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External Debt Sustainability and Domestic Debt in Heavily Indebted Poor Countries

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External Debt Sustainability and Domestic Debt in Heavily Indebted Poor Countries

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Abstract - In this paper we stress the limits of the current debt sustainability framework used in the IMF-WB HIPC Initiative and the necessity to include domestic public debt into the analysis. The standard sustainability analysis does not take into account the fully-fledged budget constraint and the feedback effects of the fiscal and monetary adjustment required by multilateral programs. The switch from foreign to domestic borrowing, and rising domestic real interest rates are likely to undermine the overall sustainability and the success of debt relief programs. This work focuses on the evaluation of public debt sustainability in a simple accounting framework. We use data on external public debt (multilateral and bilateral) and on domestic public debt to underline how the inclusion of domestic debt into the analysis undermines the sustainability target.

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1   Introduction

In developing countries, policy makers and international institutions have given to domestic debt far less attention than to external indebtedness. Even if the large concern on external imbalances is justified by a number of reasons and by the huge stocks of debt accumulated in the last decades, nonetheless a fully fledged macroeconomic analysis has to include domestic debt dynamics. In fact, domestic financing is becoming more and more important in many countries and there are reasons to believe that this trend will not revert, especially if donors' willingness to lend will decline over time.

The rationale behind the creation of a domestic market for government securities in poor countries is that it could stimulate the development of deep and liquid internal financial markets and protect countries from adverse external shocks. However, the achievement of a certain degree of macroeconomic stability, in terms of credible fiscal and monetary policies and financial markets liberalization, is required to reap the benefits of the development of an internal bonds market (Arnone and Ugolini, 2005, Del Valle and Ugolini, 2003). If this is not the case, the advantages are likely to be offset by adverse effects in terms of higher interest rates, and crowding out of private investments.

The availability of a domestic debt database for Low and Middle Income countries makes possible the analysis of the evolution and effects of domestic debt in HIPCs. The development of a clear picture about the cost and the evolution of domestic borrowing is necessary for improving the debt sustainability analysis and to better understand the dynamics of the main macroeconomic variables, in order to reach a more efficient resource allocation and to design more sensible policy recommendations.

We move from three previous papers (Arnone 2004, Arnone and Presbitero 2005, and Arnone *et al.* 2006) on external debt sustainability in Heavily Indebted Poor Countries (HIPC), where the limits of the current debt sustainability framework and the necessity to include domestic debt into the analysis are stressed. Our aim is to evaluate the sustainability condition considering the fully-fledged budget constraint, with the inclusion of domestic debt. We presents the main findings about the structure and the evolution of domestic public debt in the 14 HIPC countries for which there are reliable data sets and sufficiently long series. This descriptive analysis makes it clear that there are a number of reasons to include domestic debt into a macroeconomic framework for Low-Income and Heavily Indebted countries, since it is becoming a relevant part of the overall level of indebtedness and, more important, interest rates on domestic debt are a serious constraint to government spending and investment.

The analysis of total public debt sustainability is based on the accounting approach: looking at the fully-fledged budget constraint we show that the inclusion of domestic debt is critical for the analysis, since the interest rates on total public debt are larger than the ones on external public debt. Hence, the sustainability condition does not generally hold, raising concerns for the future economic performance of HIPC countries. The asymmetry related to different speed of reaction of monetary and fiscal policies is creating serious imbalances because a good performance on the control of inflation does

not go hand in hand with fiscal adjustments, as showed by the large differences between the actual primary balances and the ones consistent with public debt sustainability.

The remainder of the paper is as follows: Section 2 is about the role of domestic debt in poor countries and its macroeconomic effects; Section 3 briefly describes the dataset and the composition of total public debt, while Section 4 presents the evolution of domestic debt stocks and interest payments in the 14 HIPCs, and the holders and maturities structure. Section 5 illustrates the model of debt sustainability, Section 6 discusses the results and the last section concludes and draws some policy implications. A detailed presentation of the domestic debt dataset is presented in Annex A, while Annex B presents country-specific figures on debt sustainability.

2 The Role of Domestic Debt in Poor Countries

Since the mid-Nineties there has been increasing interest by the World Bank and the International Monetary Fund on the development of domestic markets for government securities in developing countries. Their policy recommendations and programs in Middle and Low-Income countries are generally oriented to promote the development of domestic market for government bonds.

The rationale of this policy lies is the advantages that an internal credit markets could provide to the government and its economy. As an alternative source of financing with respect to external borrowing and banking credit, it is likely to reduce the vulnerability of a country to reversal in capital flows and external shocks. In fact, domestic securities can be a substitute for external financing, avoiding the build up of foreign-currency denominated debt (with all the risks related to exchange rate devaluations) and the monetary financing of government deficits (with its inflationary effects).

Domestic debt, when well managed, can also reduce the government's exposure to interest rates and currency risks. Furthermore, a market for government securities is likely to support the implementation and the transmission of monetary policy, and a liquid and depth market with long term instrument could also help reducing the cost of government financing. Eventually, the development of a domestic bond market is essential for strengthening the process of sustained economic growth, since it helps mobilizing domestic savings and, if the market is properly organized, can lead to an efficient and market-based allocation of capital[1].

However, domestic bond markets are expected to provide these possible benefits, only if some prerequisites are satisfied. In particular the World Bank and the IMF (IMF and World Bank 2001, and Del Valle and Ugolini 2003) underline the importance of some key elements:

1. A stable macroeconomic environment;
2. An efficient money market;

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[1] For a more detailed discussion of the benefits of domestic bond markets, see IMF and World Bank (2001).

3. Broad investor participation;
4. The presence of a sound legal, regulatory and supervisory framework;
5. A non distortionary tax system;
6. An updated settlement infrastructure.

We focus on the first three conditions, particularly related to the macroeconomic situation, taking into account also the relevance the creation and management of a domestic securities market. In particular, great emphasis is given to macroeconomic and financial stability, which is the priority among the previous conditions. In fact, without a stable and credible government and without sound fiscal and monetary policy, both domestic and foreign investors will be unwilling to buy domestic securities. A weak government will be forced to shorten maturities and raise interest rates to attract investors, but this would reduce the potential benefits of domestic debt.

Inflationary expectations will be translated in higher nominal interest rates and will hinder the development of longer term instruments, since investors, in a volatile and inflationary environment, will prefer short-term securities. A weak fiscal policy, characterized by unstable revenues and excessive expenditures, is also a disincentive to investors, that have to compete with the government for resources, and will raise the cost of financing because of the perceived country risk due to high risk of default. Exchange rate uncertainty is another source of risk which will delay the development of a domestic bond markets, because it is part of the risk premium, driving foreign investors decisions. The investor base is also important and it should be as broad as possible including institutional investors, which generally are oriented towards long term instruments, and foreign participation[2].

However, as it will become clearer from the analysis of the data, Low-Income Countries, and especially the HIPC countries, do not yet (or entirely) meet these prerequisites. A look at the historical figures on economic growth, inflation and interest rates confirm that the macroeconomic environment is not yet stabilized and, on the contrary, volatility and uncertainty are real issues. Lack of sound governance and unbalanced fiscal policies are other elements that will increase the cost of financing and will hinder the development of a deep domestic bond market. The concentration of government securities among few holders, generally the banking system, is another weakness, which prevents the formation of a large secondary market and a stable demand for securities: in many Low Income Countries a large part of government securities are held by the banking system or other social security funds, because of the imposition of direct minimum reserve requirements on the banks or indirect requirements on other national funds (Del Valle and Ugolini 2003).

For those reasons, in the poorest countries, the increase in domestic debt, even if its overall level is still generally low, it is unlikely to bring the expected benefits. On the contrary, since domestic securities markets are at the very early stage of development, the cost of financing will be very high and the maturity structure will be skewed to short-term instruments (mainly Treasury Bills), raising risks of rollover and default.

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[2] However, whether foreign investors can increase competition and market efficiency, they can also bring risks, in terms of market volatility, since they could withdraw their investment if they have expectations of financial crisis, contagion, or deterioration of the macroeconomic framework.

These concerns, if verified by facts, should be taken into consideration in the policy recommendations. In other words, the transition from external to internal financing should be gradual and subject to the achievement of (at least relatively) balanced fiscal and monetary policy, as well as government credibility.

The literature on domestic debt in poor countries (especially Sub-Saharan African countries) is still very limited (both in terms of number of papers and in its depth, mainly due to limited data availability) and not at all conclusive on the effects of internal financing. Beaugrand *et al.* (2002) stress the advantages of internal over external borrowing in terms of financial costs and fewer risks, even considering the possibility of currency devaluation. Thus, a limited recourse to domestic market is still recommended, because it could help mobilize domestic savings and develop financial markets. On the other hand, Christensen (2004) underlines that:

1. Notwithstanding its relative small dimension, domestic debt is a severe burden to the government budget because of high interest payments;
2. The stock of domestic debt is increasing over time;
3. Domestic debt could squeeze private investment because of credit constraints;
4. The short maturity structure poses high rollover risks and increases macroeconomic instability.

In a recent paper, Abbas (2005) challenges the common presumption about the higher cost of domestic borrowing[3]. He argues that the lack of default on domestic debt may be an insight that "domestic debt servicing might be "easier" in certain contexts than external debt" (p. 7). Then, looking at Tanzania's experience, Abbas states that, once considered the inflation and the real depreciation rate, the cost of domestic financing could be smaller than the "concessional terms" granted by donors, and that the government could obtain funds at a lower rate than the private sector. However, Abbas focuses the analysis only on three countries (Ghana, Uganda and Tanzania), which experienced sustained GDP growth rates over the last decade and he does not take into account the possible adverse effects of higher internal interest rates on the private sector (which depress investment) and of real exchange rate depreciation and higher inflation on external debt repayments[4], which could undermine overall debt sustainability.

Some country studies

The World Economic Outlook (IMF 2003b) devotes a chapter to public debt, but it focuses on emerging countries, whose experience is different from the one of Low

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[3] With respect to the cost of financing, Abbas argues that the derivation of the effective interest rate on external debt (as done in Christensen 2004) does not take into account the fact that the interest payments refer only to a fraction of total external debt. Therefore, the choice of the denominator should consider that part of the debt is under default.

[4] Furthermore, the three countries considered in that study have more developed domestic bond markets (Tanzania and Ghana has the largest part of domestic debt with medium and long-term bonds) than most of the other HIPCs for which there are data. Therefore, they could be considered a sort of "optimistic exceptions": as showed in the next sections and in Annex B, total public debt, thanks to high growth rates, is sustainable in Uganda and Tanzania (even if the scenario is worsening in Uganda) but not in Ghana, where, however, the situation is improving.

Income Countries. However, some IMF Staff Country Reports present some brief notes and assessments on public domestic debt in low and middle income countries[5].

Ghana (IMF 2003a) is one of the countries in which the management of central government domestic debt is more problematic, since it raised until 29% of GDP in 2002 and the level is even higher considering contingent liabilities related to debt accumulated by State Owned Enterprises (SOE). The shortening maturities structure is a further problem, because it increases the rollover risk. Eventually, the cost of servicing the debt is high, so that it crowds out public expenditure and soaks up resources from the poverty reduction programs. The IMF suggests also that government borrowing is likely to crowds out other activity because of credit constraints, since bank lending is attracted by the "risk free" government papers (in 2002, the banking system holds more than 60% of government securities).

The study of Malawi's domestic debt (IMF 2004d) highlights the sharp increase of debt in recent years, due to a combination of exogenous factors (food shortage in 2002), tight monetary policy, and a loose fiscal policy. The resulting high interest rates makes domestic debt servicing very expensive (interest payments reached 9% of GDP) and represent a severe risk for macroeconomic stability and pro-poor spending.

The same adverse dynamics occurs in Zambia (IMF 2004a), where domestic debt reached 21% of GDP and the decline in interest payments on external debt is more than offset by the increase in the cost of domestic debt service, which doubled in the period 2000-2003. As a result, poverty reduction expenditure remains low, even though Zambia has already reached Completion Point.

The experience of Nicaragua (IMF 2002) is similar to the previous ones, because of the rising stock of debt (whose level is close to 60% of GDP), the high costs associated with it, and the short-term maturity structure. Also, it highlights another possible risk posed by internal borrowing: since most of Nicaragua's domestic debt is indexed to the US dollar, the exchange rate dynamics adds another source of vulnerability. In this case, the IMF stresses the importance of considering the aggregate total public debt when assessing fiscal sustainability, especially in countries like Nicaragua, where the stock of domestic debt is large[6] and it is highly responsive to external shocks.

A report on Tanzania (IMF 2004b) stresses the possibility that domestic borrowing may fulfil a buffer role in response to changes in external financing. In recent years the evolution of domestic debt does not show any worrying increase in stocks and interest payments, because of the adherence to the government's National Debt Strategy. However, some simulations point out how domestic debt could become an additional source of vulnerability. Even if the fiscal position is stable in response to alterations in

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[5] Even if they are not discussed here because they do not look at LIC countries, the analysis on Egypt (IMF 2005a), Costa Rica (IMF 1998 and 2004c) and Indonesia (IMF 2005b) public debt confirm the growing interest on domestic debt issues also in emerging markets. Furthermore, they underline how the lack of data is a severe constraint for cross country studies.

[6] In 2001, external debt was four times larger than domestic debt but, once debt relief is granted, the two stocks should not differ so much and clearly one cannot ignore internal debt in assessing fiscal sustainability.

the main macroeconomic variables, it is really responsive to changes in external financing: if donors reduce their borrowing, this will cause adverse adjustments on domestic debt and it will impose severe fiscal tightening. Therefore, in absence of an enhanced revenue system, aid dependency may result in reduced social expenditure.

These country studies highlight how adverse domestic debt dynamics could hamper the positive effect of HIPC Initiative in term of freeing resources for poverty reduction expenditure. The increasing cost of domestic borrowing is likely to absorb resources freed with debt relief; the subsequent increase in interest rates could have dramatic effect on economic growth, because of reduced investments and pressures on the exchange rate. The unfavourable evolution of domestic debt could be worsened by a reduction in aid resources, given the proposed move from loans to grants (see below).

3   Data Availability and the Composition of Total Debt

The main sources for data on public debt are the Global Development Finance (GDF) 2005 for external debt, and a domestic debt dataset constructed using data from IMF, World Bank, countries' Central Banks and Ministries of Finance[7]. For external debt, data on stocks and flows are available for all HIPCs and they are decomposed in many sub-components. However, with respect to domestic debt, we have reliable and long data only for 14 HIPCs and only on the aggregate debt stocks and interest payments. As far as we know, however, this is the broadest dataset available, since for many countries there are no data at all on government securities, even in the IMF Article IV reports[8]. All the other macroeconomic variables (GDP, budget balance, inflation, exchange rates) come from the World Bank's World Development Indicators (WDI) 2005 and from IMF data.

The target of our analysis is total public debt, both external and domestic (see Figure 1). Total outstanding external debt is defined by the World Bank as the sum of three components: 1) long-term debt, 2) short-term debt, and 3) use of IMF credit. However, only the first component is included in the definition of public external debt, since data on short-term debt do not allow for the breakdown between public and private debt. This decomposition is instead available for long-term debt, which is divided into: total Public and Publicly Guaranteed (PPG) and total Private Nonguaranteed (PNG) long-term debt. The former is the object of the IMF-WB debt sustainability analysis; therefore, we will take that aggregate as definition of total external public debt.
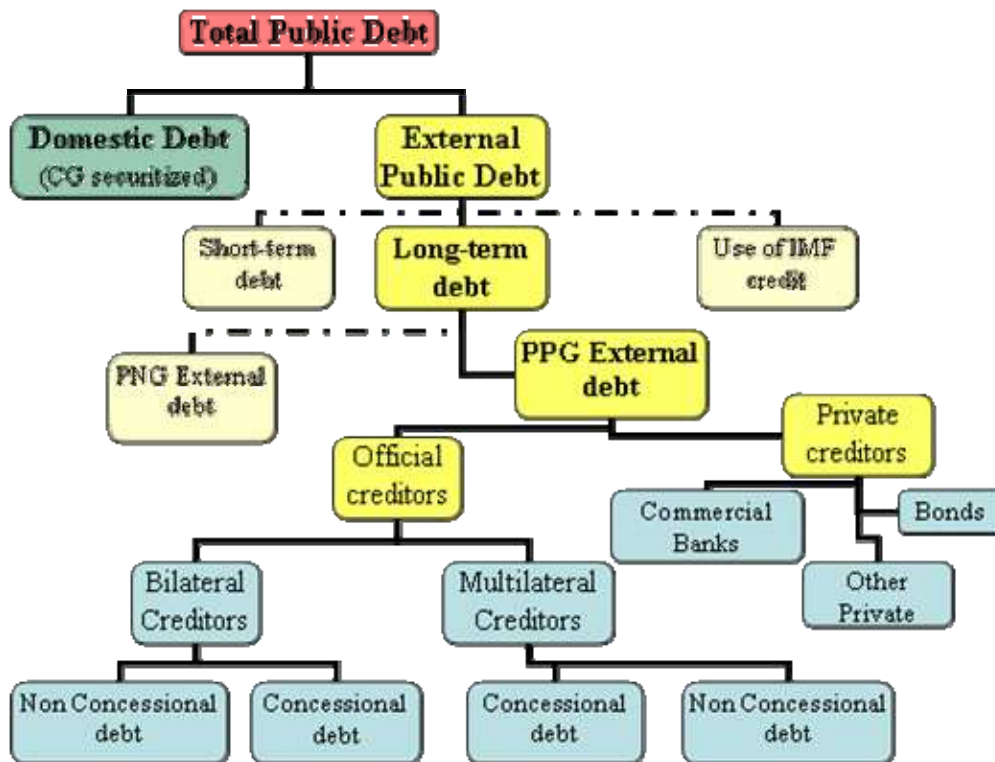
Domestic public debt is defined as the Central Government securitized debt: this is represented mainly by Treasury Bills, Bonds, notes and government stocks, even if in some countries there are other special securities and consolidated debt. For reasons of comparability across countries, the definition of domestic debt excludes loans,

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[7] Data on domestic debt are drawn from a database developed at The World Bank by J. F. Perrault, A. Presbitero and V. Tulin. A brief description of the dataset and of its sources is provided in Annex A.

[8] In few cases, this is because there are no domestic markets for government securities, as in Niger, where the first Treasury Bills were issued in summer 2005. Nonetheless, in general it is difficult to disentangle if the lack of data is due to a lack of markets or not. Besides, given the relevance that domestic debt is assuming in poor countries, we stress the necessity for an increased commitment in data collection.

advances, local government debt and contingent liabilities – which are relevant in a number of countries – so that, in some cases, we are probably underestimating the real burden of domestic debt.

Figure 1: Decomposition of Total Public Debt

Furthermore, since we want to take into account the different degree of concessionality and the different interest rates applied on external debt, we look at the most detailed decomposition available, which distinguishes between official and private creditors. The formers are also divided between multilateral and bilateral creditors and for both of them there is the breakdown between concessional and non concessional loans. Private creditors instruments are classified as bonds, commercial banks and other private creditors.

A visual representation of total public debt's breakdown is presented in Figure 1, where dotted lines connect debt aggregates which are not part of the definition of total public debt (short-term debt, use of IMF credit and PNG debt).

4   The Relevance of Domestic Debt in HIPCs

The HIPC Initiative and the Debt Sustainability Analysis implemented in the multilateral programs ignore the role played by domestic debt in poor countries. However, since participation in the HIPC Initiative forbids borrowing on commercial terms in the international capital markets, and monetary financing of the deficit is

normally prohibited in IMF programs, internal financing is becoming more and more important in many countries and this trend is not likely to be reverted any time soon.

The necessity for internal financing is mainly due the asymmetric adjustment process implied by the HIPC Initiative, which failed to reach its target in full because of the different time frames in monetary adjustment as compared to fiscal adjustments. The program is based on the achievement of a track record of macroeconomic stability and structural reforms, but it ignores the fact that fiscal variables are generally much slower to react than monetary ones. The reasons comes from the internal and external lags of fiscal policy (Friedman 1948), and from the fact that, at least in the medium term, large primary deficits in HIPCs cannot be promptly reduced because of low revenues and the inherent political difficulties in reducing public spending in countries where most of the population is already below the (many definitions of) poverty line.

As a result, the slow fiscal adjustment, together with the lack of access to international capital markets and adequate inflows of concessional lending, forced the governments to recur to domestic markets to finance their primary deficits. On the other side, monetary aggregates were much easier to control in the context of an IMF program, so inflation in HIPCs was been successfully and rapidly brought under control.

However, the success of the HIPC program in monetary policy coupled with lagging fiscal adjustment was a bad policy mix and had strongly unexpected negative results: the need for the government to keep financing its expenditures in the context of rapidly declining inflation led to a steep increase in real interest rates.

The unintended consequence of this wrongly-timed policy mix is: 1) a clear increase of the cost of financing, 2) a drag on growth, and possibly 3) a strengthening of the exchange rate (as foreign banks are eager to invest in high-yield government paper); in turn, this latter could hamper exports whose forex proceeds are necessary in the medium and long term to service the external debt[9].

The results of the multilateral programs are illustrated in Figure 2, which highlights that the adjustment process was quite successful in terms of reduced inflation, while primary balance kept on deteriorating, apart from the last two years. In other words, monetary policy worked well, while the real sector did not achieved the expected results, also in terms of per capita GDP growth, which is still quite weak and volatile.
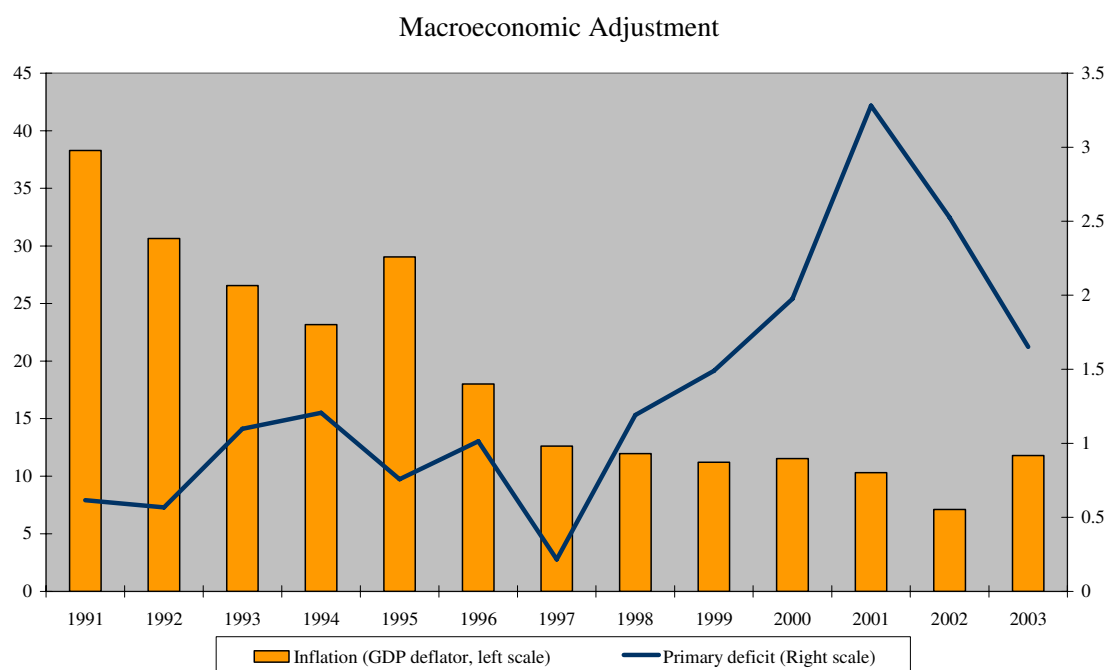
A rising domestic debt in HIPC countries – where macroeconomic stability in terms of credible fiscal and monetary policies, and financial markets liberalization might be achieved but not necessarily rooted – puts forward potential problems and risks related to: 1) lower economic growth, because of reduced investment (crowding out due to higher domestic interest rates), 2) macroeconomic instability, since governments are tempted to raise inflation (with subsequent adverse effects on external balance and

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[9] In particular, the exchange rate dynamic is critical for debt sustainability and it is affected in different directions by internal interest rates, inflation and fiscal management. In other words, an exchange rate appreciation could be due to higher interest rates (posing problems on the export side), while unexpected inflation and poor fiscal management could originate a real depreciation (with adverse consequences on external debt repayments).

exchange rates), 3) undermined debt sustainability, because of much higher interest rates and lower growth.

Furthermore, the unfavourable evolution of domestic debt could be worsened by a reduction in international aid resources. This scenario could be made at all possible by the recent pronouncements of the US administrations in favour of a move towards grants instead of loans, and endorsed by the new World Bank presidency. This latter event - strongly requested by the Bush administration, but opposed by the "development community" and several experts - not only will probably reduce the total amount of resources that donors will provide in the near future, but will make it more likely that some politically-driven donor governments will be tempted to force a "strategic" usage of funds to "shape" recipients' policies in unrelated areas. This will alienate further civil society and public opinion in developing countries, and lead to an inappropriate resource allocation.

Figure 2: Fiscal and monetary adjustments in HIPC countries
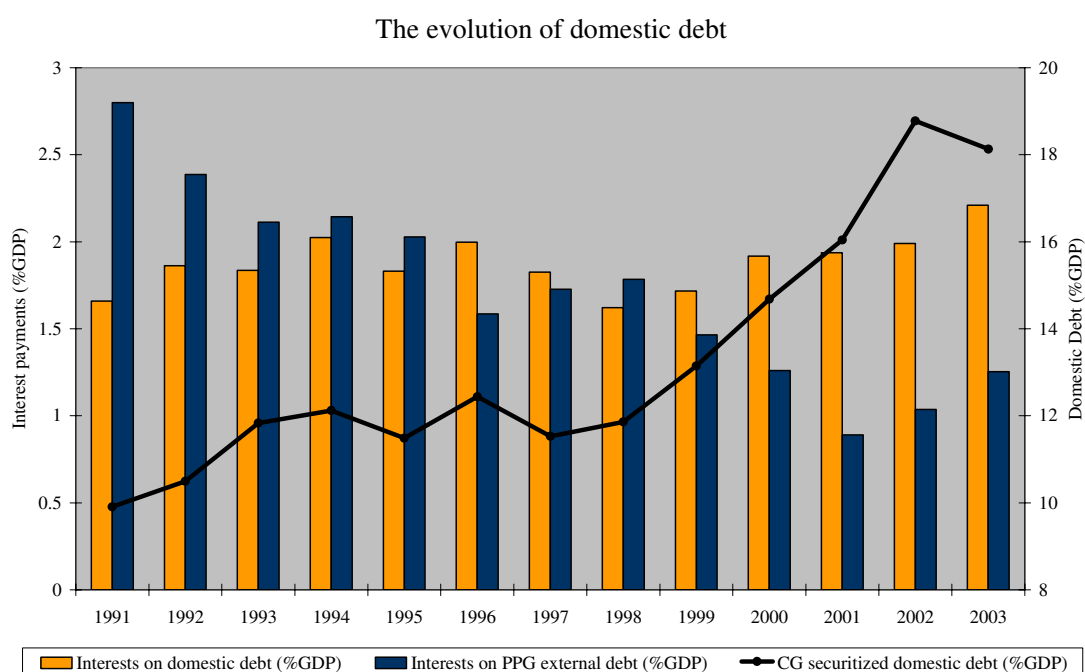
Macroeconomic Adjustment

The analysis of the recent trend of domestic debt and interest rates in the last decade in 14 HIPC countries (Figure 3) provides support for this scenario, since domestic debt, even if it is still a small fraction of total debt, is increasing and, more important, interest payments on domestic debt show a more dramatic upward trend.

Over the period 1991-2003, the stock of debt almost doubled and, even if the average value is around 18% of GDP, there are countries in which this ratio is substantially higher. Besides, these are countries whose macroeconomic framework is already stressed by a huge external indebtedness, so that even a small stock of domestic debt could have adverse effects on the economy. In particular, governments have to offer high interest rates to raise money on domestic markets and this will be reflected in

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higher costs of internal financing. In fact, we can observe that domestic debt is already more expensive than external debt, in terms of a larger share of GDP that is destined to interest repayments. From 1991 to 2003 HIPC countries moved from a situation in which external debt service is the largest part of interest payments, to an opposite situation, in which the expenditure on domestic interests becomes the greatest share of overall interest expenditure. In 2003, while interests on PPG external debt were slightly higher than 1% of GDP, domestic interests soaked up, on average, more than two percentage points of GDP. In particular, in some countries this percentage in the last years were much higher, up to 6% in Ghana, around 4% in Gambia, Guyana, Malawi, and 3% in Sierra Leone[10].

Figure 3: Domestic debt and interest payments on external and domestic debt as a share of GDP (unweighted averages).

The evolution of domestic debt

Besides, the analysis of domestic debt structure (Table 1) makes clear the potential risks of domestic debt, since it underlines that maturities are severely biased towards short-term instruments (mainly Treasury Bills), and that the banking sector in the main holder of government securities, without the existence of a broad investor base[11]. Eventually,

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[10] It is worth noting that the problem of domestic debt is not limited to the 14 countries in the sample. In fact, as reported in a very recent story by Agencia de Informacao de Mocambique, "*perhaps the most notable aspect of the Mozambican debt is the growth of domestic indebtedness, through the issuing of high interest bearing long term treasury bonds, and short term treasury bills. Domestic debt was negligible, until the year 2000. In that year, the government had to pay over eight million dollars in domestic debt servicing. The following year the domestic debt service overtook the foreign debt service: the government had to pay 22.5 million dollars to its domestic creditors, and 22.1 million to its foreign ones. Domestic debt servicing rose to 64 million dollars in 2002, falling back to 49 million in 2003 and 22 million in 2004*" (Source: http://allafrica.com/stories/200604250643.html, accessed 10th May 2006).
[11] The lack of a broader investor base could have negative effects on the maturity structure, since potential institutional and foreign investor could prefer long term securities.

there is the real risk of a credit constraint, since the banking system will prefer government securities instead of private sector lending.

As a consequence, internal debt service is already absorbing more resources than external debt, undermining pro-poor investment and social expenditures. Moreover, the raising cost of internal financing could undermine the overall debt sustainability and make the whole HIPC program irrelevant. Therefore, to assess external debt sustainability and the impact of the HIPC Initiative it is necessary to look at the fully-fledged budget constraint, without ignoring the relevant role played by domestic debt dynamics.

Table 1: Domestic debt's structure

	Banking system holding (%)		Short-term instruments (%)	
Country	**1994**	**2003**	**1994**	**2003**
Bolivia/1	88.94	32.85	27.63	21.60
Burundi	87.88	67.81	96.97	84.90
Ethiopia	93.29	93.78	9.92	40.29
Gambia/2	29.91	40.95	85.27	94.27
Ghana	67.1	56.3	18.77	59.24
Guyana	59.58	n/a	99.87	99.99
Honduras	82.8	35.07	n/a	n/a
Madagascar	100	65.04	100	100
Malawi	50.06	52.33	54.15	90.55
Rwanda	68.6	63.6	14.22	27.74
Sierra Leone	75.16	61	97.05	100
Tanzania/3	81.95	59.33	12.89	23.00
Uganda	74.29	82.3	99.98	99.99
Zambia/4	70.89	82.71	93.04	32.28

/1 Refers only to the Central Bank.
/2 The distribution by holder refers to the overall stock of domestic debt.
/3 Holders' classification refers only for stock, bonds and notes, no Treasury Bills.
/4 Only T-Bills, no data on bonds by holder. Data available from 1995.

5   The Accounting Approach to Total Public Debt Sustainability

The empirical strategy that we follow is based on the basic accounting approach, according to which a fiscal deficit is considered sustainable if it generates a constant debt-to-GDP ratio. Therefore, the sustainability condition implies that the growth rate of the economy (g) must be larger than the real interest rate (r).

The accounting approach to fiscal sustainability (Cuddington, 1997) is generally presented without an explicit consideration of the presence of both domestic and foreign borrowing. We move from a simple extension presented by Agenor (2005)[12], so that we can explicitly look at the effects on debt sustainability of different sources of financing. Consider the government budget constraint denominated in local currency (1): the

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[12] Similar frameworks are illustrated also by Cuddington (1997) and Burnside (2005).

primary deficit (PD) and the interest payments on domestic (DD) and external (FD) debt are financed throught internal and external financing and money creation (M is the monetary base). E is the nominal exchange rate, while i^D and i^F are, respectively, the domestic and foreign nominal interest rates.

(1) $\qquad PD_t + i_t^D DD_{t-1} + i_t^F E \cdot FD_{t-1} = \Delta DD_t + E \cdot \Delta FD_t + \Delta M_t$

For simplicity, we ignore seignorage revenues, on the ground that this simplification does not change the basic sustainability result of the accounting framework. Then, we express the budget constraint in real terms, dividing (1) by the GDP deflator (P) and by GDP (Y). Using the identities (2) (3) and (4), we can rearrange equation (1) into (5), in which lower-case letters refer to real variables as GDP ratios:

(2) $\qquad P_{t-1} \big/ P = 1 \big/ (1+\pi)$

(3) $\qquad Y_{t-1} \big/ Y = 1 \big/ (1+g)$

(4) $\qquad z = \dfrac{EP^F}{P}$

(5) $\qquad pd_t + \dfrac{i_t^D}{(1+g)(1+\pi)} dd_{t-1} + \dfrac{i_t^F z}{(1+g)(1+\pi^F)} fd_{t-1} = \Delta dd_t - \dfrac{1-(1+g)(1+\pi)}{(1+g)(1+\pi)} dd_{t-1} +$

$\qquad + z\Delta fd_t - \dfrac{1-(1+g)(1+\pi^F)}{(1+g)(1+\pi^F)} z \cdot fd_{t-1}$

Taking into account the identity (6), which defines the real interest rates (domestic and foreign) in terms on nominal interest rates (domestic and foreign) and inflation (domestic and foreign), equation (5) could be easily rearranged into (7):

(6) $\qquad 1+r = \dfrac{1+i}{1+\pi}$

(7) $\qquad pd_t + \dfrac{(r_t^D - g)}{(1+g)} dd_{t-1} + \dfrac{(r_t^F - g)}{(1+g)} z \cdot fd_{t-1} = \Delta dd_t + z\Delta fd_t$

In order to have the overall change in total debt on the right hand side of the equation, we must consider the effect of changes in the real exchange rate z. The overall change in foreign debt, denominated in local currency could be approximated[13] by (8), in which $\dot{z}$ represent the rate of depreciation of the real exchange rate:

(8) $\qquad \Delta(z \cdot fd)_t \approx \Delta z_t \cdot fd_{t-1} + z_{t-1} \cdot \Delta fd_t = \dot{z} \dfrac{z_{t-1}}{z} z \cdot fd_{t-1} + \dfrac{z_{t-1}}{z} z \cdot \Delta fd_t$

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[13] For a more detailed exposition, see Agenor (2005, p. 95-99).

From equation (8) we can find an expression for $z\Delta fd_t$ and substitute it into equation (7), so that we can have an expression (9) for the overall change in total public debt (td):

$$(9) \qquad \Delta td_t = \Delta dd_t + \left(\frac{z_t}{z_{t-1}}\right)\Delta(z \cdot fd_t) = pd_t + \frac{\left(r_t^D - g\right)}{(1+g)}dd_{t-1} + \frac{\left(r_t^F + \dot{z} - g\right)}{(1+g)}z \cdot fd_{t-1}$$

From equation (9), we can observe the usual sustainability condition, which requires the growth rate of real GDP to be larger than the real interest rate in order to have a non-increasing debt to GDP ratio. However, we have also underlined the role of the exchange rate on the cost of servicing public debt. Eventually, we can represent the sustainability condition in a more compact way (10), defining α as the share of external debt in total public debt:

$$(10) \qquad \Delta td_t = pd_t + \frac{\left[(1-\alpha)r_t^D + \alpha\left(r_t^F + \dot{z}\right)\right] - g}{(1+g)}td_{t-1}$$

Thus, assuming a primary balance, a non-increasing public debt to GDP ratio requires that the economy grows at a rate greater than a weighted average of interest rates on domestic and foreign debt, which take into account also the depreciation of the exchange rate. Eventually, from (10) it is easy to derive the financeable primary deficit (*fpd*, expressed as a share of GDP) consistent with a non-increasing debt-to-GDP ratio:

$$(11) \qquad fpd_t = -\frac{\left[(1-\alpha)r_t^D + \alpha\left(r_t^F + \dot{z}\right)\right] - g}{(1+g)}td_{t-1}$$

As a consequence, the accounting approach is a useful and simple tool to assess *ex-post* debt sustainability. The general condition deriving from (11) states that, as long as the economy grows at a rate higher than the interest rate, it is possible to run a sustainable primary deficit. With respect to the standard DSA, in equations (10) and (11) it is clearly stated the adverse role played by an increase in domestic interest rates and by a real exchange rate depreciation. From the descriptive analysis of the previous section, we expect public debt sustainability to be undermined by higher interest rates and by possible inflationary pressures which will have an effect on the real exchange rate.
For the empirical evaluation of debt sustainability, in the next section the difference between the real interest rate on public debt and the GDP growth rate could be considered as a sustainability criterion, as well as the comparison between the financeable and actual primary balances.

6   Discussion of results

To evaluate debt sustainability in HIPC countries, according to the model presented in the previous section, we compare: 1) the growth rate of GDP and the real interest rate on total public debt, as in equation (10), and 2) the actual primary balance of the government with the financeable primary balance expressed by equation (11).

For the empirical analysis we express the budget constraint in local currency and we calculate a weighted interest rate on the entire stock of public debt (r^{TOT}), taking into account the fraction $(1-\alpha)$ of domestic debt, the part α of external debt held by private and official creditors. Then, we estimate the implicit interest rates on each aggregate – r_t^D and $\left(r_t^F + \dot{z}\right)$ – as the ratio of current interest payments on domestic and external debt (DINT and FINT) on the respective stock of debt of the previous period, as in (12):

$$(12) \quad r_t^D = \frac{DINT_t}{DD_{t-1}} \quad \left(r_t^F + \dot{z}\right) = \frac{FINT_t}{FD_{t-1}}$$

In this way, the adverse effect of a depreciation (or appreciation) on the cost of external debt servicing is embedded in the analysis through the conversion of debt flows and stocks in local currency[14].

The following diagrams confirm the presumption that, if the target of the analysis is the fully-fledged budget constraint, debt sustainability, on average, is not achieved in the 14 HIPC countries included in the sample.

Figure 4 depicts the evolution of the implicit interest rates – on domestic, external and total debt – over the last decade, from 1991 to 2003. Notwithstanding a slight decline in the historical path, what is important is the considerable difference between the interest rates on total and external public debt. Even if the fraction $(1-\alpha)$ of domestic in total debt is generally small (but increasing to more than 0.16) the great difference between the implicit interest rates on domestic (ranging between 16% and 20% in the last five years) and external debt (ranging between 1% and 2% in the same period) is reflected in a larger interest rate on total public debt than the one used in the standard DSA. As a result, the real interest rate that has to be considered for debt sustainability is more than twice higher than the interest rate on external debt, and the difference is rising over time, because of the increasing degree of concessionality embedded in official loans[15].

This difference between the two interest rates affects significantly the evaluation of debt sustainability: once we include domestic debt in the government budget constraint, overall debt sustainability cannot always be guaranteed for the HIPC countries in the sample. From the diagram in Figure 5, it is clear that the answer could change substantially depending on the choice of the specific interest rate[16]. Thus, if we consider the interest rate on PPG external debt, as done in the standard DSA, we observe that,

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[14] A real depreciation will make debt service more expensive, since interest payments have to be met in US dollars. Comparing interest payments in local currency in the current period, with the stock of external debt in local currency in the previous period we are able to include the exchange rate effect in the determination of the implicit interest rate.

[15] The share of concessional debt in PPG external debt increased from less than 70% at the beginning of the 1990s to almost 90% at the end of the period.

[16] In Figure 5, as well as in other diagrams (see especially Figures 6 and 7), 1994 and 1995 appears to be outliers with respect to the entire period. This is due, because of the small sample, to the effect of the results of a single country – Rwanda – which was affected by a dramatic civil war and genocide. In particular, the national accounts show that the economy collapsed in 1994 (GDP went down by a half and more than two million people left the country or were killed), while in 1995 GDP grew by 35%. Nonetheless, our main results are not affected by this outlier, as confirmed by the same calculation done excluding Rwanda (diagrams, excluded for the sake of brevity, are available on request from the authors).

from 1995, the GDP growth rate is generally higher than the interest rate. This favourable result, however, is not corroborated looking at total public debt. In this case, the average interest rate – which is around 2 percentage point higher than the one on external debt (Figure 4) – is closer or even larger, in some years, than the real growth rate of the economy, substantially undermining debt sustainability.
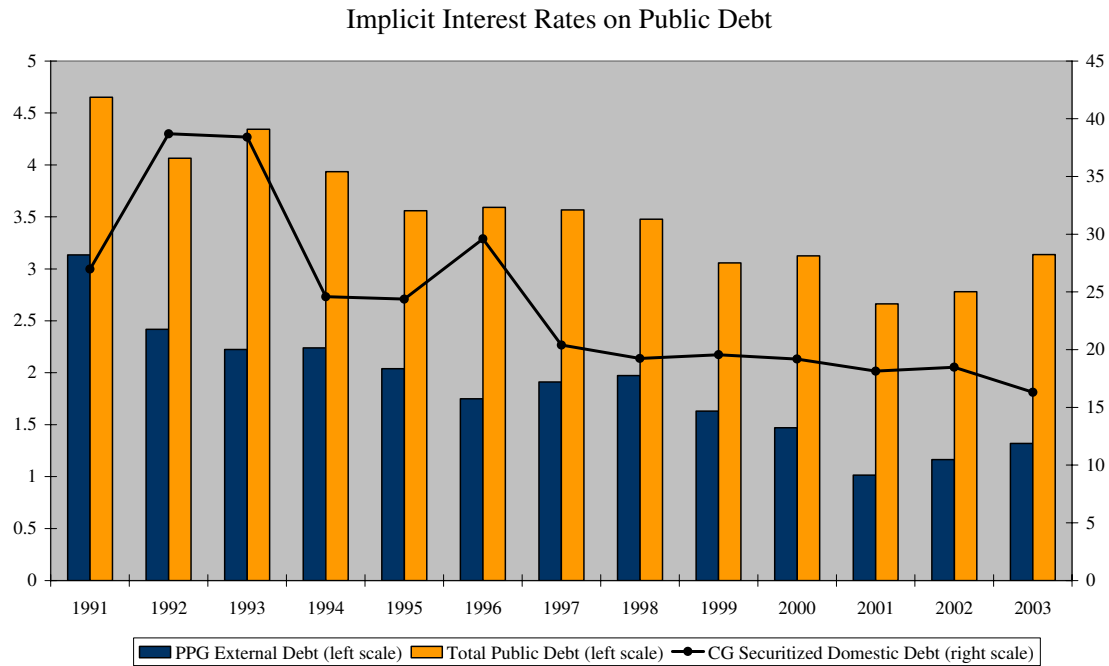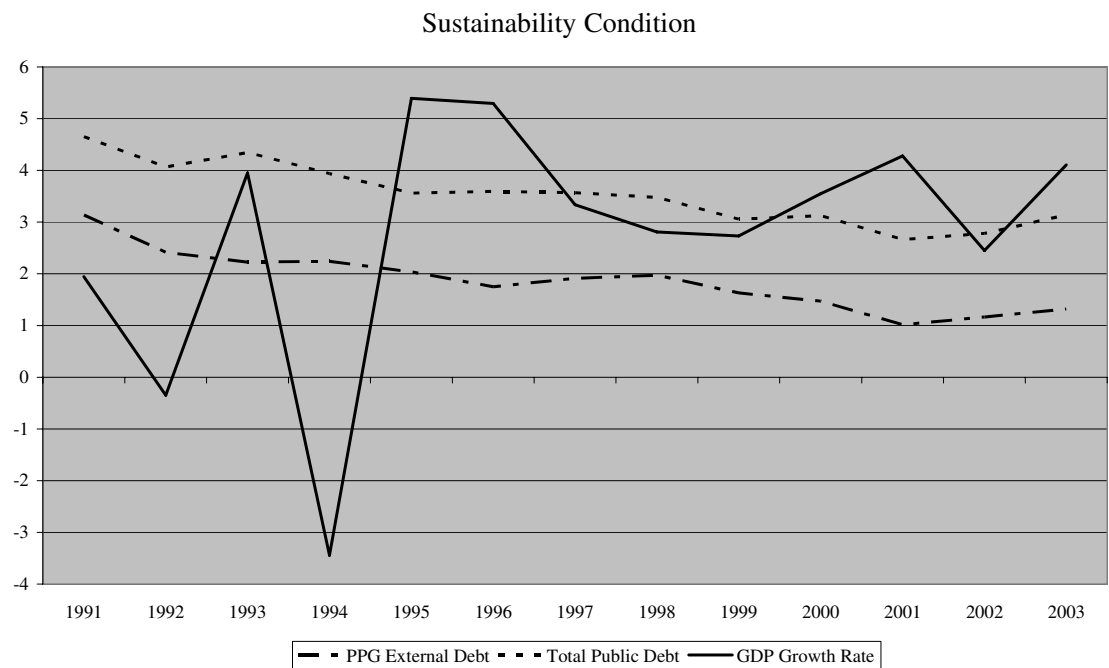
Figure 4: Implicit interest rates on Public Debt (unweighted averages)

Implicit Interest Rates on Public Debt

PPG External Debt (left scale) Total Public Debt (left scale) CG Securitized Domestic Debt (right scale)

Figure 5: Real Interest Rates on Total Public Debt and GDP growth rates (unweighted averages)

Sustainability Condition

PPG External Debt Total Public Debt GDP Growth Rate

15

The representation, at country level (see Figures in the Annex B), of the evolution of the sustainability condition (the quantity: $g - \left[(1-\alpha)r_t^D + \alpha\left(r_t^F + \dot{z}\right)\right]$ described by equation (10)) points out the large effect of domestic debt in countries such as Bolivia or Ghana. In the last 5 years, only in three (Rwanda, Tanzania and Uganda) out of 14 countries the difference g - r^{TOT} was positive every year, while in six countries the sustainability condition was not satisfied for at least 3 years[17]. Besides, the time trend is not encouraging: the comparison of the change between the last two four-years periods (1996-99 and 2000-03, see Table 2) highlights that the average situation worsened in 8 HIPC countries and in other two countries (Burundi and Ghana) the difference g - r^{TOT} decreased (in absolute value), but it is still negative.

Table 2: Total Public Debt Sustainability (Difference between GDP growth rate and real interest rate, 4-year averages)

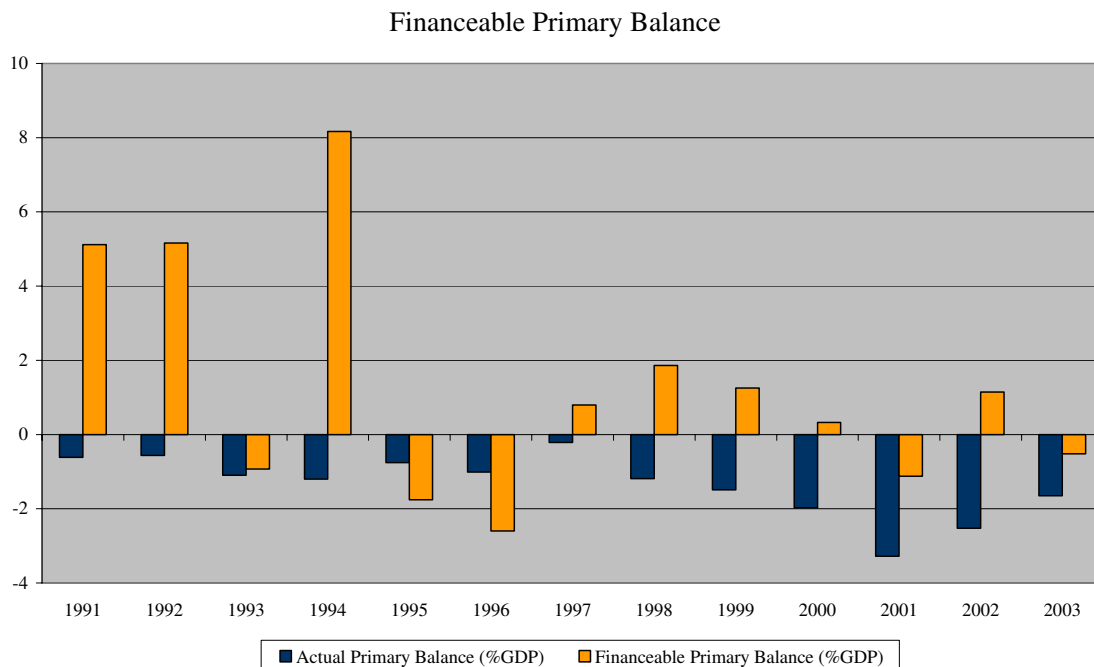| **Country**	1996-1999	2000-2003
Bolivia	-0.19	-1.48
Burundi	-2.73	-0.26
Ethiopia	3.52	1.65
Gambia, The	-0.15	-0.74
Ghana	-4.16	-2.95
Guyana	-0.71	-3.42
Honduras	-2.86	1.21
Madagascar	1.24	0.27
Malawi	0.41	-2.74
Rwanda	9.47	5.43
Sierra Leone	-7.96	2.28
Tanzania	1.23	4.53
Uganda	5.05	3.97
Zambia	-0.52	0.52

To complete the discussion of our results, two caveats are worth stressing: 1) our definition of domestic debt, limited to government securities, is likely to underestimate the overall burden of internal financing, so that the real situation could be worse in a number of countries; and 2) the presence of constant and large budget deficits aggravates the macroeconomic framework.

To address this second concern, we estimate the financeable primary balance, as defined by equation (11) and we compare it with the actual primary deficit (Figure 6). The *ex-post* assessment underlines that, in the last decade, the average country should have generally reached a primary surplus (or a small deficit), while the actual outcome was a long sequence of budget deficits. Furthermore, only in 1995 and 1996 the outcome was a sustainable primary balance, while, with the exception of 2003, the difference between

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[17] In Bolivia and Ghana the difference was negative in each of the five years, in Guyana in 4 years and in Malawi it was positive only in 1999.

16

the actual and the financeable primary balance increased thereafter, up to a maximum spread of 3.7% of GDP[18].

Figure 6: Actual and Financeable Primary Balance (unweighted averages)

Financeable Primary Balance

Actual Primary Balance (%GDP) Financeable Primary Balance (%GDP)

In the end, apart from the *ex post* evaluation of the sustainability criterion, it is worth noting that the presence of a large and increasing domestic debt in these countries is an additional source of distress because central governments, especially in presence of fiscal dominance, have a strong incentive to use the inflation tax, since, in this way, they can reduce the future interest payments on domestic debt. However, this behaviour has detrimental macroeconomic consequences, because a "higher inflation could: 1) trigger further increase in nominal interest rates to keep domestic debt attractive, thus crowding out investment, and 2) have an adverse effect on external debt sustainability, through the exchange rate, because a real depreciation will make debt service on external debt more expensive in terms of national currency. Thus, the advantages of a domestic price increase might easily be offset by its costs (a reduction of overall debt sustainability)" (Arnone *et al.* 2006). Even if data on inflation seems to suggest a limited use of inflation tax, for some countries the level of inflation is still very high (i.e Gambia, Ghana and Zambia were between 20% and 28% in 2003), and, more in general, this remains a risk which could seriously undermine investors' confidence[19].

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[18] The exclusion of Rwanda does not affect the results and the dynamic of primary balances, even if the 1994 outlier is reduced.

[19] As shown by Figure 2, inflation in 2003 started to increase after a decade of steady decline and, in 2004, inflation was higher than in the previous year in half of the countries in the sample.

7   Concluding Remarks

In this paper we discussed the effects of a rising domestic debt in HIPCs on debt sustainability. The issue of sustainability is critical for debt relief initiatives, since one of its target is to avoid a new build up of unsustainable public debt. Both the World Bank and IMF are now really concerned about the achievement of debt sustainability keeping into account country specific conditions, as testified by the New Operational Framework (IMF and World Bank 2005), by the new Multilateral Debt Relief Initiative (MDRI) and by the Fund's Medium Term Strategy (IMF 2006). In a document[20] presented at the 2006 Spring Meetings, the Fund acknowledges that:

> *The Fund's strategy for low-income countries requires more work in the following areas: (i) focus and flexibility—the Fund should focus on macrocritical issues tailored to individual country circumstances, broaden its division of labor with the World Bank, and offer more flexible lending facilities; (ii) aid and the MDGs—the Fund needs to assess whether projected aid flows are consistent with macroeconomic stability and the estimated costs of achieving countries' development goals, and also be more forthcoming with donors; and (iii) debt relief—the Fund needs to ensure that the beneficiaries of debt relief do not again accumulate excessive debt. Countries' public expenditure management systems need to be strengthened.*

In the Fund's Medium Term Strategy (2006) the IMF sets the priorities and gives great emphasis on its engagement in Low Income countries: successful debt relief is one of the three targets, which should be pursued focusing on public spending management and sustainability, integrating "in the Poverty Reduction and Growth Facility a framework for the design and adoption of a medium-term debt strategy, consistent with debt sustainability" (IMF 2006, p. 18).

Given the relevance of the debate on debt sustainability, we stress the necessity to include domestic debt into the analysis. We motivate our proposal presenting data on the evolution and the structure of domestic debt in 14 HIPC over the last decade. The increasing stock of domestic debt in countries that do not have access to international capital markets is a symptom of a pitfall in the design of the HIPC Initiative. In fact, given the asymmetry in the adjustment process of fiscal and monetary variables, the policy has achieved good results on the monetary side (lower inflation), but the lack of improvement on the public finance management is pressing local governments on financing budget deficit issuing domestic debt. The resulting stock of debt is becoming an additional constraint to the budget balance, because of the high interest expenditure, and a further source of macroeconomic distress, because of higher interest rates and of inflationary pressures.

To ascertain the effect on debt sustainability, we move from the basic accounting framework, but we look at the fully-fledged budget constraint. The *ex-post* evaluation of

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20 IMF, *A Medium-Term Strategy for the IMF: Meeting the Challenge of Globalization*, April 2006; www.imf.org/external/np/exr/ib/2006/041806.htm

the sustainability condition shows that the inclusion of domestic debt makes the evolution of debt not always sustainable, as, instead, is the results obtained looking exclusively at the external public debt. Besides, the comparison between the financeable primary deficits and the actual ones confirms that HIPC countries were not able to close their financial gap, while debt sustainability requires the average country to run a primary surplus. Eventually, in the forecasting of future scenarios, multilateral programs should carefully evaluate the risk of a larger use of inflation tax, which could undermine debt sustainability, because of real exchange rate devaluation.

In sum, it should be clear that domestic debt is already a critical issue for debt relief initiatives and for a comprehensive debt sustainability framework (as suggested in Arnone *et al*. 2006). Even if domestic debt could be beneficial for poor countries, reducing the dependence on external assistance and on external shocks, nevertheless it is true that, where the macroeconomic management and the economic performance are still unstable, the risks and the drawbacks of the development of a market for government securities could offset its benefits. Hence, we propose: (1) to look more carefully at the evolution and the structure of domestic debt, for which the lack of data is still a constraint for the economic analysis, (2) to include domestic debt in any debt sustainability analysis, taking into account the feedback effects of internal financing on the main macroeconomic variables, and (3) to evaluate the financial needs of poor and indebted countries in order to avoid a massive recourse to internal financing.

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Annex A: Domestic Debt Dataset

In order to get a debt stock comparable across countries data on domestic debt refer, when possible, to a definition of Central Government domestic debt which comprises only securitized debt. This is represented mainly by Treasury Bills, Bonds, notes and government stocks, even if in some countries there are other special securities and consolidated debt. The dataset has information on debt stocks, interest payments, instruments, maturities and holders.

There are data on securitized domestic debt for 20 HIPC countries. In particular, 14 countries (Burundi, Bolivia, Ethiopia, Gambia, Ghana, Guyana, Honduras, Madagascar, Malawi, Rwanda, Sierra Leone, Tanzania, Uganda and Zambia) have long historical data (at least the last ten years), generally with a detailed decomposition of securitized government domestic debt by holder, maturity and instrument.

The main sources of data are the Article IV Consultation and the IMF Staff Country Reports, Statistical Annexes and Recent Economic Development. Other important sources of data are Central Banks publications and websites. In some other cases, data from the website of Ministry of Finance are used too. Other sources are the WDI, the WB regional dataset, especially for the series on GDP and interest payments on domestic debt, and the GFS and IFS of the IMF.

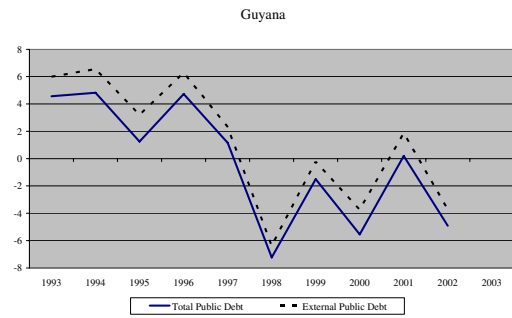More information of the dataset and on domestic debt in HIPCs are available on request from the authors.
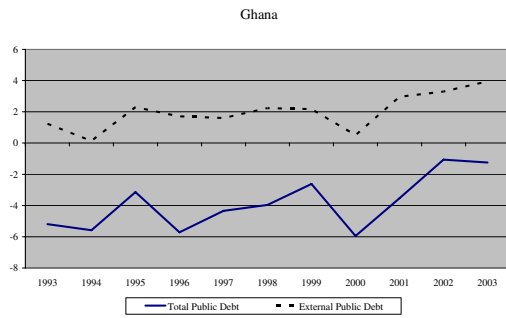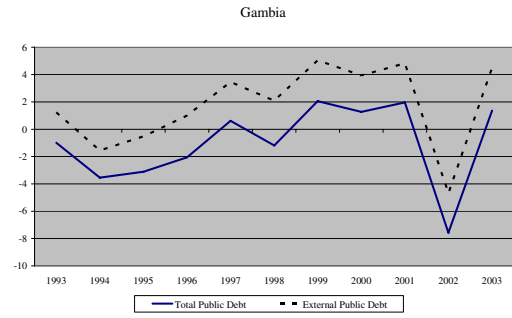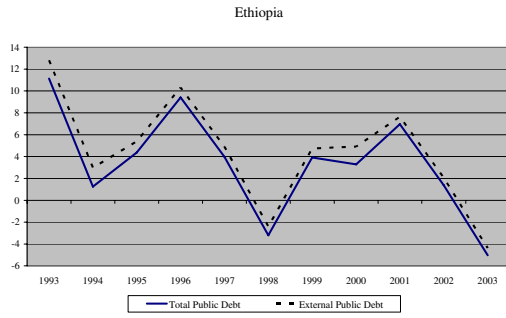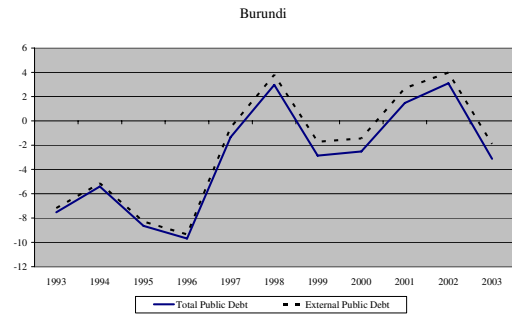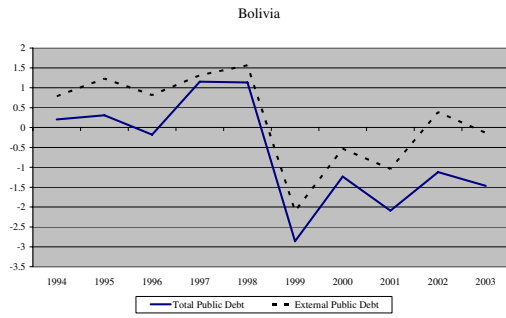
Table A1: Government Securitized Domestic Debt (in percentage of GDP) in HIPCs

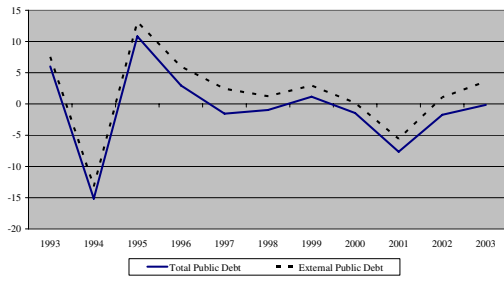| Country	Debt ratio	Year	Country	Debt ratio	Year
Benin	..		Liberia	..	
Bolivia	27.89	2004	Madagascar	7.53	2004
Burkina Faso	..		Malawi	25.36	2004
Burundi	5.44	2003	Mali	..	
Cameroon	6.76	2004	Mauritania	..	
Central African Republic	..		Mozambique	..	
Chad	..		Myanmar	2.27	2003
Comoros	..		Nicaragua/1	27.52	2003
Congo, Dem. Rep.	..		Niger/2	0.00	2004
Congo, Rep.	..		Rwanda	9.10	2004
Cote d'Ivoire	11.87	2000	Sao Tome and Principe	..	
Ethiopia	38.22	2003	Senegal	..	
Gambia, The	25.12	2004	Sierra Leone	18.26	2004
Ghana	18.53	2004	Somalia	..	
Guinea	..		Sudan	..	
Guinea-Bissau	..		Tanzania	7.81	2003
Guyana	30.78	2004	Togo	..	
Honduras	7.42	2003	Uganda	11.30	2004
Lao PDR	0.70	1998	Zambia	17.34	2004

/1 Domestic debt calculated at Net Present Value.
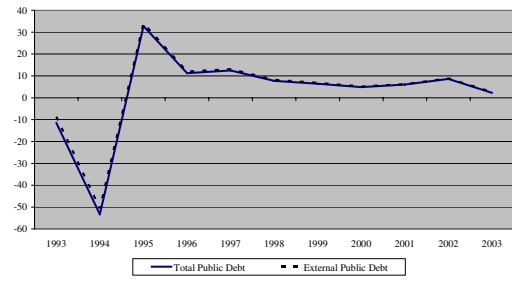/2 Niger issued the first Treasury Bills in the summer 2005.

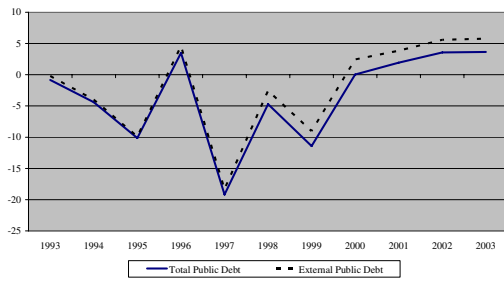# Annex B: Sustainability Condition ($g - [(1-\alpha)r_t^D + \alpha(r_t^F + \dot{z})]$) in HIPCs

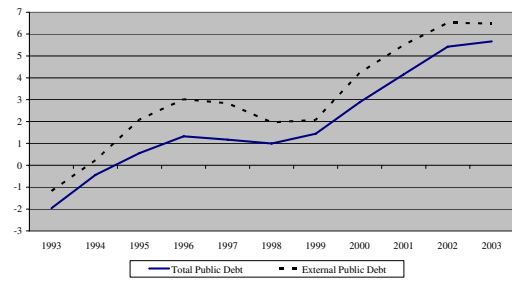Bolivia

Burundi

Ethiopia

Gambia

Ghana

Guyana

Honduras

Madagascar

Malawi

Rwanda

Sierra Leone

Tanzania

Uganda

Zambia