate of interest rate, regardless of what shocks hit the economy of the low-income country. With this restriction in place, the random inter-temporal budget constraint must be obeyed with probability one.

Using the current account identity (5), we can eliminate consumption levels from U_{t+1}. This transforms the consumer's problem into the unconstrained maximization of

$$U_{t+1} = E_t\left\{\sum_{s=t+1}^{\infty}\beta^{s-t-1}u[(1+r^w)B_s - B_{s+1} + Y_s + H_s - E_{s-1}(G_s) - I_s]\right\} \qquad (7)$$

with respect to consumption in period $t+1$. The first order condition with respect to unconditional change in C_{t+1} obtains the following stochastic Euler equation:

$$u'(C_{t+1}) = (1+ r^{w})\beta E_{t+1}\{u'(C_{t+2})\} \qquad (8)$$

Now, from the explanation of $E_t(G_{t+1})$ above we know that the change in utility of consumption in period $t+1$, $u'(C_{t+1})$, is partly driven by the proportion of the expected change in the expected level of government spending in period $t+2$, which is actually the proportion of the expected change in G_{t+1}.[2] Recall that $E_t(G_{t+1})$ itself is a function of the domestic-debt repayment gap, $\psi_t - \varpi_t^*$. Thus, $u'(C_{t+1})$ in equation (8) does not only depend on the world real interest rate, r^w, but also indirectly on the domestic real interest rate, ri^d, through changes in government spending, G. This outcome is different from the stochastic Euler equation that would obtain in the absence of donor herding in which $u'(C_{t+1})$ would partly depend on the world real interest rate, r^w, and the expected change in G_{t+2} (and not on the expected change in G_{t+1}). Thus, the case of donor herding gives rise to a situation whereby private individuals have to adjust their current period's consumption levels based partly on the expected change in the current level of government spending.

Intuitively, if the domestic-debt repayment gap for period $t+1$ is expected to be highly positive, the next period's expected government spending, $E_t(G_{t+1})$, will be revised downwards. The expected highly positive repayment gap reflects fiscal uncertainty about servicing debts in the next period. The prevailing domestic debt crisis will make it impossible for government to source loans from either the domestic financial market or the international financial market. This will lead the representative consumer to anticipate a rise in taxes. Part of the current level of government revenues used for spending will also be apportioned towards this increase in the repayment gap. The overall effect will be such that the expected government spending for the next period will go down. Therefore, due to the downward

[2] This can be readily verified from the expression of $C_{t+2} = (1+ r^{w})B_{t+2} - B_{t+3} + D_{t+2} + Y_{t+2} - E_{t+1}(G_{t+2}) - I_{t+2}$.

revision of the expected government spending for period $t+1$, the output for period $t+1$ (Y_{t+1}) and the corresponding investment I_{t+1} will be expected to go down. At the same time, this outcome is expected to be reinforced by the higher taxes imposed on consumers in an attempt to minimise the next period's domestic-debt repayment gap. Thus, the higher taxes set by government will choke private consumption and, hence, discourage savings and investment.

The outcomes envisaged in the preceding scenario contrast with the cases where there are zero and negative domestic-debt repayment gap that would be expected in period $t+1$. With a zero or negative expected domestic-debt repayment gap, savings, investment and output are expected to be maintained at least at the current rates. Thus, in the absence of uncertainty about servicing debts in the next period, savings, investment and output are expected to continue on their current paths.

5. Concluding Remarks

This study has attempted to analyse how uncertainty about future government spending affects the representative individual's lifetime utility by using a discrete inter-temporal optimizing model. It has shown that the change in utility of consumption in the next period is partly driven by the proportion of the expected change in the expected level of government spending in next of next period which is actually the proportion of the expected change in the level of next period's government spending. Furthermore, the change in utility of consumption in the next period does not only depend on the world real interest rate but also indirectly on the domestic real interest rate through changes in government spending.

The intuition behind this study is that in the presence of fiscal uncertainty the representative consumer will anticipate a rise in taxes. The overall effect of a highly positive domestic-debt repayment gap is such that the expected government spending for the next period will go down. The implication of this reduction in government spending is that the output for the next period and the corresponding investment will be expected to go down.

This outcome is further reinforced by the higher taxes imposed on consumers in an attempt to minimise the next period's domestic-debt repayment gap.

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