Debt Relief and Fiscal Sustainability for HIPCs*

Craig Burnside† and Domenico Fanizza‡

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Abstract

The enhanced HIPC initiative is distinguished from previous debt relief programs by its conditionality—that freed resources must be used for poverty reduction. We argue that this conditionality implies no net improvement in the sustainability of the government's finances. In addition, we suggest that a monetary policy dilemma arises when the government increases spending. A passive response by the central bank to monetary inflows into the economy causes a short-run rise and long-run decline in the inflation rate. On the other hand, an active policy to stabilize inflation implies no long run reduction in the government's indebtedness.

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† Duke University and NBER. E-mail: burnside@econ.duke.edu.

‡ International Monetary Fund. E-mail: dfanizza@imf.org.

Debt relief under the HIPC initiative differs from previous major debt relief initiatives, such as the Baker and Brady plans, in that it concerns official rather than commercial debt. It also differs from previous Paris Club debt reduction and rescheduling agreements in that it imposes well-defined conditionality on government spending in the debtor country. In particular, it requires that budgetary resources no longer needed for debt service be used for poverty reduction purposes.[1]

In this paper we argue that the conditionality of HIPC debt relief implies that it provides no net relaxation of the government's lifetime budget constraint. To the extent that the resources freed from debt service are used to increase government spending, any initial budgetary shortfall faced by the government remains in place.

We also argue that central banks in countries receiving debt relief may face a monetary policy dilemma. An increase in government spending on domestic goods, services or transfers will naturally lead to a monetary injection into the economy. If the central bank responds passively to this inflow, inflation will be destabilized, rising during the implementation of debt relief and falling during the post-debt relief period. On the other hand, if the central bank acts to sterilize this monetary injection, inflation will be stable but the stock of debt will rise to its pre-debt relief level.

In Section 1 we illustrate the short-term impact of debt relief with HIPC conditionality using a simple one period model. We use a standard specification of the government budget constraint to establish that any shortfall faced by the government is invariant to its receiving debt relief with conditionality that requires it to increasing spending.

We then use standard textbook T-accounts to illustrate the central bank's monetary policy dilemma. We show that a natural consequence of the government's increased spending on poverty reduction is a monetary injection equal in value to the amount of debt relief the government receives. To the extent that the central bank sterilizes this injection it must sell government debt or reduce its foreign reserves by the same amount. This leaves its debt unchanged relative to its pre-debt relief level. Thus, debt relief only replaces existing official foreign currency denominated public debt with

[1]For a simple description of the HIPC initiative see Van Trotsenburg and MacArthur (1999) and the World Bank's HIPC website: www.worldbank.org/hipc.

either domestic debt or new external debt.

In Section 2 we extend our analysis to a simple multi-period model of the government's budget and money demand. Within this framework our results are robust. Debt relief with HIPC conditionality provides no net relaxation of the government's lifetime budget constraint. Absent other changes in its benchmark fiscal policy, the increase in government spending over the lifetime of the initiative and implied by its conditionality offsets the value of the forgiven debt service. To the extent that the government had difficulty satisfying its lifetime budget constraint, it still does.

We also extend our results on the monetary policy dilemma using a simple monetary model based on the quantity theory of money. With this model we can fully characterize the equilibrium dynamics of prices, inflation, debt and seigniorage during and after the implementation of a debt relief initiative. We describe the central bank as passive if it does not sterilize the monetary injection associated with the increase in government spending that follows from HIPC conditionality. Passive policy causes a short-term increase in inflation, which is reversed in the post-debt relief period. An active central bank can stabilize inflation at its initial level, but to do so it must sterilize the monetary injection. If it does so, we show that the government's net debt level will be equal to its pre-debt relief level by the terminal date of the initiative.

In Section 3 we provide concluding remarks as well as important caveats to our analysis. Importantly our analysis says nothing about the welfare implications of the HIPC initiative. It is clear that regardless of fiscal sustainability issues, the initiative represents a resource transfer from creditors to debtors. So, absent strategic issues, this transfer should be welfare increasing for the debtor countries. An important strategic issue that we ignore is the possibility that donors will treat debt relief as a substitute for other forms of aid. To the extent that they do this, of course, the extent to which the HIPC benefits from debt relief is reduced. We also ignore concerns that debt relief reduces the incentive for HIPC governments to introduce economic reforms. Finally, we discuss whether there are indirect benefits to fiscal sustainability stemming from HIPC debt relief. If the government's increased spending spurs development, this may increase government revenue. We argue, however, that the magnitude of such effects is likely to be modest.

1. A One Period Model

In this section we outline a one-period model which allows us to derive our main results within the simplest possible framework. We begin by discussing the implications of debt relief with HIPC conditionality for fiscal sustainability. Then, within a framework familiar to students of monetary theory and policy we discuss a possible monetary policy dilemma faced by a recipient government.

1.1 Fiscal Sustainability in a One Period Model

Imagine a model of a single period in which a government enters the period with some outstanding amount of debt, D. Since the world lasts for only a single period, this debt must be retired at the end of the period. Therefore the government's budget constraint is simply:

$$\text{outstanding debt} = \text{budget balance} + \text{seigniorage} \tag{1.1}$$

or

$$D = BB + \Delta M, \tag{1.2}$$

where D is the level of net debt, BB is the budget balance and ΔM is seigniorage revenue. Within the budget balance we may distinguish between interest on the debt, rD, primary government expenditure, G, government revenue, T, and foreign aid, A. So (1.2) becomes

$$D = T + A - G - rD + \Delta M$$

or

$$(1+r)D = T + A - G + \Delta M. \tag{1.3}$$

Since the HIPC initiative is targeted at countries that among their characteristics have difficulty servicing their debt, we interpret these countries' initial condition as one in which D is very large. By “very large” we mean that the government must either raise an implausibly, or punitively, high level of tax revenue (T), seek extraordinary amounts of aid (A), slash its spending (G), or print a large amount of money (ΔM), to avoid default.

To highlight the role of debt relief in determining the government's financial state, we rearrange (1.3) as follows:

$$(1+r)D - A = T - G + \Delta M. \tag{1.4}$$

Let us imagine that given the government's benchmark budget plans and the likely amounts of aid it will receive, there is a shortfall in its budget. That is, suppose $(1+r)D - A > T - G + \Delta M$, so that (1.4) does not hold. This would require the government to default on a portion of its debt with the same value as the shortfall

$$S = (1+r)D - A - (T - G + \Delta M). \tag{1.5}$$

We think of countries that need debt relief as countries with large values of S given reasonable benchmarks for their budgetary plans.

Suppose the government obtains debt cancellation or, equivalently, *additional* outside aid with a value of R. Let $A' = A + R$ be the new level of aid being received by the government. This implies that the government's budget shortfall is reduced by the amount of this relief:

$$S' = (1+r)D - A' - (T - G + \Delta M) = S - R. \tag{1.6}$$

If $R \geq S$, the government will be able to finance its benchmark budget plans without default. If the government still faces a budget shortfall, there is a sense in which the sustainability of its finances has been improved. The amount by which $T - G + \Delta M$ would have to adjust upward relative to the benchmark budget would be smaller.

Now suppose that the government receives debt relief, as under the HIPC initiative, which commits it to increased expenditures on goods and services equal to the value of the aid it receives. In other words, relative to its benchmark level of spending, the government must increase G to the level $G' = G + R$. Now

$$S'' = (1+r)D - A' - (T - G' + \Delta M) = S. \tag{1.7}$$

This simple example illustrates that aid with HIPC conditionality leaves the government in the same fiscal situation it was in before. To the extent that the government faced a budget shortfall before, it still faces one now. There is no change in the sustainability of the government's budget plans.[2] One caveat to our analysis is that the

[2]Later, we show that this result extends to a multi-period model. In the context of that model, debt relief with HIPC conditionality has no impact on the government lifetime budget constraint.

HIPC initiative includes a top-up clause through which countries can receive additional debt relief upon reaching the completion point. However, as originally envisaged, this top-up would have been rare and relatively small compared to the size of the baseline debt reduction.

1.2 The Monetary Policy Dilemma

To illustrate the monetary policy dilemma that arises with debt relief and HIPC conditionality, we use a simple accounting framework. Imagine a scenario in which the central bank and government simplified balance sheets at the beginning of the period are as described as in Table 1(a).

In the absence of debt relief, as above, we assume that the government receives revenue in the form of aid, A, and taxes, T. These inflows affect the balance sheet in the manner indicated in Table 1(b). Aid arrives in the form of a grant of additional foreign exchange reserves, A, which the central bank credits to the government's deposit account. Taxes, T, flow into the government's account at the central bank either in the form of cash or cheques drawn on the banking system, so the increase in the government's deposits at the central bank is matched one for one by a decrease in the monetary base. In Table 1(b) we also see the result of the government's expenditure on goods and services, G. These draw down the government's deposits at the central bank by G, and at the same time, increase the stock of base money.[3]

At the end of the period, the government's deposits at the central bank have increased by the amount $A+T-G$, so the government consolidates its finances at the end of the period by writing a cheque on its deposit account to pay down its debt by the amount $A+T-G$ [see Table 1(c)]. Its deposit account at the central bank is thus reduced to zero.

Notice that if the period were to end as described by Table 1(c), the public sector's nonmonetary debt would have changed by the amount $-(2A+T-G)$, while the monetary base would have increased by the amount A. If we consolidated monetary and nonmonetary debt this would imply a net change in debt equal to $-(A+T-G)$. We like

[3]We are implicitly assuming that the government's purchases of goods and services are made in the domestic goods market.

to think of the central bank as a debt manager who chooses the allocation of this change in debt between monetary and nonmonetary debt. We assume that the central bank conducts open market sales of foreign exchange (with a total value of A), and open market purchases of government bonds (with a total value of ΔM), so that the end-of-period balance sheets appear as in Table 1(d). Notice that since the change in nonmonetary debt is now $-(A+T-G+\Delta M)$, and the change in the monetary base is ΔM, the overall change in debt is still $-(A+T-G)$.

Now suppose the government obtains debt relief with value R from a foreign donor. In Table 2 we ask how the public sector balance sheets change as a result of this debt relief, relative to their state in Table 1(d). Of course, debt relief directly reduces the government's debt and public sector net debt by an amount R, as in Table 2(a).

Suppose, however, in order to receive debt relief the government must commit itself to an increase in government purchases of domestic goods and services, or transfers to domestic residents, with value R. Assuming that the government does not raise new taxes or cut other government expenditure in order to finance this increased spending, the central bank must create money. In fact, this money creation is the natural result of the government increasing its spending in the absence of any additional taxation. The public sector accounts end up looking like Table 2(b).

The effect on the money supply of the government's increased spending can be sterilized by the central bank. It can sell government bonds in an open market operation, as in Table 2(c). Notice, however, that as a result of the central bank's decision, the public sector's net debt position rises back to its pre-debt relief level.[4]

Suppose that rather than increasing domestic purchases or transfers, as in Table 2(b), the government increases its spending on imported goods and services. Then, instead of there being an increase in the monetary base, as in Table 2(b), the central bank's foreign exchange reserves are drawn down by the amount R [see Table 2(d)]. Notice, however, that the final outcome is equivalent to Table 2(c) in terms of the public sector's net debt. It is unchanged relative to the pre-debt relief level.

[4]Later, in a dynamic context, we obtain a similar result. The government can postpone the monetary implications of debt relief with HIPC conditionality through sterilization. However, it must eventually face the reality of its intertemporal budget constraint: absent cuts in future spending or rises in future taxes, the present value of future seigniorage revenue must rise in order for the level of debt to fall.

2. A Multi-Period Analysis

In this section we extend the results we obtained with the one-period model to a dynamic model. Once again, we show that debt relief with HIPC conditionality has no impact on a government's fiscal sustainability. In the dynamic model this means that there is no relaxation of the government's lifetime budget constraint implied by debt relief. Similarly, we show that the central bank faces a monetary policy dilemma. The natural consequence of the government's increased spending for poverty reduction is a monetary injection that occurs over the life of the debt relief initiative. To the extent that the central bank sterilizes this injection, inflation can be stabilized, but this implies no long-run reduction in the government's level of debt.

2.1 The Government's Intertemporal Budget Constraint

We now present a standard model of the government's intertemporal budget constraint in continuous time. In our simple model, there is only one good, whose price is P_t. The government issues only one type of debt, D_t, whose value is indexed in terms of that good. We assume, for simplicity, that the net real interest rate on government debt is some constant r. The government finances its interest payments, rD_t, and its spending on goods, services and transfers, G_t, in four ways: by raising tax revenue, T_t, through the issuance of base money, M_t, by receiving aid, A_t, or through the issuance of new debt. The government raises funds by issuing base money via seigniorage revenue, $\dot{M}_t / P_t$, where P_t is the price level and $\dot{M}_t$ is the time derivative of the money stock.[5] Hence, the government's flow budget constraint is given by

$$\dot{D}_t = rD_t + G_t - T_t - A_t - \dot{M}_t / P_t, \tag{2.1}$$

where all variables are measured in units of the single good.

The solution to the differential equation (2.1) is

$$D_t = e^{rt} D_0 - \int_0^t (T_s - G_s + A_s + \dot{M}_s / P_s) e^{r(t-s)} ds. \tag{2.2}$$

[5]We generically indicate time derivatives, $\partial Z_t / \partial t$, as $\dot{Z}_t$.

If we take the limit as $t \to \infty$ and impose the no-Ponzi scheme condition that

$$\lim_{t\to\infty} e^{-rt} D_t = 0$$

we obtain

$$D_0 = \int_0^\infty (T_t - G_t + A_t + \dot{M}_t / P_t) e^{-rt} dt. \tag{2.3}$$

Our interpretation of a highly indebted government at time t is as follows: given the likely paths of $\{T_t\}_{t\in[0,\infty)}$, $\{G_t\}_{t\in[0,\infty)}$, $\{A_t\}_{t\in[0,\infty)}$ and $\{\dot{M}_t / P_t\}_{t\in[0,\infty)}$, the government's lifetime budget constraint, (2.3), is violated. In other words, without (i) fiscal reforms that would increase future values of T_t or decrease future values of G_t, (ii) a substantial increased in anticipated aid inflows, A_t, or (iii) higher rates of money growth and seigniorage revenue, the government will be unable to service its debt while avoiding default. The lifetime budget constraint only holds if a government does not default.

To measure the degree to which a highly indebted government has a fiscal sustainability problem we define:

$$V_0 \equiv \int_0^\infty (T_t - G_t + A_t + \dot{M}_t / P_t) e^{-rt} dt. \tag{2.4}$$

Here V_0 represents the present value of the government's future primary surpluses and seigniorage revenue given benchmark values for its future revenue, spending, aid and seigniorage flows. The government's lifetime budget shortfall is given by $S_0 = D_0 - V_0$, the difference between the value of the government's initial debt, and the extent to which it will be able to service it based on its benchmark budget.

The design of the HIPC debt relief program can be interpreted as follows. A country that receives debt forgiveness under the program is one that finds its debt level at date 0 reduced to $D_0' = (1-\theta) D_0$, with $0 < \theta < 1$. Formally, the initiative reduces debt by forgiving a substantial portion of future debt service payments. Here θD_0 represents the present value of these forgiven payments.

Clearly if debt relief were given unconditionally this would reduce the government's budget shortfall since we would have $S_0' = D_0' - V_0 = S_0 - \theta D_0$. Debt relief under the HIPC initiative, on the other hand, comes with conditionality attached. This conditionality is equivalent to a simultaneous increase in the present value of the future

path of $\{G_t\}_{t\in[0,\infty)}$ equal in value to θD_0. This is because the forgiven debt service payments are targeted towards increased spending on poverty reduction initiatives. So the present value of future government spending will rise by an equivalent amount to the present value of the forgiven debt service absent some independent fiscal reform. Hence the present value of the government's future primary surpluses plus seigniorage revenue falls by the amount θD_0: $V_0' = V_0 - \theta D_0$. There is no change in the size of the government's lifetime budget shortfall which equals $S_0' = D_0' - V_0' = S_0$. Thus, in a well-defined sense, the design of the debt relief initiative does not make the government's debt position more sustainable.

2.2 A Simple Monetary Framework

In this section we examine a simple model of price determination. Together with the government budget constraint, this model allows us to discuss the dynamic inflationary implications of different policy responses to debt relief.

We assume that money demand takes the form implied by the quantity theory of money:

$$M_t^d = v^{-1} P_t Y_t \tag{2.5}$$

where $v > 0$ is some constant, Y_t represents the level of output, and P_t continues to denote the price level. Although some of the specific implications of the quantity theory do not hold for more general money demand specifications, our qualitative results are robust to different models of money demand.[6] We will assume that the level of output is constant, and we will normalize it to equal 1. Hence, in money market equilibrium, our solution for the price level is just

$$P_t = vM_t, \tag{2.6}$$

where M_t is the supply of money. If the money growth rate is $\mu_t = \dot{M}_t / M_t$, this means

[6]In Burnside and Fanizza (2004) we use a Cagan money demand framework. When money demand is interest elastic, future values of the quantity of money influence the current price level, whereas under the quantity theory, all that is relevant is the current quantity. With interest elastic money demand, this means that the precise timing of inflation may be different than under the quantity theory.

that seigniorage revenue is

$$\dot{M}_t / P_t = v^{-1}\mu_t. \tag{2.7}$$

To analyze the impact of debt relief on the price level, we will situate the economy in an initial steady state at time 0. Since, in this section, we wish to abstract from issues of default, and since we have shown that the initiative has no net impact on long-run sustainability, we assume that with or without debt relief the government will, with difficulty, adjust its benchmark fiscal plans so that its lifetime budget constraint, (2.3), holds.

In the initial pre-debt relief steady state we assume that G_t, T_t, A_t, and μ_t are given by constant values G, T, A and μ. Using these assumptions, the government's lifetime budget constraint, (2.3), can be rewritten as

$$rD_0 = T - G + A + v^{-1}\mu. \tag{2.8}$$

The government must set its fiscal plans so that its primary balance plus seigniorage is equal to its flow of debt service. Furthermore, from the flow budget constraint, (2.1), we get the implication that the government's debt stock is constant at the level D_0. Given that money grows at a constant rate, the inflation rate is simply $\pi_t = \mu$ for all t.

To make our example as simple as possible we will assume that the government issues debt in the form of perpetuities. So, in the initial steady state, the government has a stock of perpetuities which will pay out interest equal to rD_0 in each period into the infinite future.

The HIPC initiative typically forgives some fraction of a country's existing debt service obligations out to some finite horizon in the future. To capture this aspect of the initiative, we will assume that at time 0 the holders of the government's perpetuities announce that between date 0 and date $\bar{t}$ they will forgive some fraction ψ of the interest payments on the existing stock of perpetuities. For this to amount to a reduction of the government's debt by the amount θD_0, we can see that the parameter ψ must be such that $\theta D_0 = \int_0^{\bar{t}} \psi r D_0 e^{-rt} dt = \psi(1 - e^{-r\bar{t}})D_0$. Hence $\psi = \theta/(1 - e^{-r\bar{t}})$.

Our interpretation of the HIPC initiative is that at time 0 the country receives previously unanticipated debt relief of the form described above. We interpret the

conditionality of the HIPC initiative as requiring that government expenditure increase by as much as the aid flow until date $\bar{t}$:

$$G_t = \begin{cases} G + \psi r D_0 & \text{for } 0 \le t < \bar{t} \\ G & \text{for } t \ge \bar{t}. \end{cases} \tag{2.9}$$

We assume that taxes and aid remain unchanged so that $T_t = T$ and $A_t = A$ for all t. Together these assumptions imply that the present value of the government's primary surpluses goes down by the amount θD_0, which is precisely the same as the reduction in the value of the government's debt at time 0.

So far we have said nothing about the path of the money supply under the debt relief initiative. We will now explore monetary policy, by considering two alternative paths for the money supply is the post-debt relief world.

Notice that under the HIPC initiative, as described in the previous section, the government increases its primary expenditure by the amount $\psi r D_0$ for $0 \le t < \bar{t}$. As we saw in the simple T-account examples, increased government spending requires an instantaneous injection of money into the domestic economy. In response to this monetary injection the central bank could be passive, in the sense that it could take no action. Alternatively, the central bank could sterilize the monetary injection through an offsetting sale of domestic government debt or foreign reserves. In what follows, we explore these two possibilities, keeping in mind, of course, that there are many others.

Passive Monetary Policy We first describe a passive central bank which does not respond to the injection of liquidity created by the government's increased spending. The real value of government spending is higher by the amount $\psi r D_0$ in the period $0 \le t < \bar{t}$. So if the central bank acts passively the real value of seigniorage revenue, $\dot{M}_t / P_t = v^{-1}\mu_t$, will be higher by the same amount. Hence $\dot{M}_t / P_t = v^{-1}\mu_t = v^{-1}\mu + \psi r D_0$. Hence the money growth rate (and the inflation rate) will rise to the level

$$\mu_t = \bar{\mu} = \mu + v\psi r D_0 \text{ for } 0 \le t \le \bar{t}. \tag{2.10}$$

To get some sense of the quantitative magnitudes implied, imagine that the country's initial debt level is 70 percent of GDP ($D_0 = 0.7$), the real interest rate is 2

percent ($r = 0.02$), the monetary base is 10 percent of GDP ($v^{-1} = 0.1$), 50 percent of the debt is forgiven ($\theta = 0.5$) and the life of the initiative is 20 years ($\bar{t} = 20$). Together these assumptions imply that $\psi = 1.52$ and $\bar{\mu} - \mu = 0.21$, i.e. the inflation rate would rise by roughly 21 percentage points.

An interesting consequence of passive policy is that the government's debt level is reduced by the terminal date of the initiative, despite our result that there is no net relaxation of the government's lifetime budget constraint at time 0. From (2.2) we can see that

$$\begin{aligned} D_{\bar{t}} &= e^{r\bar{t}}(1-\theta)D_0 - \int_0^{\bar{t}} (T - G + A + v^{-1}\mu)e^{r(\bar{t}-s)}ds \\ &= (1-\theta e^{r\bar{t}})D_0. \end{aligned} \tag{2.11}$$

The first line follows from the fact that $G_t = G + \psi r D_0$, while seigniorage revenue is $v^{-1}\mu + \psi r D_0$. The second line follows from (2.8). The reason that the debt level is permanently reduced is that with passive policy, the increased government spending is financed by seigniorage revenue, and debt relief provides additional financing.

Given the previous result, notice that the government would satisfy its lifetime budget constraint at date $\bar{t}$ if, for $t > \bar{t}$, it set $\dot{M}_t / P_t$ consistent with

$$D_{\bar{t}} = \frac{1}{r}\left(T - G + A\right) + \int_{\bar{t}}^{\infty} (\dot{M}_t / P_t)e^{-r(t-\bar{t})}dt. \tag{2.12}$$

If the government sets the money growth rate equal to a constant $\underline{\mu}$ for $t > \bar{t}$, (2.11) combined with (2.12) and (2.8) implies

$$\underline{\mu} - \mu = -vr\theta e^{r\bar{t}} D_0.$$

So the long-run inflation rate, $\underline{\mu}$, is lower than the initial inflation rate. In our numerical example above, we would have $\underline{\mu} - \mu = -0.10$; i.e. the inflation rate is lower in the long run by 10 percentage points.

Active Monetary Policy By an active central bank we mean one that sterilizes the monetary injection associated with the government increased spending in the period $0 \le t < \bar{t}$. As money flows into the economy, the central bank buys in back from the private sector through an offsetting sale of domestic government debt or foreign reserves.

Under this policy, the money supply continues to grow at the rate μ, and the inflation rate stays the same as in the pre-debt relief steady state. From (2.2) we can see that

$$\begin{aligned} D_{\bar{t}} &= e^{r\bar{t}}(1-\theta)D_0 - \int_0^{\bar{t}} (T - G - \psi r D + A + v^{-1}\mu)e^{r(\bar{t}-s)}ds \\ &= D_0. \end{aligned} \tag{2.13}$$

By the time the terminal date of the initiative is reached, the country's debt level is once again equal to its initial debt level. This is the cumulative result of the central bank's policy of sterilization.

Of course, once the initiative is over, the government's debt level remains at D_0, and money growth and inflation continue at the rate μ.

Discussion We summarize our findings as follows. Under active monetary policy (i) the government's debt level is not permanently reduced but (ii) inflation is stable. Under passive monetary policy (i) the government's debt level is permanently reduced but (ii) inflation is unstable, rising during the period of increased government spending and falling after the initiative ends.

We should note that under either type of policy we kept $T_t = T$ and $A_t = A$ for all t. The path of government purchases was described by (2.9) in both cases. Since the initial debt level was $(1-\theta)D_0$ in both cases, it is clear that the present value of seigniorage revenue is identical across the two examples. The distinction between the two is that the timing of seigniorage revenue is different. Under passive policy bigger monetary injections during the life of the initiative are followed by smaller ones in the post-initiative period. Under active policy, monetary financing is stable over time.[7]

3. Caveats and Conclusions

We conclude by first pointing out several important caveats to our analysis. Most importantly, we want to point out that our analysis is not a negative statement about the

[7]Our results are the mirror image of Sargent and Wallace's (1981) *unpleasant monetarist arithmetic*: without a change in the primary surplus, low inflation now means more inflation later. In our case, lower inflation in the future means higher inflation now.

welfare implications of the HIPC initiative. Although we argue that fiscal sustainability is not enhanced, it is clear that the initiative represents a resource transfer from creditor countries to debtor countries. Therefore, other things equal it is welfare enhancing to the debtor countries.[8]

We abstract from the possibility, raised by Cohen (2001), that donors will decrease their non-debt relief aid once the HIPC initiative is under way. Of course, any decline in other forms of aid would offset the value of the debt relief provided by the donors, and would imply a net worsening of the government's fiscal position.

We have also ignored incentives effects that stem from aid and debt relief.[9] For example, we do not take into account the possibility that with preferences unchanged, HIPC governments may undo the effects of debt relief (see Easterly 2002 and Burnside and Fanizza 2004).

Undoubtedly there may be some indirect benefits to fiscal sustainability stemming from the impact of HIPC debt relief on domestic income. We explore the likely magnitude of these effects in Burnside and Fanizza (2004), and conclude that they are relatively modest, perhaps amounting to at most about one quarter of the country's initial debt stock under generous assumptions about the returns to foreign aid.[10]

Our main focus has been on two simple points. First, debt relief conditioned on increased government spending does not relax the government's lifetime budget constraint. Second, monetary policy makers face a policy dilemma. If they act passively in the face of monetary inflows stemming from increased government spending, this can have a destabilizing effect on inflation. On the other hand, if they active sterilize these inflows the government stock of debt returns to its pre-debt relief level.

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[8]Our analysis has also omitted the possible welfare consequences of destabilized inflation under passive monetary policy.

[9]See, for example, Corden (1989), Bulow and Rogoff (1990), Casella and Eichengreen (1996), and Svensson (2000).

[10]The results in Burnside and Fanizza (2004) are based on the assumption that the returns to foreign aid are quite high, of a magnitude consistent with what Burnside and Dollar (2000) suggest is consistent with a good policy country. Implicit in the analysis is the notion that government investment in capital leads to growth. Easterly and Levine (2001), and Devarajan, Easterly, and Pack (2003) provide independent evidence that there is good reason to think that our assumptions are, if anything, overly generous.

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TABLE 1

(a) INITIAL BALANCE SHEETS OF THE PUBLIC SECTOR

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves	Monetary base	Government deposits	Gross debt
Government bonds	Government deposits		

Net nonmonetary debt of the public sector: Gross debt – government bonds held by the central bank – FX reserves

(b) CHANGES IN BALANCE SHEETS AFTER REVENUE INFLOWS AND EXPENDITURE OUTFLOWS

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves $+A$	Monetary base $+(G–T)$	Government deposits $+(A+T–G)$	Gross debt n.c.
Government bonds n.c.	Government deposits $+(A+T–G)$		

Net nonmonetary debt of the public sector: $–A$

(c) CHANGES IN BALANCE SHEETS AFTER GOVERNMENT PAYS OFF DEBT

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves $+A$	Monetary base $+A$	Gov't deposits n.c.	Gross debt $–(A+T–G)$
Government bonds n.c.	Gov't deposits n.c.		

Net nonmonetary debt of the public sector: $–(2A+T–G)$

(d) CHANGES IN BALANCE SHEETS AFTER CENTRAL BANK MANAGES THE PUBLIC SECTOR DEBT

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves n.c.	Monetary base $+\Delta M$	Gov't deposits n.c.	Gross Debt $–(A+T–G)$
Government bonds $+\Delta M$	Gov't deposits n.c.		

Net nonmonetary debt of the public sector: $–(A+T–G+\Delta M)$

n.c. Indicates no change

TABLE 2

(a) CHANGES IN BALANCE SHEETS AFTER DEBT RELIEF IS PROVIDED

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves n.c.	Monetary base n.c.	Government deposits n.c.	Gross debt –*R*
Government bonds n.c.	Government deposits n.c.		
Net nonmonetary debt of the public sector: –*R*			

(b) CHANGES IN BALANCE SHEETS AFTER HIPC CONDITIONALITY IS IMPOSED

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves n.c.	Monetary base +*R*	Gov't deposits –*R*	Gross debt –*R*
Government bonds n.c.	Gov't deposits –*R*		
Net nonmonetary debt of the public sector: –*R*			

(c) CHANGES IN BALANCE SHEETS AFTER CENTRAL BANK STERILIZES THE MONETARY INJECTION

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves n.c.	Monetary base n.c.	Gov't deposits –*R*	Gross Debt –*R*
Government bonds –*R*	Gov't deposits –*R*		
Net nonmonetary debt of the public sector: n.c.			

(d) CHANGES IN BALANCE SHEETS AFTER INCREASED GOVERNMENT PURCHASES ARE DIRECTED TOWARDS IMPORTED GOODS

Central Bank		Government	
Assets	Liabilities	Assets	Liabilities
FX reserves –*R*	Monetary base n.c.	Gov't deposits –*R*	Gross Debt –*R*
Government bonds	Gov't deposits –*R*		
Net nonmonetary debt of the public sector: n.c.			

n.c. Indicates no change