FISCAL IMPLICATIONS OF DEBT AND DEBT RELIEF

SECOND PHASE

ANALYTICAL ISSUES IN DOMESTIC DEBT RELIEF

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INTRODUCTION

This paper presents an analysis of a number of issues that arise with domestic debt reduction in the context of donor funded debt relief. Linkages between internal and external debt are discussed where relevant but the main emphasis is on internal debt. The paper follows a substantial amount of earlier work on the theme, *Fiscal Implications of Debt and Debt Relief*, undertaken for DFID for the workshop of the same name held in November 1998.

Following an Executive Summary, the paper is structured (following our proposal) into three themes. Theme I constitutes the largest single portion of the work and covers debt, monetary policy and the financial sector. Initially data for domestic debt levels in a sample of countries is presented in order to suggest a number of “stylised facts” to guide the analytical discussion that follows. The linkages between domestic debt levels and domestic real interest rates, and the optimal stock of domestic debt, are discussed in the context of the state of development of the financial sector and other variables that affect interest rates. The analysis turns to the consequences of domestic debt reduction on interest rates and the financial sector, in particular whether reduced government debt levels will lead to increased lending to the private sector, followed by a broader assessment of the effects of domestic debt relief on monetary and macroeconomic conditions. Theme II is primarily concerned with the distributional impact of debt relief, which is analysed in depth, followed by an overview of the interactions between public and private debt. Theme III focuses on the links between debt relief and shocks to the economy, asking whether debt relief can be designed to act as a "shock absorber" such that it partly offsets the impact of adverse shocks.
EXECUTIVE SUMMARY

The Domestic Debt Burden and Fiscal Sustainability

For many HIPC\(^1\) countries the cost of servicing domestic debt constitutes a large claim on total government revenue, either because the domestic debt stock itself is large and/or because domestic real interest rates are high. Problems associated with domestic debt are therefore legitimate components of fiscal sustainability.

The approach taken towards domestic debt reduction needs to reflect the nature of the domestic debt burden in individual countries. Unlike the external debt burden of HIPC countries, the size and cost of the domestic debt burden varies greatly. Based on a small sample of mainly African countries, the domestic debt stock is in fact quite low, both in absolute terms and compared to their external debt burden. This is not universally the case: for some countries (such as Ethiopia and Zimbabwe) domestic public debt is high so that even quite small changes in the real interest rate on debt will require substantial fiscal accommodation. Even though the debt stock itself is generally relatively low, the cost of servicing domestic debt is often high, reflecting the structure of domestic interest rates. To the extent that the required fiscal accommodation is not forthcoming, increasing real interest rates can lead to a rapid growth in the debt burden, regardless of the starting level, as the additional interest cost is capitalized. Domestic debt is dominated by short-term instruments and is held predominantly by financial institutions (the central bank and the commercial banks). Since corporate debt and equity markets are typically underdeveloped, domestic public debt frequently serves as the only interest-bearing financial instrument in circulation and therefore plays a central role in monetary policy.

Domestic Debt and Domestic Interest Rates

In contrast to external debt, the interest rate on domestic debt is, at least partially, determined by the outstanding stock of debt. In particular, a high domestic debt stock presents the authorities with an incentive to devalue the real debt stock by generating inflation above the level anticipated by the private sector. Given the narrowness of the traditional tax base in low income economies, the potential value of this "inflation tax" revenue may be high. Anticipating this incentive, the private sector will demand an "inflation premium" on domestic debt, driving up interest rates. The inflation tax incentive (and hence the premium required to counter it) is positively related to the stock of debt, hence reducing the stock of debt will, in addition to lowering the cost of debt service directly, lower the interest rate on debt. Depending on the structure of the domestic financial sector and the degree of capital account liberalization this may also lower the cost of capital to the private sector and hence "crowd-in" higher levels of domestic investment.

Given the tension between the cost of domestic debt service and the role of the debt

\(^1\) Throughout this paper we shall use the term HIPC to denote highly indebted poor countries identified as suitable candidates for debt relief.
instruments in the conduct of monetary policy, it is probably not optimal to seek to eliminate domestic debt entirely. Rather, the target for domestic debt should be a level low enough to eliminate any excessive inflation premium but not so low as to jeopardize the smooth functioning of the monetary system. Given that the domestic debt stock is already quite low in a number of HIPC countries, this target level may entail only limited additional debt reduction. In such circumstances measures taken to reduce the debt stock further without developing alternative interest bearing liquid assets (for example Central Bank paper) may be destabilizing.

The interest rate-reducing effect of a lower debt stock operating through a reduced inflation premium may be further enhanced if a lower domestic debt stock serves as a more general signal of sustainable domestic macroeconomic policy in the future. However, transitional effects flowing from temporary real exchange rate movements may offset or even reverse this effect in the medium term.

Domestic Debt Reduction and Lending to the Private Sector

Whether declining domestic debt (and interest rates) will be passed on to the private sector by way of cheaper or more credit depends on the structure of the banking sector. Specifically, the less competitive is the banking sector (or the less able it is to diversify its lending portfolio) the less the benefits of lower interest rates on debt will be passed through to the private sector. In low income countries characterized by a history of controls, and where the banking sector is typically oligopolistic, “crowding-in” effects may be relatively weak, at least in the short to medium term.

Although capital account liberalization does not eliminate the distinction between domestic and external debt, it does alter the pricing of domestic debt. In principle, capital account liberalization increases the competitiveness of the domestic financial sector and provides for domestic real interest rates to be driven towards the (risk-adjusted) world cost of capital. In practice, however, the short to medium term effects of capital account liberalization may be asymmetric: the open capital account makes the deposit market more competitive but has a much less powerful effect on the lending market (since domestic firms cannot readily switch their source of borrowing).

The Macroeconomics of Domestic Debt Relief

External assistance for debt relief could be directed (i.e. made conditional) to either domestic or external debt reduction, or both. In principle, for a given external resource inflow supporting debt reduction, the long-run change in the net worth of the economy should be invariant to the composition of debt relief (although the consequences for the public and private sectors will differ). In practice, if domestic financial assets in the recipient economy are non-tradable (in the sense that changes in their demand alters the structure of relative prices), and if there are “hysteresis effects” (so that short-run shocks to the economy alter the characteristics of the long-run equilibrium) then the equivalence between domestic and external debt relief will not hold. Specifically, short-run domestic asset price movements are likely to be greater in the case of domestic debt reduction which, if asset price volatility
increases uncertainty, may act as a brake on investment, at least in the short-term.

Stock Versus Flow

Most internal government debt takes the form of treasury bills with short maturities, typically of only a few months, and hence large reductions in domestic debt may be achieved over a short space of time by simply issuing fewer new treasury bills as old ones mature. Hence significant domestic debt reductions are feasible through such a "flow" reduction without the need to retire existing debt instruments. Hence short maturities blur the distinction between stock and flow reductions and obviate the need for consideration of the terms under which existing debt instruments are bought back since this is not necessary. We do, however, identify a case for domestic debt to be reduced gradually rather than in a one-off fashion. Such a case for gradualism can be overstated when the existing stock of domestic debt is excessive.

Distributional Issues

The primary direct impact of debt relief on income distribution is likely to come from the nature of higher government expenditure facilitated by the resources released by debt relief. Such higher government expenditure may be "pro-poor" or not depending on the government's choices or whether conditionality of some kind is imposed.

The poor are also likely to gain, in an absolute if not relative sense, from the increase in economic activity and income opportunities that are likely to follow from debt relief even if they are not the immediate beneficiaries of higher government spending.

Reductions in domestic debt may be achieved through flow reductions in the number of new treasury bills issued and hence there is little cause for concern about the distributional impact of domestic debt reductions as such.

Private Sector Debt

The relief of public sector debt (external or internal) gives rise to enhanced fiscal sustainability which will improve private sector expectations of future policy stability. In turn this should improve the willingness of world capital markets to lend to the private sector within debtor countries. This is to be welcomed and should be regarded as one of the indirect (but possibly substantial) benefits of debt relief.

The Asian crisis has shown that large amounts of private sector debt, particularly short term debt, can lead to instability but such problems are likely to be reduced rather than exacerbated by relief of government debt.

Shocks

Many LDCs are subject to periodic adverse shocks and these reduce the sustainability of the public finances. This suggests that debt relief geared towards fiscal sustainability should be
more generous in countries prone to such shocks. Debt relief makes a given fiscal stance more sustainable for any pattern of future adverse shocks and as such it can be regarded as providing partial relief from the effect of such shocks. It is difficult, however, for debt relief to be used or adapted as a complete "shock absorber" unless debt relief is given in instalments over long periods of time. Debt relief may be staggered to some extent if donors impose conditionality over time but beyond this our view is that debt relief should not be too ambitious in terms of offsetting the effects of shocks as they unfold, as opposed to improving fiscal sustainability whatever the pattern of future shocks. It would be very much in the interests of debtor countries (and LDCs generally) for donors to examine other ways of reducing the effects of adverse shocks as they occur but this should be seen as a largely separate exercise from debt relief itself.
THEME I: DOMESTIC DEBT, MONETARY POLICY AND THE FINANCIAL SECTOR

Outline and Overview

For many HIPC countries the cost of servicing domestic debt constitutes a large claim on total government revenue. This occurs most directly when the domestic debt stock itself is large although in the presence of high real interest rates even a relatively small domestic debt may be very costly to service. Moreover, as we shall discuss later, there may be “hidden costs” associated with a large domestic debt stock, arising from the incentives it creates for governments to act in an opportunistic fashion. The problems associated with domestic debt are therefore legitimate components of fiscal sustainability, and hence consideration should be given to the domestic debt burden in the design of debt-relief programmes for HIPC-eligible countries.

In this section we re-examine the macroeconomic and financial sector consequences of externally funded debt reduction and consider how, if at all, the analysis differs when we bring domestic debt reduction into the analysis. We shall focus on a number of central questions. First we consider whether it is possible to determine the appropriate level of domestic debt for low-income countries. Second we consider the linkage between the domestic debt stock and the level of domestic interest rates to ask under what conditions a reduction in domestic debt will lower domestic interest rates and hence stimulate domestic private sector investment and growth. Finally we return to the mechanics of debt relief to consider the differential macroeconomic effects of a dollar’s worth of domestic debt reduction relative to an equivalent sum allocated to external debt reduction. In all three cases the answers will depend in large measure on the private sector perceptions about the policy environment, on the structure of the domestic financial system, and, indeed on the size of the resource flow allocated to debt reduction.

How the issue of domestic debt reduction is approached also depends on the nature of the domestic debt burden. Unlike the burden of external debt which, by definition, is uniformly high amongst HIPC countries, there are marked differences between countries when we compare the level and cost of domestic (official) indebtedness. First, the size of the debt stock itself differs greatly. For many countries, especially those in Africa, the domestic debt stock is in fact quite low, both in absolute terms but certainly compared to their external debt burden (see Table 1). This is not universally the case with some countries such as Ethiopia and Zimbabwe facing large and rising domestic debt burdens. Secondly, the cost of servicing domestic debt reflects the degree of financial sector liberalization which has consequences for the structure of domestic interest rates (and hence the cost of domestic debt service). Although equilibrium interest rates are likely to rise as a result of financial liberalization, in many economies implementing adjustment and liberalization measures domestic interest rates “overshoot” their new post-liberalization equilibrium values. This partly reflects portfolio adjustment effects, as the private sector responds to the removal of various controls on the disposition of their wealth, but also reflects the fact that liberalization episodes tend to be associated with high levels of uncertainty on the part of domestic investors who demand an additional return on domestic financial assets to offset the risk of policy reversals.
An important consequence of these differences is that the importance of the domestic debt burden in determining overall fiscal sustainability will vary country by country. However the combination of relatively low levels of domestic debt and the potential for rapid domestic debt reduction to generate damaging short-run volatility in interest and exchange rates counsels that, in general, donors should not aim to reduce domestic debt too rapidly. Rather measures to reduce the domestic debt burdens should be implemented gradually and in conjunction with support aimed at reducing the external debt burden, by allocating some of the resource flow from external debt reduction towards domestic debt amortization. There are, however, exceptions to this general conclusion, the most obvious being where an already high domestic debt stock accumulated under conditions of financial repression would constitute a serious threat to fiscal sustainability if and when domestic asset market are liberalized. In such instances consideration should perhaps be given to a more substantial and rapid reduction in the domestic debt stock. Amongst the low-income economies of Africa, Ethiopia stands out as one such country.

**Domestic Debt: Size, Composition and Cost**

It is beyond the scope of this paper to conduct a comprehensive analysis of domestic debt in all the potential HIPC countries. Nonetheless the evidence from a small sample of countries allows us to infer some broad characteristics of the structure and cost of domestic debt that are germane to our analysis.\(^2\) These are summarised in Tables 1 and 2 where we highlight three important features. First, for many countries the domestic debt burden is relatively low as a percentage of GDP, and certainly is much lower than the external burden for these economies (Table 1). As a share of GDP domestic debt is typically less than 20% and for many less than 10%. However this is neither uniform nor has it always been the case. There are two distinct groups: those for whom the debt stock has fallen rapidly since the mid-1980s and those moderate inflation economies who have relied on heavily on domestic debt financing: in Africa the two examples of the latter are Zimbabwe and Ethiopia.

The evolution of the debt stock reflects “flow factors” – the fiscal stance – but, more importantly, reflects the impact of inflation. Historically, problems of fiscal control have been the source of rapid increases in public indebtedness. But the converse is also true, and during the 1990s, a number of countries, for example Uganda, Zambia and Guyana, have managed to redeem outstanding domestic debt by running budget surpluses.

However, inflation has tended to play a much more important role in determining the evolution of the real domestic debt stock. Obviously inflation will reduce the real value of the nominal domestic debt stock. Moreover, if the inflation is unanticipated (in the sense that it is not built into the nominal interest rate), or if there are controls on domestic interest rates

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\(^2\) Reliable and detailed data on the structure, cost and distribution of domestic debt in low-income developing countries is extremely difficult to obtain. The data reported in Tables 1 and 2 are based on domestically published sources. Because of differences in individual country data reporting protocols the comparability of the data across countries cannot be guaranteed, nor can we be certain that the reported debt burden represents a true measure of the liabilities of the government. A detailed analysis of the domestic debt burden for such countries would require a substantial investment in data collection.
so that they cannot respond to anticipated inflation, the nominal interest payable on debt will be insufficient to compensate for the capital loss due to inflation whilst still generating a positive real rate of return. For many of the HIPC countries chronic (and sometimes extreme) inflation in these circumstances has led to large and rapid reductions in the real domestic debt burden. The debt-reducing effects of inflation are seen most clearly during the 1980s in economies such as Ghana, Uganda and Zambia where persistently high inflation in controlled regimes wrote the real value of domestic debt to almost zero.

In circumstances where domestic asset markets are tightly controlled, especially when high inflation depresses real realized interest rates, governments enjoy substantial implicit revenue flows. With interest rate liberalization, particularly in conjunction with capital account liberalization, real interest rates have tended to rise sharply (see for example Kenya, Ghana, Zambia, and Zimbabwe). Part of this increase is the anticipated counterpart of the removal of pre-existing financial repression, but there has also been a tendency for domestic interest rates to greatly “over-shoot” their new equilibrium values in the short- to medium-term. This overshooting may reflect price-stickiness in the goods market but is more likely to be due to the premium required by investors to compensate them for the (temporary) uncertainty over the future direction of the economy arising from the liberalization process.

<table>
<thead>
<tr>
<th>Year</th>
<th>Ken</th>
<th>Gha</th>
<th>Zam</th>
<th>Uga</th>
<th>Tza</th>
<th>Guy</th>
<th>Zim</th>
<th>Eth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>n.a</td>
<td>22</td>
<td>32</td>
<td>10</td>
<td>n.a</td>
<td>100</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>1985</td>
<td>5</td>
<td>11</td>
<td>24</td>
<td>7</td>
<td>15</td>
<td>271</td>
<td>19</td>
<td>34</td>
</tr>
<tr>
<td>1990</td>
<td>14</td>
<td>3</td>
<td>8</td>
<td>1</td>
<td>8</td>
<td>62</td>
<td>40</td>
<td>47</td>
</tr>
<tr>
<td>1995</td>
<td>16</td>
<td>10</td>
<td>6</td>
<td>0</td>
<td>16</td>
<td>37</td>
<td>75</td>
<td>82</td>
</tr>
</tbody>
</table>

Thus even though the debt stock is relatively small, the true cost of servicing may rise very sharply as liberalization measures are implemented. Moreover, to the extent that this sharp
increase in the interest burden is not accommodated by adjustments to the primary budget surplus (through tax increases or reduction in other items of expenditure), there has been a tendency to capitalize the interest through issuing new domestic debt, thereby reversing the previous downward trend in the debt stock. This reversal, which can occur whether the debt stock is initially low (the case of Ghana) or high (Zimbabwe). In fact, it would appear that in a number of cases – most notably Zimbabwe – the failure of the government (and international agencies) to acknowledge the value of the implicit revenue flowing from financial repression led to serious under-estimates of the fiscal cost of financial liberalization. In circumstances where the initial debt stock was high and/or where financial repression was substantial, such as in Zimbabwe, asset market liberalization has seen a rapid increase in the domestic debt stock and concomitant problems of fiscal sustainability.

These features have a number of important implications for thinking about debt relief. The first is that there are a number of countries, possibly a majority, for whom the current stock of domestic debt in isolation does not constitute a threat to fiscal sustainability, even though it may simultaneously be the case that domestic interest rates remain “too high”. For such countries, aggressive measures aimed at reducing the domestic stock may at best have only a small welfare effect when set against the opportunity cost of debt reduction, i.e. higher public spending on the poor. At worst such measures could prove counter-productive in view of the central role played by domestic debt instruments in the functioning of the domestic monetary system, an issue to which we return.

On the other hand there are countries – most notably from our restricted sample, Zimbabwe and Ethiopia -- for whom the stock of debt does challenge fiscal sustainability. For example, in Zimbabwe even a 1 percentage point increase in the real interest rate generates a substantial additional fiscal burden of 0.75% of GDP in interest costs. Moreover, as we shall discuss below, this high domestic debt stock may also undermine the authorities’ incentive to implement effective stabilization measures with potentially adverse effects for investment and growth.

The second important feature is that domestic debt stocks are dominated by short-term instruments (usually in the form of treasury bills), as may be seen from Table 2. To the extent that it exists, long-term debt, that with a maturity of greater than one year, represents a sizeable share of total debt only in Zimbabwe and Ethiopia, the two countries in our sample where controls on domestic asset portfolios remain in place. Even then, long-term debt is typically held by quasi-public institutions such as the post office savings banks, state insurance corporations and state pension funds who are obliged to match their long-term liabilities with similar maturity domestic assets. Long-term debt is rarely traded on the secondary market and this part of the market remains small and segmented from the short-term debt market. Short-term debt is predominantly in the form of 91-day bills, although following high and volatile inflation during the early 1990s, the authorities in a number of countries found it difficult to sell even these instruments and maturities shortened even further (to 28 day in the case of Zambia, for example).

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3 This phenomenon is discussed in detail in External Evaluation of the ESAF (Report by an Independent Group of Experts, IMF 1998).
Finally, Table 2 also indicates that short-term debt is predominantly held by financial institutions (the central bank and the commercial banks). Since corporate debt and equity markets are typically underdeveloped, domestic public debt frequently functions as the only interest-bearing financial instrument in circulation and therefore plays a central role in monetary policy.

### Table 2
Selected HIPC Countries: Maturity Structure and Distribution

<table>
<thead>
<tr>
<th></th>
<th>Ken</th>
<th>Gha</th>
<th>Zam</th>
<th>Uga</th>
<th>Tza</th>
<th>Guy</th>
<th>Zim</th>
<th>Eth</th>
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</thead>
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<tr>
<td><strong>Domestic Debt Maturity</strong></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1990 Short-dated (&lt; 1 year)</td>
<td>46</td>
<td>99</td>
<td>87</td>
<td>n.a</td>
<td>n.a</td>
<td>100</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>1990 Long-dated (&gt; 1 year)</td>
<td>54</td>
<td>1</td>
<td>13</td>
<td>0</td>
<td>95</td>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1995 Short-dated (&lt; 1 year)</td>
<td>80</td>
<td>100</td>
<td>92</td>
<td>n.a</td>
<td>n.a</td>
<td>100</td>
<td>54</td>
<td>10</td>
</tr>
<tr>
<td>1995 Long-dated (&gt; 1 year)</td>
<td>20</td>
<td>0</td>
<td>8</td>
<td>0</td>
<td>46</td>
<td>90</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Domestic Debt Distribution</strong></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>1990 Central Bank</td>
<td>6</td>
<td>28</td>
<td>n.a</td>
<td>n.a</td>
<td>63</td>
<td>n.a</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>1990 Banking Sector</td>
<td>77</td>
<td>10</td>
<td>28</td>
<td>21</td>
<td>37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990 Non-Bank Sector</td>
<td>17</td>
<td>61</td>
<td>9</td>
<td>75</td>
<td>6</td>
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<td></td>
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</tr>
<tr>
<td>1990 Central Bank</td>
<td>0</td>
<td>30</td>
<td>8</td>
<td>n.a</td>
<td>44</td>
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<td>75</td>
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<tr>
<td>1990 Banking Sector</td>
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<td>64</td>
<td>71</td>
<td>47</td>
<td>90</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990 Non-Bank Sector</td>
<td>35</td>
<td>6</td>
<td>21</td>
<td>3</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Domestic Debt and Domestic Interest Rates**

In our previous paper\(^4\), the discussion of an excessive burden of debt concentrated mainly on issues of fiscal sustainability. It followed directly that a target debt burden is that which does not exert excessive pressure on the budget and is sustainable in the face of reasonable assumptions about the volatility of the external accounts and revenue. As we narrow the discussion to focus on domestic debt we need to consider a number of other aspects. The most important is that, in contrast to external debt, interest rates on domestic debt are endogenous so that a target level of debt should be consistent with real domestic interest rates that are not greatly out of line with the world cost of capital. Second, in many low-income economies government domestic debt is the only interest bearing liquid asset in the domestic economy. Hence the domestic debt stock should also be consistent with the smooth functioning of the domestic monetary system. We take each of these issues in turn, starting with the question of the link between interest rates and the stock of debt.

\(^4\) Gunning, J.W and R. Mash “Fiscal Implication of Debt and Debt Relief” (CSAE mimeo, November 1998).
The nominal interest rate on domestic debt consists of two components: that part which compensates the holder for foregoing consumption (the real interest rate) and that part which compensates him for the capital loss incurred through inflation. The nominal interest rate at which private agents will willingly hold domestic debt (i.e. the *ex ante* rate) can be expressed as:

\[ i = r + \pi^e. \]  

Thus if, *ex post*, inflation is correctly anticipated then the nominal return on domestic debt is just sufficient to allow the real *ex ante* interest rate to be earned while maintaining the real value of domestic debt (e.g. in terms of GDP).

### The Inflation Premium

Governments have the capacity to alter the growth of the money supply and thus they can generate unanticipated inflation that represents a capital loss to the asset holder and a corresponding transfer to the government (usually referred to as an “inflation tax”). This is an example of the standard time-consistency problem: once agents have acquired an asset at a fixed interest rate the authorities have an incentive to increase inflation. This incentive is potentially large -- in the sense that it can deliver a sizeable resource transfer to the government -- and increases with the size of the debt stock. For example, suppose the debt to GDP ratio was 10%. A 10% unanticipated increase in the price level will generate a real resource flow to government of 0.9% of GDP (10% times 10% at the new price level of 1.1). However, if the debt to GDP ratio was 25% the fiscal gain would be 2.3% of GDP. Thus the higher the domestic debt stock, the greater the incentive to inflate *ceteris paribus*. Anticipating this incentive, the private sector will demand an “inflation risk premium” thus driving up the real (and thus nominal) *ex ante* interest rate on domestic assets. Notice that when the traditional tax base is narrow or shrinking, as is often the case in low income economies undergoing adjustment, then the incentive to raise revenue from inflation tax is likely to be correspondingly high.

This suggests that one possible target for the domestic debt stock is that level where the inflation risk premium is minimized. By lowering the debt stock sufficiently, the direct revenue benefits of surprise inflation will become sufficiently low relative to the costs of acting opportunistically that the risk premium will become negligible.5

### Other factors determining domestic interest rates

While the inflation risk premium is clearly important it is unlikely that it alone explains the extremely high real interest rates experienced in many African economies in the 1990s. The *ex post* real rate of interest, \( r \), is simply the nominal rate of interest less the rate of inflation

\[ r = i - \pi \]

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5 The risk premium will not disappear completely. Even if the government is committed not to indulge in surprise inflation there will remain a residual “peso problem”: as long as it has the capacity to change the inflation rate there will be a non-zero probability that it will and hence there will be some finite risk premium on domestic assets.
where $i$ is the nominal interest rate and $\pi$ the actual rate of inflation. If we now define the “anticipated” (or “required”) real interest rate in the same way (denoted by the superscript $e$), and subtract this from (2) we derive a relationship, (3), which identifies three possible explanations for high \textit{ex post} real rates of interest,

$$ r = r^e + (i - i^e) + (\pi^e - \pi). \tag{3} $$

This shows that the actual real interest rate may be high because the “required” real interest rate is high, because actual interest rates exceed anticipated nominal interest rates, or because actual inflation is lower than anticipated. It is certainly true that in economies undergoing reforms which alter the structure of asset markets inflation and interest rates are likely to be very difficult to forecast accurately. However it likely that these forecast errors are random rather than systematically too high (for inflation) or too low (for nominal interest rates).

Hence to understand why real interest rates have been persistently high the focus must turn to the first term on the right hand side, the required or \textit{ex ante} real interest rate. Why should this be high? To understand this we need to think about two cases, the first where there are capital controls and the second where capital controls have been removed.

When there are capital controls, the high real interest rate may come about if there is a shortage of savings, an excess demand for those savings, or a combination of both. Thus with binding capital controls the loanable funds market is non-tradable and the interest rate is simply that which equates domestic supply of funds (savings) with domestic demand (represented by private sector borrowing through the banks and government borrowing through Treasury Bills). In the context of economies undergoing adjustment where a high demand for funds emanating from the government's fiscal stance is met by a limited supply of savings it seems entirely plausible that real rates will be high.

In the case where the capital account is (at least partially) open funds will flow into and out of the country up to the point where the expected, risk-adjusted, return from investing in domestic securities is equated to the return in the rest of the world (technically: interest parity will be satisfied). If the domestic return is higher than the rest of the world, funds will flow in and reduce the return. Thus, letting the asterix denote the rest of the world, and $\theta$ the risk premium on domestic assets, we have the condition

$$ i = i^* + E^e + \theta \tag{4} $$

where $E^e$ is the expected depreciation of the domestic currency over the holding period. In equation (4) the (net) risk premium, $\theta$, reflects both the inflation risk associated with holding domestic nominal assets not otherwise reflected in the expected depreciation of the nominal exchange rate and other “real” risk factors associated with holding domestic as opposed to foreign assets. Such factors would include, for example, the risk of policy reversals which reduced or eliminated the degree of capital account convertibility. Holding this risk factor constant, if the expected exchange rate depreciation is positive then domestic interest rates need to be higher than world rates to compensate the holder for the loss of purchasing-power.
value of domestic assets conditional on the depreciation. With a bit of manipulation\(^6\), we can use this condition to express the \textit{ex ante} (i.e. anticipated) real domestic interest rate relative to that in the rest of the world rate as follows;

\[
r^e - r^{*e} = (E^e + \pi^e - \pi^e) + \theta^e.
\]  

Noting that the term in brackets on the right hand side is simply an expression for the \textit{expected} depreciation of the \textit{real} exchange rate, this suggests that domestic real interest rates will be high when the risk premium on domestic assets is high and/or when the market believes the real exchange rate to be temporarily over-valued.

This expression takes us some way to understanding how externally funded domestic debt relief will interact with the structure of domestic interest rates. In the case of a closed economy with market determined interest rates the link is relatively simple: a reduction in the flow demand for funds (i.e. through higher government savings) which lowers the domestic debt stock will lower the domestic real interest rate (or crowd-in greater private borrowing at the same real interest rate). This effect will be reinforced by the associated reduction in the inflation risk premium.

In the case of a partially open capital account, however, matters are somewhat different. At one level, since the domestic interest appears to be tied down by the interest parity condition, it would appear to be independent of the actual domestic debt stock. In other words the domestic debt market becomes a “price-taking” market. However in this case the domestic debt stock does influence the interest rate indirectly, through the risk premium, \(\theta\). Clearly, a reduction in the domestic debt stock which reduces the inflation risk premium will lower \(\theta\). Similarly if the decline in the domestic debt stock is associated with greater confidence in the government’s commitment to maintain good policy in the future, the premium will similarly decline, with the consequent benefits for investment and growth.

Equation (5) however suggests that there may be offsetting short-run effects. In particular, since we assume that debt relief is externally funded, and if the resource inflow generates temporary real exchange rate overshooting – which, as we discuss below is a reasonable assumption -- domestic interest rates will tend to rise during the transition period as domestic investors seek to protect themselves against expected capital losses on holding domestic assets and the increased uncertainty associated with the process of adjustment. It is necessary to recognize the possibility that in the short to medium term these effects may outweigh the pressure for real interest rates to fall as a result of the decline in the inflation risk premium and hence be prepared to accept the fiscal accommodation this entails.

**Domestic Debt and the Financial System**

Setting aside the possibility of this short-run “overshooting” it would appear that with an open capital account, an “optimal” debt relief strategy would involve reducing debt stock at

\(^6\) This comes from the fact that under the interest parity condition, \(i^* = i^e + E^e + \theta^e\) will also hold so that we can write \((i - i^*) = (i^e - i^e) + (\theta^e - \theta)\). We use this along with the foreign real interest analog, \(r^e = i^e - \pi^e\).
least to the point that the domestic interest rate is equal to the (exchange rate adjusted) world rate of interest and possibly further (since even if the uncovered interest condition (4) sets the interest rate on debt, lowering the stock still has positive fiscal benefits in terms of a lower interest bill). However, given that domestic debt is often the main interest bearing eligible liquid asset in the economy, then it may not be possible to reduce domestic debt to zero without placing the banking sector under stress.

The banking sector operates under liquid asset requirements that tend to be relatively high in low-income economies, reflecting the volatility of the banking system’s deposit base and the relative illiquidity of its lending. Typically, Treasury Bills are the banking system’s only interest-bearing liquid asset. As government seek to rely more heavily on indirect mechanisms of monetary controls Treasury Bills are called on to play an increasingly important role in monetary policy. Starting from a position in which the domestic interest rate is above the pure interest-parity condition, reducing the stock of debt will drive down the interest rate on Bills. As more debt is removed from the system, however, banks will only be able to meet their reserve requirements by substitute cash for interest-bearing government debt (assuming the total size of their deposit base is unchanged). From a fiscal perspective this is beneficial to the government (since it is increasingly financing its deficit by issuing non-interest bearing liabilities) but a shortage of interest-bearing liquid assets creates problems for the banking sector. A banking system can, of course, function without public sector interest-bearing liabilities (since interbank trading will still emerge to allow banks to manage liquidity in the short-run) but effective short-run liquidity management by the central bank requires it to actively trade with the banking sector as a whole. This can be achieved through direct quantitative measures but if the objective is to place greater reliance on price-based or indirect methods of monetary control, the central bank needs to be able to buy and sell public sector liabilities.

This problem can, in principle, be rectified by letting the central bank issue its own interest-bearing liabilities as domestic government debt is withdrawn. This is currently done in a number of countries in Africa, notably Botswana and Uganda. Obviously this does not alter the liabilities of the consolidated public sector although, depending on the perceived independence of the central bank, it may serve to lower the inflation risk premium demanded by the private sector. One certain consequence, however, is that such a move will change the net worth of the central bank and consequently its relationship with government. It is beyond the scope of this paper to consider this question further but it is important to acknowledge that one implication of a sharp reduction in the domestic debt stock is that it will require significant changes in the operation and financial structure of the central bank.

A second consequence of reducing domestic debt is that it reduces the return on assets of the banking sector, at least in the short-run. It is true that as interest rates are reduced then the relative return on lending to the private sector should be more attractive thereby presenting the banks with profitable investment opportunities. However if, as is the case in a number of countries, lending opportunities may be limited due to considerations of risk, banks may choose not to increase their lending but rather prefer to hold excess liquidity. If there is limited scope to reduce interest rates on deposits (because they at zero already or constrained by currency substitution effects) bank profitability is likely to decline, and thus lowering the liquidity and solvency of the sector. In a general equilibrium sense, it would seem reasonable
that inefficient banks should not be subsidized through high interest rates, but it is also possible that too rapid a reduction in the return on government debt may trigger bank failures. Whether this is seen as a problem depends on the dynamic response of the banking system to such events. Clearly if those banks that fail were only viable when domestic interest rates were unsustainably high then this should not be a matter of concern. If, on the other hand, bank failures also occurring amongst those institution rendered temporarily illiquid (but fundamental solvent), or if bank failures produce a “flight to quality” which strengthens the monopoly position of the large banks, then the gains to a fall in interest rates are dissipated to some extent.

In both cases, the presence of short-term adjustment problems do not constitute arguments against a reduction in the domestic debt stock – even its elimination altogether – but they do counsel in favour of a gradual reduction in the debt stock.

To summarize, it would appear that a reduction in the domestic debt stock would put downward pressure on domestic interest rates. However, the fiscal gain in terms of lower interest rate is likely to diminish as the debt stock declines suggesting that, at least in the short to medium term, total elimination of the domestic debt stock is probably undesirable. Moreover, given the already low level of debt in a number of African economies there may be at best limited interest rate gains from lowering the debt stock further (despite the interest cost gains accruing directly from the lower debt stock). In cases such as Zimbabwe and Ethiopia, it seems more probable that there would be significant interest-rate gains from lowering the domestic debt stock.

**Debt Relief and Private Sector Lending**

Implicit in the discussion about the non-fiscal benefits of lower domestic interest rates are three crucial assumptions. First, that credit extended to the private sector has a higher marginal social return than credit to the public sector; second, that high interest rates reflect high levels of government debt and that these high interest rates were crowding out lending to the private sector; and third, by symmetry, reducing the domestic debt stock will “crowd-in” private investment. We have already discussed the second assumption: it is reasonable to assume that there are links between domestic debt and interest rates and between the latter and domestic investment demand. Suppose for the moment that the first assumption is also true (although we shall consider this question in more detail below in considering the benefit of using the flow proceeds from external debt reduction to write down domestic debt or to increase social expenditure). Whether the third is valid depends on the structure of the domestic financial system.

In the simplest benchmark case where the banking system is competitive the “crowding-in” effect of lower domestic debt will be direct and lending to the private sector will be directly substituted for lending to the public sector. Often, however, the banking system in HIPC countries is less than fully competitive so that the fall in interest rates on public debt will not necessarily be fully passed through to the cost of capital for the private sector. In the face of falling returns on government debt, monopolistic banks may be able to maintain their profit margins by reducing the interest rate paid on domestic deposits, by increasing their holdings of foreign assets, or, even, by increasing the lending rate on lending to the private sector.
In addition, as the domestic public debt stock declines this reduces the one important source of portfolio diversification for the banks. Although banks faced the risk of capital losses through inflation, public debt is otherwise relatively risk free. Moreover if the risk on public debt has a relatively low co-variance with the risk on lending to the private sector, holding public debt increases the overall expected return to the banks’ portfolio. In the face of a decline in the availability of (and return on) this asset, banks may seek to maintain the expected overall return on their portfolio by increasing their holdings of foreign assets (which are likely to have a low risk-covariance with domestic lending), or by requiring a higher return on their lending to the private sector. Thus although it is not possible to say with certainty how the banking sector will respond to a decline in public debt, it is unlikely that the decline in the stock of public debt will translate one-for-one into an increase in lending to the private sector.

Capital account liberalization may not necessarily guarantee greater competition in the domestic lending market. Typically capital account liberalization is asymmetric. With an open capital account, depositors are able to substitute foreign for domestic deposits which puts a floor under domestic deposit rates (domestic banks must compete to maintain their deposit base). However the lending side of the banking sector is less “tradable”. With the exception of large multinational firms domestic borrowers typically cannot substitute foreign for domestic credit and hence oligopolistic structures in the domestic banking sector can persist.

The Macroeconomics of Debt Relief: Long-Run and Transitional Effects

In our earlier paper we argued that there is no substantial monetary and real exchange rate differences between externally funded domestic and external debt reduction in the long run. Here we build on that analysis to examine the transitional effects of alternative forms of debt relief. The central point of our earlier discussion was that what determines the long-run equilibrium is the real resource transfer to the recipient country from the rest of the world, rather than the purpose to which it is devoted. This transfer, to the extent that it is unrequited, represents an increase in the real wealth of the recipient country regardless of the use to which it is put. Thus the characteristics of the new long-run equilibrium may differ but in a fundamental welfare sense this equilibrium will be independent of whether we consider domestic or external debt reduction.

This having been said, however, the transition to this new long run will differ, possibly very substantially, depending on the size of the debt relief being considered and on the structure and functioning of the domestic financial sector. Most importantly, if the economy is characterized by so-called “hysteresis effects”, which means that the short-run response of the system to an external shock will influence its medium- and long-run equilibrium, then the equivalence between domestic and external debt reduction will not hold.

Hysteresis effects will be present to some degree in the presence of any change in real wealth, (including a reduction in external debt flows). However, since domestic assets are typically small and non-tradable, price effects are likely to be more pronounced when a given resource transfer is directed towards domestic rather than external debt relief. How these effects play
out in general will depend crucially on characteristics of the individual economy, the starting point against which debt relief is implemented and on the size of the transfer.

**External Debt**
In discussing external debt relief, we assume the debt is a liability of the public sector but that the foreign exchange resources required to finance the debt are generated by the private sector and therefore have to be acquired by the public sector through taxation. The aid is immediately used to write down external debt (by paying off external creditors) which has a direct and permanent impact on the fiscal balance but, at least initially, does not have an impact on the domestic private sector. In effect, the capital value of aid inflow comes nowhere near the domestic economy: it is only the flow consequences that have an impact. In macroeconomic terms this is identical to using a resource inflow to accumulate net foreign assets and using the interest on these reserves to reduce the deficit or increase public expenditure.

An external debt reduction therefore only affects the domestic economy by generating a permanent reduction in the level of external debt service. The government (economy) has a permanently reduced demand for foreign currency: the external transfer is reduced so that the real exchange rate will therefore be permanently appreciated. Although this effect is often associated with the term “Dutch disease” it should be noted that the more appreciated real exchange rate is an equilibrium outcome consistent with higher national wealth. The actual price, exchange rate and money supply consequences of this net increase in real wealth will depend on the nominal exchange rate regime being pursued by the authorities, although as we illustrate in Appendix I the (long-run) real exchange rate (and hence resource allocation) implications will be the same under either nominal exchange rate regime. Thus under a floating exchange rate regime the money supply will be unaltered (unless the authorities explicitly choose to intervene in the foreign exchange market) and the nominal exchange rate will appreciate. Under a fixed exchange rate, on the other hand, the domestic price level and the nominal money supply will increase.

Debt relief reduces the net external transfer. Whether it alters the internal transfer from the private to the public sector depends on how the government allocates the “debt relief dividend”. There are three possible ways in which the authorities may choose to respond (they may, of course, respond in some combination of all three). Assuming that we start from a position in which external debt is being serviced then external debt relief simply reduces the transfer required. The options are: (i) government maintains fiscal balance and switches expenditure to “pro-poor” uses; (ii) the fiscal balance is maintained while domestic taxes are reduced; or (iii) revenue and (non-interest) expenditure levels are maintained but government savings (i.e. reduces the budget deficit).

In the situation where the authorities choose to substitute external debt service by higher expenditure in other areas (or reducing domestic taxes) there will be no direct impact effect

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7 It is important to note that the demand effects from any real resource inflow of this kind will tend to appreciate the real exchange rate in the short-run, although the extent to which the real exchange rate appreciation persists will depend on how the supply side of the economy responds. It does not follow, however, that the more appreciated real exchange rate is harmful to the economy.
on domestic asset markets, although second-round effects may have an impact. In the third case, however, the increased government savings will reduce the government borrowing requirement, and depending on how the authorities choose to adjust to the lower deficit financing, the stock of domestic debt. It is reasonable to assume that at least some of the adjustment will involve a reduction in the domestic debt stock. The two objectives of external and domestic debt reduction can therefore be simultaneously addressed, albeit at the cost of forgoing other forms of direct fiscal support.

**Domestic Debt Reduction**

In principle the equilibrium consequences of the same resource transfer being applied to write down the domestic debt stock should be the same as in the case of an external debt write-off. However, only in the case where the private sector re-invests the proceeds from the domestic debt amortization in foreign assets is there a direct equivalence between domestic and external debt reduction. The economy’s net worth is identical to the case of the external debt reduction. Official net liabilities (debt) have not been reduced but private foreign assets are higher, the interest income flow from which will appreciate the real exchange rate in proportion to the permanent income flow from the foreign asset. As we have set it up this real appreciation will be equivalent to that arising from the equal-value external debt reduction. The monetary consequences are exactly as described above (depending on the nominal exchange rate regime), while the second round effect are as before and will depend on the relationship between the domestic debt stock and domestic interest rates.

More generally, though, it is more probable that the private sector is unlikely to allocate the proceeds from debt amortization completely to foreign assets so that the short-run exchange rate consequences of the resource flow in favour of the debtor country are not dissipated by the accumulation of foreign assets. Domestic agents will use the proceeds from a domestic debt reduction to accumulate domestic assets either claims against government or against firms in the form of loans to the private sector. In either case since asset supplies are not perfectly elastic the portfolio reallocation results in changes in domestic relative asset prices. Ultimately, in this case the increase in “net wealth” associated with the resource transfer is represented by increased investment (with possibly some leakage into foreign asset accumulation).

**Implications**

It should be clear that only under strong assumptions about the behaviour of domestic asset prices in the short- and medium-term will the economy’s response to external and internal debt reduction be the same. What is more likely is that the larger the share of any resource flow directed to domestic debt relief the greater will be the short-run movement in domestic asset prices (reflecting the larger required change in the wealth portfolio of the domestic private sector). If short-run volatility is damaging for “hysteresis” reasons then some of the welfare gains from debt reduction will be lost. In such circumstances, therefore, the quantity and speed of domestic debt reduction should be set to ensure that short-run asset price volatility is minimized.

**Implementing Debt Relief: External versus Domestic Debt Reduction.**

Fiscal sustainability depends on both internal and external debt (together with the interest
rates payable on each) and a debt sustainability analysis that determines the quantity of debt relief to be given should consider both. Once the amount of relief has been decided, however, there is an important question as to how the available resources should be directed to the two forms of debt. This is not an either/or choice and some reduction in both is likely to be optimal, both at the time that debt relief is given and subsequently since the easier fiscal situation that follows from debt relief implies that some of the resources released by debt relief can be used to make subsequent and gradual reductions in the stock of either type of debt. The latter course of action implies that some of the fiscal benefits of debt relief are delayed from a purely fiscal point of view since ongoing debt repayment (as opposed to debt servicing) reduces the immediate availability of resources for higher spending (or lower taxes) but this does not necessarily make ongoing debt stock adjustment sub-optimal since reducing a large overhang of domestic debt, for example, that makes domestic real interest rates very high may give rise to larger economy-wide benefits than immediate increases in government spending. In addition a lower debt stock over time implies greater availability of fiscal resources for expenditure. We discuss further below the possible rationale for gradual domestic debt reductions of this kind.

The question of the balance between domestic and external debt reduction may be considered in two stages. Firstly from the perspective of the government's finances alone the rational course of action is to reduce the debt that incurs the higher real interest rate. If the domestic debt stock is initially excessive it is likely that the real interest rate payable on that debt will exceed that on external debt in which case domestic debt reduction would be the priority from a fiscal perspective. As the domestic debt stock is reduced, however, the domestic real interest rate payable on domestic government debt should fall and there will come a point when the domestic real interest rate falls towards the level of the real interest rate on the marginal unit of external debt (excluding any element of concessionality) at which point the latter should be reduced also. If the domestic debt stock is initially small the real interest rates may already be approximately equal in which case external debt reduction would be the immediate priority.

Secondly the analysis should consider the extent to which these fiscal priorities also reflect the interests of the economy as a whole. In the first instance enhanced fiscal sustainability should stimulate private sector activity which would suggest that the fiscal and economy-wide criteria may coincide. One may think of the optimal stock of domestic debt as being determined by the combination of the usefulness of domestic debt as a liquid asset to the financial system (which means that the optimal stock of domestic debt will not be zero) and the costs of a high stock of debt due to i) the high real interest rate that government will need to pay on the debt, including an inflation risk premium, and ii) the temptation for government to have high inflation that reduces the real value of that debt at the cost of less macroeconomic stability. The interaction of these factors points towards an optimal stock of domestic debt greater than zero but not so large as to raise domestic real interest rates much above world levels.8

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8While noting that equilibrium ex ante real interest rates will usually always be higher in LDCs through a higher inflation risk premium if agents perceive a lower commitment to, and less institutional framework to promote, low inflation.
Thus far the fiscal and economy-wide criteria for the balance between external and internal debt reduction coincide in that we have highlighted that a high domestic real interest rate points towards an excessive domestic debt stock from an aggregate perspective and that high domestic real interest rates makes servicing a given value of domestic debt higher than servicing the same value of external debt. Hence both of these factors point towards lowering an initially excessive domestic debt stock as being the priority for the use of debt relief resources.

There is an issue with implementing the optimal domestic debt stock rapidly (by prioritising domestic over external debt at the time of debt relief), however, in that there may be transitional difficulties. The earlier analysis was sceptical about whether the banking system would make best use of the financial resources no longer tied up in treasury bills if the domestic debt stock was adjusted rapidly. In addition, while externally financed debt relief will not destabilise the money supply there is some risk of exchange rate instability in the economy as it adjusts to the new post debt relief equilibrium. Hence it is questionable whether, assuming that the domestic debt stock is initially high with a high real interest rate, it is advantageous to reduce it as quickly as a pure fiscal criteria would imply.

Our view is that there is a strong argument for gradualism in reducing the domestic debt stock but that the costs of an excessive level of domestic debt should be kept firmly in mind as well as the costs of quick reductions in that level. The exact speed of the "gradual" reduction in domestic debt would need to be determined by country circumstances with the key variable being the state of development of the financial system and the ability of banks in particular to on-lend to the private sector for productive use the resources that were previously tied up in treasury bills. A squeeze on bank profits from fewer treasury bills (assuming that they were voluntarily held) and competitive pressure should encourage this process but to the extent that it may take time for the banks to develop the capacity to do this it may be optimal to reduce domestic debt gradually. A gradual approach to domestic debt reduction also minimises the likely extent of possible exchange rate fluctuations during the transition.

It may be noted that whatever rate of domestic debt reduction is implemented there is no meaningful distinction between stock and flow reductions given the short maturity of the great majority of domestic government debt instruments. With maturities of a few months being typical as noted earlier, large stock reductions can be achieved in a "flow" fashion. With such short maturities a large stock reduction can occur simply through the issuance of fewer treasury bills as existing ones mature. In turn this means that stock reductions do not involve any buying back of existing instruments and hence the issue of the terms under which such buybacks would occur does not arise. Hence there is no decision to be made between stock and flow reductions in debt in the sense of buybacks versus slower issuance of new debt, the fundamental questions being those discussed above about the optimal domestic debt stock and the optimal speed of approaching that stock from an initially high level.

**THEME II: DISTRIBUTIONAL ISSUES IN DEBT RELIEF**

In this section we discuss the distributional impact of debt relief. Clearly this is an important
issue in itself and it has also been prominent in public debate concerning the extent to which the costs of high debt service are ultimately borne by the poor in LDCs and the merits of debt relief from a poverty reduction perspective.

**Distributional Effects of Debt Relief**

It may be noted that while discussion of this issue centres around whether the poor will receive the greater part of the benefits from debt reduction, if all groups benefit equally (in proportionate terms) absolute poverty will decline even if relative poverty does not. Hence distributional issues are important but the poor still stand to gain in absolute terms from a general improvement in economic conditions. In this sense we may distinguish between distributional effects as such, which are concerned with the relative position of the rich and the poor, and effects on absolute poverty which should be favourable if there is a general improvement in economic conditions. These are not mutually exclusive and given the importance of both types of effect on absolute poverty we present a general analysis that covers both.

We analyse the distributional consequences of debt relief in sequential fashion since there is a mixture of different influences on the distributional and poverty outcome. That having been said our main conclusion is that the distributional outcome will depend primarily on whether debt relief facilitates an expansion of "pro-poor" government expenditure in line with the International Development Targets.

We first distinguish the cases where the government is or is not meeting its debt service obligations in full prior to debt relief, which is important for the "knock-on" effect on fiscal conditions. This is followed by analysis of the impact of internal debt relief on the holders of domestic debt and the effect of internal or external debt reductions on the government budget and the economy in general.

**Relief of debts that are not being fully serviced**

It is helpful to first consider a situation in which prior to debt relief the government is not servicing its debts in full such that debt relief does not have any immediate effect on the government's fiscal position in a cashflow sense. This applies primarily to external debt since implicit partial default of this kind generally occurs through inflation in the case of internal debt (with inflation reducing the real value of debt service payments fixed in nominal terms). In this case debt relief does not enable any expansion in government spending or cut in taxes and as such the immediate effect of the debt relief is small both in general and in relation to the distribution of income and wealth. This does not mean that debt relief is not worthwhile since in the medium to long run the removal of the "overhang" of non-serviced debt reduces uncertainty about how the situation of partial default would be resolved.

For example prior to debt relief private sector agents may be uncertain about their future tax liabilities following adverse shocks. The reduction of such uncertainty about the future has no direct distributional impact of itself but a strong indirect one since it is likely to raise investment which will give rise to increased work and income generating opportunities for the poor. In turn greater private sector activity should enhance government revenues and thus have a favourable distributional impact if government spending is on balance pro-poor in its
orientation.

More generally the reduction of a non-serviced debt overhang may encourage governments to more vigorously implement economic reforms and pursue economic growth (and tax revenue growth) policies since the returns to these would not be dissipated (from the point of view of the government and domestic economy) by the higher debt service payments that would then be affordable.

Hence if debt relief is chiefly of debts that were not initially being serviced the impact effect on the budget and distribution is small but significant benefits should arise through higher investment and enhanced work opportunities for the poor. In turn higher tax revenues from greater private sector activity will affect distribution to the extent that government spending at the margin is pro or anti poor.

Having discussed this case we now assume that the whole of a country's debt is being serviced in full prior to debt relief and trace out the effects of that relief on domestic bond or treasury bill holders (for domestic debt relief), effects arising from reduced domestic debt in the banking system, and effects operating through the government budget (for internal or external debt relief).

The impact of domestic debt relief on the holders of domestic debt

We turn to the question of whether reductions in domestic debt have a distributional impact through the return to creditors or the holders of that debt. For example if the holders of domestic debt were wealthy individuals and reductions in that debt in some way acted as a subsidy to those people the act of debt relief would have an adverse distributional effect. We find that concerns of this kind are misplaced for two reasons.

Firstly the holders of domestic debt are primarily commercial banks (see Table 2) rather than individuals (though we discuss below the possible distributional impact through bank profits) and secondly because the short maturity structure of domestic debt means that debt stock reductions may take place through reduced issuance of new debt (ie. the government sells fewer treasury bills per month or per year) rather than the buying back of long maturity government bonds. If the latter case applied there would have to be a decision about the price at which the bonds would be bought back by government and to the extent that the price was regarded as too high (or too low) it could be seen as an implicit subsidy to (or tax on) the private sector creditors. Given the short maturity structure there is no need to buy back debt instruments since the stock of debt can be reduced swiftly by simply issuing fewer new treasury bills than the number maturing. Hence existing creditors receive the maturity value of their treasury bills which is fixed in advance in nominal terms and hence there can only be an implicit subsidy to those creditors if either they anticipated partial default on the nominal maturity value or if inflation was lower than expected during the life of the debt instrument which would make the real return to holding that instrument higher than anticipated. Default on domestic debt occurs more often through inflation (which reduces the real return to the creditor) than explicit default and hence the first of these mechanisms is not likely to be important unless in a particular country it is standard practice to default in nominal terms and this was anticipated at the time the debt was first bought. With respect to the second mechanism it is hoped that debt relief would lead to lower inflation, since
enhanced fiscal sustainability should lead to less reliance on seigniorage revenue, but the short maturity of most domestic debt (of typically a few months at most) means that gradual reductions in inflation will not have a strong real effect on the holders of domestic debt relative to the anticipated real return at the time the debt was bought.

Hence domestic debt stock reductions achieved through reduced issuance of new treasury bills will not in general give rise to strong distributional effects, assuming that the maturity values paid on existing debt is in line with what would have been expected at the time that the debt was purchased and given that inflation effects on short maturity debt are weak.

**Distributional effects from the reaction of the domestic banking system**

The previous section analysed the impact effect of domestic debt reduction on the holders of debt whereas this section broadens the focus to consider the distributional impact of the reaction of the banking system to the lower domestic debt stock analysed under Theme I.

The key mechanism here is that if the reduction in the domestic debt stock gives rise to higher lending to the domestic private sector for investment the poor should gain from the subsequent increase in economic activity through enhanced demand for their labour. In principle the higher investment lending should result from both a greater availability of funds which are no longer invested in treasury bills and from a larger demand for loans by the private sector in response to the lower interest rates that should result from the lower domestic debt stock. As noted earlier, however, this outcome is unfortunately not inevitable if a lack of competition in the financial system prevents interest rates from falling as much as they should and/or the banking sector has limited capacity for, and experience of, lending to the private sector for investment purposes rather than the easier option of buying government securities. In practice there is a spectrum of possibilities for the nature of increased bank lending with loans for private sector fixed investment having perhaps the greatest dynamic benefit for the economy. Other possibilities are loans for working capital and for consumption, the latter having a stimulative effect on the economy if higher consumption raises demand for domestically produced goods. A less beneficial possibility, however, is an expansion of consumption lending primarily for consumer durables such as motor vehicles (which offer the lender better security than non-durable goods) which are often imported. While not harmful to overall welfare as such, consumption lending of this kind will tend to favour the rich rather than the poor and give rise to lower aggregate dynamic benefits than lending for investment.

In this context it may also be noted that there will be a small distributional effect from a change in the domestic debt stock on bank profits if banks are domestically owned by relatively wealthy individuals. This effect can go in either direction. If the banks are initially operating under financial repression such that they hold more treasury bills than they would like, the reduction in the domestic debt stock would lower this implicit tax and tend to raise bank profits. Alternatively if the financial sector is liberalised and the banks no longer have access to such large quantities of high return government securities, their profits will tend to be squeezed by domestic debt reduction though this effect will be partly offset if there is limited competition in the sector. Given that banks are often foreign owned and that the profits of domestically owned ones will usually be a small proportion of the income of the rich these effects on distribution through bank profits are not likely to be large.
Thus in summary the poor are likely to gain from an increase in economic activity stimulated by the reduction in domestic debt if that gives rise to lower interest rates and/or higher lending to the private sector for investment. If this does not take place due to inflexibility in the banking system this beneficial impact on the poor will not take place but there are not likely to be large effects in favour of the rich either.

**Distributional effects from the government budget**

We turn to the more significant distributional impact that is likely to occur through the government budget following debt relief. Reductions in external or internal debt ease the government's fiscal position (assuming that debt service obligations were being met pre-relief) and hence the same fiscal balance can be maintained with lower taxes and/or higher government expenditure. Alternatively the government may increase its net savings in which case it could choose to take the fiscal benefit from debt relief partly or wholly in the form of an accelerated repayment of remaining debt, again external or internal. To the extent that debt service levels remain high, particularly if the stock of domestic debt is still large, the latter can be a perfectly rational course of action. If it is pursued the consequence is to delay the beneficial effects of debt relief on taxes or spending but to make them larger by doing so. Hence we focus on the taxation and expenditure side in the discussion that follows together with the more general effects on the economy of greater fiscal sustainability.

The fiscal benefit of debt relief may be realised partly or wholly through lower taxes, either in the form of lower explicit income or sales tax rates or by means of reduced tax effort in terms of enforcing tax collection and/or less vigorously pursuing measures to broaden the tax base. There is, for example, some empirical evidence that increased aid flows tend to weaken tax effort. The tax base in many LDCs is narrow and there are likely to be significant benefits from broadening it so weakening the tax effort in this way is likely to be more politically attractive than economically efficient. The exception to this would be when existing tax rates are highly distorting in which case a lowering of those rates may have powerful incentive effects on economic activity. Highly distorting implicit taxes have been applied in the past in agriculture through low levels of producer prices paid by marketing boards, which have now mostly been abolished. There is also evidence of very high tax rates on some items such as fuel in some countries which are likely to cause severe distortions but overall there is little reason to suppose that a general lowering of tax rates would have as stimulating an effect on the economy as carefully targeted increases in government expenditure. A general argument may also be given that very high tax rates are more likely to be applied to politically weak groups in society and hence any reductions in taxes are unlikely to include the most economically damaging ones. This argument suggests that reductions in tax rates or tax effort more generally are not likely to generate very strong incentive effects and hence not likely to give rise to sharply increased economic activity as their dominant effect. If that was the case reductions in tax revenue might be seen as broadly anti-poverty but in practice the benefits are likely to accrue to those paying taxes who are more likely to be the rich. Hence except where highly distorting taxes are reduced it is unlikely that reduced tax revenue as a benefit from debt relief will have a favourable distributional impact.

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9See "Debt and public finance in low-income countries", paper prepared by CREDIT, University of Nottingham, for DFID under the first phase of this project.
The discussion has considered reductions in tax revenue from explicit taxes such as income and sales taxes. A further, and often desirable, implicit tax reduction may be a lower inflation tax through lower inflation and hence reduced seigniorage revenue. This arises from the government's monopoly right to print money and greater money creation that raises the price level operates as an implicit tax on nominal money holdings and nominal government debt. When a government's fiscal position is under strain it will generally be more tempted to have high seigniorage revenue through high inflation even though this may be highly distorting to the financial system by reducing agents' willingness to hold nominal assets. Debt relief both eases the current fiscal situation, and thus makes current high inflation less attractive to the government, and in a longer term sense gives rise to greater fiscal sustainability and thus a reduced likelihood that the government may resort to the inflation tax after adverse shocks in the future. Hence debt relief that stabilises and eases the fiscal position of the debtor government is likely to give rise to lower current inflation and lower expected future inflation, thus enhancing macroeconomic stability and in principle lowering real interest rates which should raise investment. These effects are to be welcomed from the point of view of the economy generally and also from a distributional point of view in terms of income opportunities for the poor. Hence the direct distributional impact of lower inflation is not necessarily strong (except in so far as the poor have less access to interest bearing and real assets and hence are more exposed to inflation) but the indirect effect on poverty may be much larger and hence part of the benefit from debt relief being felt through reduced seigniorage revenue, if inflation was high pre-debt relief is broadly to be welcomed.

Many of the arguments above have been based on fairly general linkages from debt relief to economic activity and from that to income opportunities for the poor. Effects of this kind are not necessarily small but they are indirect and hence difficult to quantify with any precision. It may be argued that the strongest direct effects on the poor will arise from the effect of debt relief on government expenditure.

If public expenditure is at the margin pro-poor a positive distributional impact may be expected from debt relief, assuming that its fiscal benefits are not entirely absorbed through lower taxes or higher government saving. Alternatively if government expenditure favours the well off, increases in that expenditure facilitated by debt relief will not greatly assist the poor. Hence the effect of higher government spending on distribution is conceptually clear but in practice the net effect will depend on individual country circumstances in terms of the pattern of spending. Hence higher expenditure may be significantly pro-poor in one country, with a government that emphasises health, education or other social sector expenditure for example, but have very little effect on the poor in another country with different government preferences. To the extent that the latter government might spend the extra resources freed by debt relief on economically useful things that happen not to have a strong direct impact on the poor, such as infrastructure perhaps, a favourable effect on poverty may be expected in the medium to long run through higher economic activity. If on the other hand the government spends the resources in an economically wasteful fashion little effect on the poor will occur in the short or long run.

In this sense debt relief is no different from other forms of aid which may also be spent in a pro-poor way or otherwise. The distributional impact of government expenditure is part of what constitutes good policy and debt relief may only be given to those countries that have
Indeed the circumstances under which they might be large are difficult to foresee since there would have to be a good that has a large consumption weight for the poor (of which a basic foodstuff would be the most likely candidate), that is non-tradable and has no close substitutes (neither of which usually apply to food), and whose price rises much more than the income of the poor. Price rises of basic foodstuffs are plausible when the income of the poor increases and they spend more on food - 21 - a good track record in this regard.

Hence in summary debt relief (when debts were being fully serviced) eases pressure on the government’s budget and can result in lower explicit taxes or tax coverage, reduced seigniorage revenue, accelerated repayment of remaining debt or higher government spending. Of these lower taxes are not likely to favour the poor, lower seigniorage revenue is broadly to be welcomed on general economic grounds (and may also favour the poor to some extent) and higher government expenditure may favour the poor (and do so very strongly) but unfortunately this is not inevitable.

**Distributional effects from changes in relative prices**

The possibility of greatly increased pro-poor expenditure is arguably the strongest direct effect on distribution from debt relief. More indirectly the general improvement in economic conditions that follows from enhanced fiscal sustainability and, in principle, lower real interest rates should help to reduce absolute poverty while not necessarily changing distribution (in a purely relative sense). For completeness, however, we also outline a further effect on distribution that may occur if there are changes in relative prices in the economy. These effects are difficult to forecast but are not likely to be large.

At the broadest level, debt relief makes a country better off and hence facilitates higher expenditure in the economy by both the government and the private sector. Extra expenditure on tradable goods generally gives rise to increases in the volume of imports rather than any increase in their price because developing countries are usually small in the world markets in which they trade. By contrast higher spending on non-tradable goods does generally increase their prices (as well as the quantities produced). These price rises will usually be more pronounced in the short run (when price elasticities of supply are generally smallest) but are likely to persist in the long run. A distributional effect may arise if the non-tradables whose prices rise have larger or smaller shares in the budgets of the rich and the poor. For example if the price of a non-tradable foodstuff (without close tradable substitutes) increases it will reduce the real incomes of the poor (for whom basic foodstuffs have large budget shares) much more than the real incomes of the rich (who have low budget shares for basic foodstuffs). This effect can work in the opposite direction, however, since an increase in the price of non-tradable services consumed disproportionately by the rich would reduce their real income more than that of the poor. Indeed to the extent that non-tradable services are often supplied by the poor, an increase in their price can raise the demand for the poor’s labour. Hence increases in expenditure following debt relief will have complex "general equilibrium" effects on distribution through changes in relative prices on consumption and real incomes and also on the demand for different types of labour. There is, unfortunately, very little empirical evidence on the likely net effect on distribution from this source, and it would in any case vary considerably from country to country, but what evidence there is does imply that the net effects are likely to be small.10 Thus from a policy perspective it is

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10Indeed the circumstances under which they might be large are difficult to foresee since there would have to be a good that has a large consumption weight for the poor (of which a basic foodstuff would be the most likely candidate), that is non-tradable and has no close substitutes (neither of which usually apply to food), and whose price rises much more than the income of the poor. Price rises of basic foodstuffs are plausible when the income of the poor increases and they spend more on food.
suggested that these relative price effects are not given undue weight.

**Interactions Between Public and Private Sector Debt**

We close this section by outlining the likely interaction between reductions in public sector debt through debt relief and private sector external debt, i.e. debt that is a liability of the private sector within the LDC and owed to foreign creditors. Private sector debt owed to domestic banks is discussed elsewhere. In contrast to the middle income debtor countries the total size of external private sector debt is small but to the extent that it may become an important source of investment finance these interactions are important. It is also highly likely that high public sector debt has repressed private sector debt through credit rationing.

The interactions between public and private sector debt in their entirety are complex but from a policy perspective reductions in public sector debt through debt relief are likely to have highly beneficial effects on the private sector's access to investment finance. Debt relief gives rise to enhanced fiscal sustainability and reduced external debt also assists the balance of payments position (since the economy no longer has to generate such a large resource outflow for external debt service). These point towards improved policy and exchange rate stability which lower the perceived risks associated with lending to the private sector within an LDC. A particular source of investment finance that is likely to be sensitive to improved economic conditions is the return of flight capital owned by domestic residents.

Having pointed towards the generally favourable effect on private debt from public debt reductions, three further points should be made. Firstly, from the history of the debt crisis in the 1970s and early 1980s it is essential for governments to be careful not to give any explicit or implicit guarantees on private sector debt (as occurred in a number of middle income and Latin American countries in the 1970s). Secondly, a greater inflow of private sector finance will have Dutch disease effects on the economy since fewer resources will be allocated to the tradable sector in equilibrium since lower net exports are required for balance of payments equilibrium given the greater inflow of capital. As with the Dutch disease effects from the resources provided for debt relief itself, this should not be regarded as necessarily harmful to the economy (as before the "disease" terminology is rather unhelpful). Lastly the Asian crisis has shown that private sector debt from foreign creditors is not necessarily problem or issue free but such problems are likely to be reduced rather than exacerbated by lower public sector debt and the greater economic stability that should result from that.

Thus private sector debt is a potentially important part of the economy's overall response to public debt relief but from a debt relief policy point of view it is not likely to be large in the HIPC's and the effects are in any case likely to be favourable.

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but the net effect is unlikely to be a reduction in real income. Large price rises for a basic foodstuff are unlikely solely from an increase in the income of the rich since their expenditure on basic food is usually small and basic foodstuffs are likely to be an inferior good for the rich anyway.
THEME III: DEBT RELIEF AND ECONOMIC SHOCKS

Can “Shock Absorbers” be Built into Debt Relief Programmes?

High levels of debt and debt service payments taken on their own are a major development issue but it is important to consider whether there are important interactions between debt and other development problems such as the fact that many debtor countries are prone to periodic adverse shocks. We approach the interaction between debt and shocks from the perspective of both the effect of shocks on debt management and fiscal sustainability on an ongoing basis and the extent to which the anticipation of future shocks should affect debt relief itself in terms of quantity and timing. We find that the effect of shocks is an important issue for sustainability and the volume of debt relief but that there is a limit to the extent to which debt relief can be specifically geared to offsetting the effects of future shocks.

First it may be noted that one source of adverse shocks, increases in the interest rate on external debt and thus higher debt service payments, becomes immediately less important with lower external debt. The same effect applies to domestic debt though with short maturity instruments it takes the form of "rollover" risk whereby the government faces volatility in the price at which it can sell new treasury bills as existing ones mature. In both cases possible shocks are not eliminated but their scale is reduced.

We turn now to shocks that arise through large swings in commodity prices. The export structure of many poor debtor countries is concentrated in a small number of primary commodities and the prices of these are notoriously volatile. We first examine the effect of these price fluctuations on fiscal sustainability followed by whether the form of debt relief should be adjusted to the existence of those fluctuations.

Fiscal sustainability was analysed in some depth in the earlier paper, the key point in this context being that shocks, particularly adverse shocks that impact negatively on the economy and with it tax revenue, reduce the sustainability of a given set of tax and expenditure policies that may be sustainable under normal conditions. If it is the case that positive and negative shocks are equally likely, long run sustainability is little affected but in economies where adverse shocks dominate or where the government has limited access to the world capital market (which is typically the case) the effect of negative shocks matters for sustainability. For example if a government has limited access to external finance and faces a negative shock to tax revenue there is a risk that its policy mix will be perceived as unsustainable or it will be forced to make sharp changes to tax and expenditure policies that may be undesirable. In this type of situation the anticipation of adverse shocks is harmful from a fiscal sustainability point of view and at the margin this calls for greater caution in determining fiscal policy. As noted in the earlier paper, however, this rationale for caution needs to be balanced against the benefits to the economy from appropriate government expenditure, particularly where that expenditure has previously been tightly squeezed during economic reform.

Hence the likelihood of future adverse shocks implies a case for (some) extra caution from the point of view of fiscal policy and debt management. With regard to debt relief the argument may be turned round the other way in that it implies that an economy subject to
adverse shocks should be given greater debt relief (for given "normal" circumstances) than one which is not. Thus so far the exposure of an economy to shocks has led to a recommendation of higher debt relief in order to ensure fiscal sustainability. With debt relief seen as a one off event this means that for given tax and spending policies into the future the fiscal situation will be easier both during normal times and during adverse shocks.

Following from this it may be asked whether debt relief can in some way interact with the occurrence of shocks as opposed to its amount simply reflecting the anticipation of future shocks. We are sceptical about whether debt relief can be used to offset adverse shocks over time, essentially because debt relief disbursements are of their nature one-off events (albeit ones that may take place over a few years as under HIPC) whereas shocks are part of an ongoing process into the foreseeable future. Hence for debt relief to interact with adverse shocks as they occur it would need to take the form of an initial disbursement (what is normally thought of as debt relief) twinned with what amounts to an insurance policy for the LDC into the future whereby more debt relief would be given if commodity prices fall. While such an arrangement would be extremely desirable for commodity export dependent LDCs it is not one that is likely to appeal to donors since they are in effect taking on a liability for future payments of an unknown size.¹¹

In this context the timing arrangements of HIPC disbursements are of interest. These are related to conditionality and hence there is a delay between the decision to give debt relief (when a debt sustainability analysis is conducted) and the time that payment is made. The size of that payment depends on the output of the prior sustainability analysis and the economic conditions that apply when the payment is made. Hence the delayed disbursement of debt relief for conditionality reasons enables a degree of "shock absorbing" to be built in since the final payment will allow for any shocks that occur between the two times.

This illustrates that if debt relief payments are staggered over time (for conditionality reasons or otherwise) it is possible for debt relief to adjust to the occurrence of shocks but unless debt relief takes the form of a pure flow relief into the foreseeable future (such that donors undertake to make debt repayments above a threshold level relative to GDP or tax revenue) the "shock absorbing" properties of debt relief will always be limited.

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¹¹For a number of reasons the "average" or trend level of commodity prices, below which further disbursements would be triggered, is extremely difficult to forecast. This is one of the reasons why private sector markets such as futures markets do not provide commodity price insurance more than a year or so ahead.
APPENDIX

Monetary Effects of Resource Inflows: The Nominal Exchange Rate, Money Supply and the Real Exchange Rate

The monetary and exchange rate consequences of a resource inflow can be illustrated using the following simple model.\textsuperscript{12} The model helps clarify the distinction between fixed and floating exchange rate regimes but also allows us to illustrate how, in the presence of slow adjustment of domestic prices, there may be a risk of exchange rate over-shooting.

The principal link here is the demand for money. Importantly, as is the case in most developing countries, domestic money is not held overseas and therefore can be thought of as being a “non-tradable” asset. The demand for this asset can be written as:

\[
m - p = \alpha y . \tag{A1}
\]

where \(m\), \(p\) and \(y\) are the (logarithm) of nominal money demand, the price level, and the level of real income. This is a standard (Cambridge) demand for money function.\textsuperscript{13} Equation (A1) is linked directly to the nominal exchange rate through the aggregate price level which can be defined as a weighted average of the price of traded goods and non-traded goods

\[
p = \beta p_{NT} + (1 - \beta)p_T \tag{A2}
\]

Denoting the nominal exchange rate by \(e\) and the world price of tradable goods as \(p^*_T\) it follows that \(p_T = ep^*_T\). \(\beta\) represents the share in consumption of non-tradable goods. Assuming for convenience that the world price of traded goods is fixed (and set to unity) then we can re-express (A2) as

\[
p = \beta p_{NT} + (1 - \beta) e \tag{A3}
\]

In equilibrium, the nominal demand for money is equal to the nominal supply of money, which we denote as \(H\), so that

\[
H = p + \alpha y . \tag{A4}
\]

By substitution from (A3) we get

\[
H = \beta p_{NT} + (1 - \beta) e + \alpha y \tag{A5}
\]

which relates the money supply to domestic prices (\(p_{NT}\)), the nominal exchange rate (\(e\)) and income (\(y\)). The line MM in Figure 1 plots all the combinations of domestic non-tradable prices and the nominal exchange rate which ensure money market equilibrium. Holding \(H\)

\textsuperscript{12} This version of the model derives from a paper by Peter J. Neary “Real and Monetary Aspects of the Dutch Disease” in Jungefeldt and Hague (eds) \textit{Structural Adjustment in Developing Open Economies} Macmillan (1985).

\textsuperscript{13} This specification can be extended to allow for asset market effects on the demand for money (see below).
and $y$ fixed (A5) defines a downward sloping relationship between $p_{NT}$ and $e$: any increase in the price on non-tradables requires a decline (i.e. an appreciation) in the nominal exchange rate for the fixed stock of money, $H$, to be willingly held by the private sector. When the nominal exchange rate is market-determined, $e$ will move to ensure equation (A5) holds continuously.

If we notice that the demand for money is simply the asset market counterpart to the tradable goods market, then we can summarize the economy’s external balance directly through the money market relationship. An excess demand for tradable goods (i.e. a current account deficit), is the equivalent to an excess supply of domestic money. Similarly, an excess demand for money is equivalent to an excess supply of tradable goods (and a current account surplus).\textsuperscript{14} We therefore do not need to describe the tradables goods sector or the external balance explicitly since they have their mirror image in the money market. We do however need a description of the non-tradable sector of the economy. If we assume that a rise in the price of non-tradables will increase their supply and decrease demand in this sector, then for equilibrium to be maintained in this sector there must be some offsetting price change which will absorb the excess supply of non-tradables. This is achieved if the price of tradables rises relative to non-tradables so that demand switches from tradables into non-tradables. Thus equilibrium is maintained in the non-tradable sector with higher prices in both sectors. Hence, the SS locus in Figure 1, which illustrates all the combinations of $p_{NT}$ and $e$ which will give equilibrium in the non-tradable goods market, will be upward sloping. Specifically we assume that what matters for equilibrium in this market is only the relative price and therefore the SS line is a ray through the origin: the slope of this ray is simply the real exchange rate.\textsuperscript{15} Points above the SS line correspond to positions of excess supply of non-tradables and those below the line, excess demand. The initial equilibrium is at point A, where the real exchange rate (the relative price of non-tradable to tradable prices) is given by the slope of SS.

With this structure we can now consider what happens when the economy enjoys a permanent reduction in external debt service. We start with the case where the nominal exchange rate floats. As far as the non-tradable market is concerned we know that the resource inflow will lead to an increase in the demand for non-tradables. For any given level of the tradable goods price, $e$, a higher non-tradable price is required to ensure that the higher demand for non-tradables is met by domestic supply and hence SS rotates counter-clockwise which corresponds to a real exchange rate appreciation.

The reduction in the “tax” on the private sector required to finance external debt will also have consequences for the demand for money. The increase in private sector income, $y$, therefore increases real money demand. Since the money supply is fixed then the aggregate

\textsuperscript{14} This parallel can be simplified if we think of what it means to import more than is exported. To do so we wish to acquire more foreign currency for imports and therefore we have an excess demand for foreign currency. This is an "excess" relative to our holding of domestic money. Having an excess demand for foreign currency is therefore identical to having an excess supply of domestic money. This equivalence is central to the monetary approach to the balance of payments.

\textsuperscript{15} Technically this specification assumes that the non-tradable market is linear homogenous in prices.
price level must fall to ensure so that the (fixed) nominal money supply is willingly held.\textsuperscript{16} This shifts the money market equilibrium inwards: the new equilibrium will be at a point such as point B which, as it is drawn, is composed of a fall in both the prices of non-tradable goods and a fall in the price of tradable goods brought about by the nominal exchange rate appreciation. Notice that at B the real exchange rate, as indicated by the now steeper ray through the origin, has also appreciated. The basic result is that with a flexible exchange rate and a fixed money supply then a fall in external debt service will lead to a nominal and real appreciation of the exchange rate and may or may not involve a fall in the price of non-tradable prices. As can be seen, whether the non-tradable price increases or decreases depends on the extent to which the non-tradable equilibrium locus shifts relative to the movement in the money market equilibrium.\textsuperscript{17} Notice also, that if the authorities respond to the improved fiscal conditions brought about by external debt relief by reducing the nominal money supply the real exchange rate appreciation will be strengthened.

Consider now the case where the nominal exchange rate is fixed. In order to honour the fixed exchange rate the money supply must be endogenous. In terms of our model, this implies that the tradable price does not change in the face of the real resource inflow. This has two consequences. The first is that, since the real resource inflow is the same as before, the new real exchange rate must lie on the same ray from the origin as point B. This is only possible at point B' where the MM curve has shifted upwards: the new equilibrium will be characterized by a higher money supply and higher non-tradable prices, but the real exchange rate, and hence the incentives facing domestic producers and consumers, will be unchanged relative to flexible exchange rate case (Pn2/e0 = pn1/e1).

Some Extensions
It is interesting to return to the flexible exchange rate case and consider the case where there is there is stickiness in the non-traded prices (because, for example, there is some wage resistance in the government sector). The same positive inflow of resources will require that the equilibrium is at point B and that with a flexible exchange rate, the money market equilibrium will hold continuously and that the economy will always be on the M'M' curve. The implication of sticky prices, however, means that all the adjustment on aggregate prices will fall on the tradable price sector, in other words on the nominal exchange rate. The resource inflow will lead to an appreciation of the nominal exchange rate to point C, which is more appreciated than the equilibrium, and then a gradual depreciation of e to B as non-tradable prices adjust. As a consequence, the nominal exchange rate (and the real exchange rate) overshoot their “equilibrium” (see Figure 2).

Second, we can use this framework to note what happens as a result of the second-round effects of a (successful) debt write off that manifest themselves in a higher willingness to hold domestic assets. If there is an autonomous increase in the willingness of the economy

\textsuperscript{16} Note that under a floating exchange rate there is no intrinsic reason why the money supply should change in response to this resource inflow. Only if the authorities were to simultaneously pursue a policy of credit creation, which would be totally independent of the external resource inflow, would the nominal money supply change.

\textsuperscript{17} The extent to which these loci shift depend on the income elasticity of real money demand and the elasticity of production and consumption in the non-tradable goods market.
to hold domestic money, due to an improvement in economic confidence, this will exacerbate the appreciation of the real exchange rate relative to the case analysed above. If this effect is substantial then choosing not to increase the money supply (either through their own choice or externally driven conditionality) will exacerbate the real exchange rate appreciation, particularly if there is any degree of non-tradable price stickiness. Again if nominal price rigidities are present in the non-tradable sector, then nominal and real exchange rate overshooting may occur. If we are concerned about the adverse hysteresis-induced costs associated with a short-term exchange rate appreciation, a failure to allow the money supply to expand may be quite costly. By the same logic if the demand for money was in fact of the form

\[ m - p = \alpha y - \gamma i \]  \hspace{1cm} (A1')

a debt reduction lowered the premium on domestic interest rates then real money demand will increase and the risk of exchange rate overshooting re-emerges.
Figure 1. Real Exchange Rate Equilibrium under Fixed and Floating Exchange Rates
Figure 2. Nominal Exchange Rate Overshooting