How defensive were lending and aid to HIPC?*

Silvia Marchesi
Dipartimento di Economia Politica
Università di Milano-Bicocca

Alessandro Missale
Dipartimento di Scienze Economiche, Aziendali e Statistiche
Università di Milano

This version
May 2007

Abstract

We examine both grants and net loans made to low income countries during the last two decades to understand the main reasons that motivated the behaviour of both donors and creditors. Our results point to an overall "mixed" evidence, concerning the hypotheses of defensive lending (and defensive granting). Specifically, while a higher level of multilateral debt negatively affects both multilateral new loans and grants to low-income countries, in the case of HIPC such "correction" does not take place at all (in the case of grants) or it is much weaker (in the case of net loans). Bilateral creditors reduce their loans as their debt exposure increases and significantly so in the case of HIPC, while bilateral donors give more grants to HIPC as their bilateral debt share increases.

Keywords: Debt relief, foreign aid, highly indebted poor countries.
JEL Classification: : C23, F34, F35, O19.

*Corresponding author: Silvia Marchesi, Dipartimento di Economia Politica, Piazza dell'Ateneo Nuovo 1, I-20126 Milano. Tel. +39 02 64483057; Fax. +39 02 64483085; E-mail: silvia.marchesi@unimib.it.
We would like to thank Gregorio Impavido for providing us with GDF data. We also thank Emanuele Bacchiocchi, Daniele Checchi, Geske Dijkstra, Carlo Favero, Peter Kenen, Emanuela Marrocu, Luca Nunziata, Laura Sabani and seminar participants at the Universities of Bari, Milano, Pavia, Roma, 2003 Warwick Summer Workshop and 2004 Debt Relief Conference (Rotterdam) and the Political Economy of Aid Conference (Hamburg). Financial support from the Associazione Guido Carli is gratefully acknowledged.

1 Introduction

The pros and cons of debt relief to Heavily Indebted Poor Countries (or HIPC) have been much debated in recent years.[1] Debt relief is deemed to reward countries for past poor policies, to increase moral hazard by inducing expectations of further relief, and be ineffective compared to other form of aid such as new loans and grants in delivering developmental assistance. On the other hand, debt relief reduces the debt overhang and thus may create incentives for adjustment and productive investment.[2]

One more advantage of debt relief may be that of eliminating pressures for providing new aid to refinance existing debt-service obligations (the so-called "defensive lending" hypothesis). In fact, to the extent that loans and grants are motivated by the aim of avoiding default, greater future selectivity may be enhanced by reduced levels of debt. It then becomes crucial to assess whether defensive lending has so far distorted financial assistance to HIPC.

Despite the popularity of the defensive-lending hypothesis little evidence has so far been provided in the literature on its relevance for aid policy. As Easterly (2002) puts it, the central paradox of the HIPC is that they became indebted after two decades of partial debt relief and concessional (official) lending. Official lenders did not seem to follow the same prudential rules as private capital, which pulled out of HIPC; they may have given new loans to enable the old loans to be paid back. Birdsall et al. (2003) investigate the factors that explain multilateral and bilateral net transfers, defined as the sum of grants and loans net of interest and principal repayments. Analysing a panel of 37 Sub-Saharan African countries over the period 1978 to 1998, the authors find that net transfers were higher in poorer and smaller countries. The quality of their economic policy, however, mattered little in explaining net transfers, as donors, especially bilaterals, made greater transfers to countries with high multilateral debt, despite their bad policies. Finally, Devarajan et al. (1999) find that 30% of aid in the period 1975-99 has been used to service the external debt. This evidence suggests that a "defensive granting" hypothesis should be investigated as well.

This paper provides new evidence on the extent of defensive lending and defensive granting by official creditors and donors for the period 1982-1999 before the start of the enhanced HIPC Initiative. We examine both grants and net loans, that is new loans net of principal and interest payments, received by low-income countries over the last two decades, to examine whether this continued transfer of resources was motivated by defensive lending, or by the hope of stimulating development, or by humanitarian reasons. We empirically investigate whether a high debt and its composition by type of creditor played an important role in the allocation of grants and net loans to HIPC, while controlling for their characteristics and economic performance.

[1] HIPC are listed in *Table 1*, according to their original classification made in 1996.

[2] However, this is not obvious. Arslanalp and Henry (2004, 2005), for example, question whether HIPC suffer from debt overhang and then whether they are the best candidates for a debt reduction

We estimate a dynamic panel of 52 low-income countries for the period 1982 to 1999, where the sample includes 39 HIPC countries and a control group of other 13 low-income countries. The use of a dynamic panel is new in this kind of analysis and allows to reach more accurate and robust conclusions regarding the behaviour of bilateral and multilateral institutions. Indeed, a strong dependence of net loans and grants from the level of debt, in the static specification, might simply reflect the autocorrelation of loans and grants that are typically disbursed in a number of installments over time.

Moreover, unlike Birdsall et al. (2003), who focus on aggregate net transfers (i.e., the sum of both net loans and grants) we examine the determinants of grants and net loans separately. Indeed, despite multilateral and bilateral net loans to HIPC are, in most cases, concessional and, as such, a part of aid, official net loans are inherently different from grants, if anything because loans unlike grants must be repaid. We also distinguish loans by type of creditor in order to examine whether the behaviour of donors and creditors is affected by the decisions of the other creditors and donors, an important aspect that has not yet been considered. Finally, our sample is larger and allows us to distinguish between the amount of resources allocated to HIPC, relative to other low-income countries, over the years.

Our results point to an overall "mixed" evidence, concerning the hypotheses of defensive lending and defensive granting. As multilateral institutions are concerned, we find evidence of a significantly different behaviour towards HIPC relative to other low-income countries. Specifically, while a higher level of multilateral debt negatively affects both multilateral net loans and grants to low-income countries, in the case of HIPC such a "correction" is much weaker in the case of net loans and does not take place in the case of grants.

As bilaterals are concerned, they behave not only differently towards HIPC, as compared to non-HIPC, but also their net loans and grants present a different pattern. While bilateral creditors clearly reduce their loans as their debt exposure increases (and significantly so in the case of heavily indebted countries), bilateral donors give more grants to HIPC as their bilateral debt share increases. On the contrary, bilateral donors reduce their grants to (non-HIPC) low-income countries as their debt increases (where this effect is independent of the debt holder but it is not significant).

This paper is organised as follows. In Section 2 we present some descriptive evidence on net loans and grants while Section 3 develops the empirical framework. Section 4 presents the results and Section 5 finally concludes.

2 Loans and grants: descriptive evidence

The debt-to-GDP ratio of Heavily Indebted Poor Countries steadily increased until the mid 1990s, as shown in *Figure 1* where the evolution of the HIPC debt ratio is compared to that of all developing and of all low-income countries.

Figure 1: Total External Debt % GDP. 1970-99.

The rise in debt ratios of HIPC between 1988 and 1994 could be explained by: (i) the transformation of interests payments into debt (that is, interests capitalized and interest arrears); (ii) the effect of cross-currency valuations and; (iii) the fall of GDP measured in dollars, a frequent event for the countries under consideration.

The debt increase is, however, surprising, as it occurred at a time when bilateral official creditors pledged to reduce the burden of poor debtor countries under the "Toronto terms" (1988), "London terms" (1991) and "Naples terms" (1994). In fact, traditional debt rescheduling did reduce the net present value of debtors obligations (e.g., see Dasek-ing and Powell, 1999) but the effective "relief" was modest and certainly below expectations. More important, debt relief was offset by a greater amount of new borrowing: in the period between 1989 and 1999 total debt forgiveness was about $35 billions while new borrowing reached $53 billions. This raises the issue of whether resources have been moved away from the indebted countries to their international creditors (negative transfers) or resources have continued to flow into and benefit these countries (positive transfers).

To estimate the net transfers that debtor countries received over the years we must examine the evolution of net loans, that is, the difference between new loans (i.e., new disbursements) and total debt service (i.e., principal and interest repayments). We call this difference net loans instead of net transfers (which is the definition in the Global Development Finance) to make clear that net loans do not include grants, which are the other important source of funds to low-income countries. *Figure 2* shows that total debt service was steadily increasing throughout this period but net loans, though declining, remained positive except that in 1994, 1998 and 1999. Therefore, until the late 1990s new loans were high enough to make indebted countries able to service their debt. It is only since 1998 that aggregate net loans turns out to be negative, thus providing support to the claim that the service of the outstanding debt drained resources out of poor countries precluding development opportunities.

Figure 2: Total Debt Service and Total Net Loans % GDP. HIPC. 1970-99

A full picture of net resource flows from the international community to HIPC also requires examining grants, which represent the most important component of foreign aid and a clear alternative to net loans as a source of funding for the HIPC.[3] *Figure 3* presents the evolution of grants (with and without technical cooperation) along with the evolution of both total and long-term net loans.[4]

Figure 3: Total Net Loans and Grants % GDP. HIPC. 1970-99

[3]Foreign aid is usually associated with Official Development Assistance (ODA), which includes both official grants and official concessional loans (that is loans with at least a 25% percent grant component). ODA statistics are produced by the Development Assistance Committee (DAC) of the OECD. In turn, ODA can be divided into a bilateral and a multilateral component, which accounts for about 2/3 and 1/3 of all the resources, respectively (see Renard and Cassimon, 2001).

[4]Technical assistance relates to short and long-term experts from the donor countries working in developing countries, scholarship programmes and some other forms of human capital contributions.

Over the last two decades, grants have clearly been the most important transfers to HIPC. As grants kept rising until the mid nineties, they compensated the fall in net loans over the period between 1984 and 1997, making stable the "total resources inflow". Figure 4 shows that when grants (without technical cooperation) are added to net loans, their sum is always positive and comprised in a range between 4 and 8 percent of GDP until the second half of the nineties, when both grants and net loans fell substantially.

Figure 4: Total Net Loans & w/o TC Grants and Total Net Loans % GDP. HIPC. 1970-99

Hence, during the nineties the total resources transferred to HIPC (i.e., the sum of net loans and grants) remained positive despite the fall in net loans. This fact raises the issue of whether grants can substitute normal money transfers. This mainly depends on the fungibility of (non technical) grants. The quality of grants, from the point of view of the recipients, is certainly lower than their monetary value, but a number of studies show that, though not completely, grants are a highly fungible source of financing (Devarajan et al., 1999). The reason is that grants tend to finance projects of high priority and, thus, free resources from the budget for other uses.

To provide further insight, net loans can be distinguished by type of creditor. To this end, we focus on the distribution of long-term net loans, since the Global Development Finance provides disaggregated data only for this type of loans. Long-term net loans to HIPC, disaggregated by type of creditor, are displayed in *Figure 5*.[5] Both bilateral and private net loans started decreasing since the beginning of the eighties. While private net loans were negative throughout the whole period, bilateral net loans became negative in the mid nineties. Until 1997 positive long-term net loans to HIPC were ensured by multilateral organisations. International financial institutions played a crucial role in maintaining a positive flow of funds to HIPC.

Figure 5: Long-Term Net Loans % GDP by type of creditor. HIPC. 1970-99

Since the early nineties transfers to HIPC have mainly taken the form of grants. Differently from the data on grants presented above (which come from the GDF database) *Figure 6* shows data on grants disaggregated by type of donor, which are provided by the Development Assistance Committee of the OECD, as the GDF does not contain such a distinction.[6] Both bilateral and multilateral grants had been rising since the seventies, but bilateral grants had been increasingly higher than multilateral grants throughout the whole period. Figure6 also shows that grants (???) started decreasing in 1995 while multilateral grants began to rise again in 1998.

Figure 6: Grants % GDP by type of donors. HIPC. 1970-99

Evidence on net loans and grants clearly shows that bilateral creditors, unlike private creditors who pulled out from HIPC, agreed to switch from loans to grants (including debt

[5] As data on IMF net loans were not originally included in the long term multilateral net loans we had to add them to the series.

[6] Data on grants from DAC include both technical cooperation grants and debt relief.

reduction). *Figure 6* confirms that bilateral grants continued to flow into these countries, thereby compensating for the fall of net loans. As debt service payments started exceeding new loans in 1994, this pattern suggests that bilateral grants may have freed resources to be used for the repayment of the bilateral debt.

Interestingly, among the various transfers to HIPC only net loans from multilateral creditors had been growing over the whole period. *Figure 7* shows that the rising debt held by multilateral organisations replaced the debt held by the other creditors (however, bilateral debt still accounts for half of the total).[7]

Figure 7: Long-Term External Debt % GDP by type of creditor. HIPC. 1970-99

This evidence raises the issue of what motivated the increasing involvement of multilateral organisations in the HIPC debt problem. Humanitarian reasons certainly provide a possible explanation. A second explanation is that a substitution of multilateral for bilateral debt may increase the leverage of the international community on the HIPC. Indeed, multilateral loans are conditional on the adoption of reforms and adjustment programmes and multilateral organisations are senior creditors because default on their debt may lead to the exclusion from future lending and from other forms of aid. Finally, the behaviour of multilateral creditors can be explained by "defensive lending". Multilateral organisations may have intervened with the main goal of avoiding default and thus the "embarrassment" of losses in their budgets and failure of aid policy.

3 A Model of Net Loans and Grants Determination

The descriptive evidence presented in the second section clearly suggests that the lending activity of governments and multilateral organisations to the HIPC cannot be explained without a joint analysis of aid concession. More important, it appears that the behaviour of multilateral organisations (in the aggregate) is affected by the behaviour of the other major lenders, be they private or public. In particular, since the early 1980s, the continuous drop out of private and bilateral creditors has been offset by an increasing involvement of multilateral organisations in lending to the HIPC. Bilateral and multilateral grants have also flowed into these countries, at least until the mid nineties, apparently to make up for the shrinking channel of bilateral credit.

This evidence leads us to examine whether there is a link between net loans and grants to the HIPC and between the decisions of bilateral and multilateral creditors. In particular, we want to study the interactions between the lending and granting decisions of multilateral and bilateral creditors, a theme that has so far received scant attention in the empirical literature, despite the central role that it should play in the "defensive lending" hypothesis. Moreover, if such hypothesis were empirically relevant, we would expect that net loans and grants were motivated not only by the level of debt but also by

[7] This descriptive evidence confirms what claimed by Easterly (2001, 2002), namely that the HIPC debt crisis developed because of the expansion of official lending.

the amount of debt owed to each creditor.

In the following analysis we examine the behaviour of grants and long-term loans net of principal and interest repayments from bilateral creditors and from multilateral creditors for the period 1982 to 1999. Multilateral creditors (and donors) include the IFI (IMF, World Bank and other regional development banks) and other multilateral and intergovernmental agencies while bilateral creditors (and donors) include governments and their agencies and official export credit agencies. Data on loans are from Global Development Finance (GDF) statistics of the World Bank; data on grants disaggregated by type of donors come from the Development Assistance Committee (DAC) of the OECD and include technical cooperation.

Our definition of net loans is equal to "net flows" (i.e., the change in the external debt) in the GDF definition minus interest payments. This aggregate gives the amount of disbursements that are left to the HIPC once they have paid for the service of their debts. Thus, we take into account the fact that most of the new credit flows back to the creditors in the form of interest and principal repayments. As we abstract from any gross lending made with the purpose of allowing the HIPC to fulfil their maturing liabilities, we take for granted this kind of defensive lending and investigate whether more indebted countries get even greater support on top of this. We confine our attention to long-term net loans, since the GDF database does not provide any information on creditors of short-term loans. However, we believe that long-term loans are fairly representative of the aggregate behaviour, since short-term loans have been a small share of total loans for the period under investigation. Finally, our definition of grants include some elements of debt forgiveness. However, the quality of the data on debt reduction is not good enough to derive a more accurate "net grants" figure (on this see Renard and Cassimon, 2001).

We estimate a dynamic panel of 52 low-income countries for the period 1982 to 1999 with both country-specific effects and time effects. The sample includes 39 HIPC countries and a control group of other 13 low-income countries (listed in *Table 2*). This allows us to test for possible differences in the lending and granting behaviour of official institutions towards HIPC relative to other low-income countries.[8] Data availability has also limited the non-HIPC group to 13 countries, out of the 68 low-income countries listed in *Table 3*. The reason we focus on this period is that the debt crisis of the early 1980s arguably marked a shift in regime and, in 1999, the HIPC Initiative was strengthened. The year 1999 then marks a change in the debt strategy towards a greater effort in debt reduction.

We choose a dynamic specification –i.e., we include a lag of the dependent variable among the regressors– to account for the short run dynamics of net loans and grants. The dynamic specification allows for a correct estimation of the effect of high levels of debt by controlling for the autocorrelation of net loans and grants.

[8] We had to exclude Somalia and Vietnam from the group of 41 HIPC because of data availability in the former case and inconsistency between stocks and flows in the latter. Comoros is also excluded in our analysis as it was classified as HIPC only in 2002.

The estimated equations for net loans and grants are as follows:

$$L^j_{i,t} = b_0 + b_1 L^j_{i,t-1} + b_2 L_{i,t-1} + b_3 B_{i,t-1} + b_4 G_{i,t-1} + b_5 Z_{i,t-1} + b_6 C_i + b_7 T_t + c_8 F_{i,t-1} \quad (1)$$

$$G^j_{i,t} = c_0 + c_1 G^j_{i,t-1} + c_2 G_{i,t-1} + c_3 B_{i,t-1} + c_4 L_{i,t-1} + c_5 Z_{i,t-1} + c_6 C_i + c_7 T_t + c_8 F_{i,t-1} \quad (2)$$

where $L^j_{i,t}$ denotes net long-term loans (relative to GDP) to country i from creditor j (i.e., bilateral or multilateral creditors) and $L_{i,t-1}$ is the vector of long-term net loans from the other creditors (i.e., private creditors and bilateral or multilateral creditors). The variable $G^j_{i,t}$ denotes grants (relative to GDP) to country i from donor j (i.e., bilateral or multilateral grants) and $G_{i,t}$ the grants from the other donor. Therefore we consider the interactions between creditors' decisions and between loans and grants.

To examine the relation between aid policy and indebtedness, we consider the stock of long-term debt (relative to GDP) owed to bilateral, multilateral and private creditors and enter the three types of debt separately; i.e., $B_{i,t-1}$ is the vector of the stocks of long-term debt held by multilateral, bilateral and private creditors.

To control for the fact that grants partly includes debt reductions, in the bilateral and multilateral grant equations we add the amount of debt forgiveness (relative to GDP), $F_{i,t-1}$.[9] Moreover, as bilateral creditors have switched from loans to grants throughout the years, we include debt forgiveness among the regressors in the net loans equations as well.

In order to distinguish the "defensive lending" hypothesis from other motivations for providing loans and grants, we consider a set of variables $Z_{i,t-1}$ suggested by the literature on aid. Following the distinction made by Alesina and Dollar (2000) and Alesina and Weber (2002), we include variables that should account for the recipients' needs and the quality of their policy and institutions. The set Z_{t-1} include (previous year) economic performance measured with the rate of inflation, GDP growth, and openness (constructed as the ratio of the sum of imports and exports to GDP). We also add population to the regressors, as in the aid literature it is usually found that countries with a higher population receive less aid, probably because aid is more effective when given to small countries.

These variables should actually matter both in the case loans and grants were motivated by humanitarian reasons and in the case they were given to enhance the effectiveness of aid in stimulating development. In the latter case aid and loans are expected to positively depend on past economic performance (i.e., good policies) and on the quality of institutions. But low growth or high inflation could also lead to higher loans and grants if the latter were motivated by humanitarian reasons. To account for a rise of aid in

[9] However, debt reductions, though classified as grants in the OECD statistics, do not necessarily free additional resources to be used by debtor countries.

post-war periods, we include a dummy variable that takes the value of one during the years following a conflict for a maximum of four years.[10]

As for the quality of institutions we consider the index of "Political Rights and Civil Liberties" (PCRL) and the indexes of Investment Profile, Law and Order, Corruption and Bureaucracy Quality from the International Country Risk Guide (ICRG). Investment Profile represents risks to investment that are not covered by the other political, economic and financial ICRG risk component; Law refers to the impartiality of the legal system while Order concerns the popular observance of the law; Corruption is assessment of corruption within the political system, which, among other consequences, represents a threat to foreign investment; finally, Bureaucracy Quality is an assessment of whether the bureaucracy has the strength and expertise to govern without drastic changes in policy or interruption of the public service. For both PRCL and the four ICRG indexes the higher the score the better the profile.[11] As the ICRG indexes are available only for a subset of 38 countries, and only for the 1984 to 1999 period, we estimated our model both excluding and including such indexes.

The countries dummies C_i are used to control for country specific characteristics. We also expect them to capture motivations related to donors' political and strategic interests, which are traditional in the aid literature, such as colonial past, religion, ethnic and geographic variables (e.g., Easterly and Levine, 2002). Finally, T_t is a set of time dummies. *Table 4* and *Table 5* contain all the details on our variable definitions and sources.

To understand whether a possibly positive relation of net loans and grants with the debt-to-GDP ratio arises because of defensive lending and granting or because of humanitarian reasons, we test whether this relation for HIPC is significantly different than for other low-income countries. We do so by interacting the debt (relative to GDP) owed to bilateral, multilateral and private creditors with the dummy H_i, taking the value of one in the case of a HIPC country. The coefficients on the interactions of H_i with each creditor's debt provide an estimate of the differencial treatment of HIPC relative to non-HIPC by creditors and donors (allow to test whether creditors and donors' behaviour towards HIPC differed relative to non-HIPC).

However, in order to evaluate the effect of (lagged) stock of debt on new net loans and grants to HIPC, we need to sum each coefficient of the interacted term to the coefficient of corresponding debt share. To make things clearer, *Table 8* presents the results of a different specification where, using two separate dummies (one for HIPC and one for non-HIPC) we directly estimate the absolute (and not the relative) impact of each debt share on new net loans and grants.

In principle, the behaviour of official creditors and donors may differ between HIPC

[10] Collier and Hoeffler (2002) claim that aid would be considerably more effective in augmenting growth in post-conflict situations than in other situations.

[11] The Political Rights and Civil Liberties index values have been multiplied by (-1) as, originally, the higher the score the lower the liberties.

and non-HIPC also relative to the other variables in equations (1) and (2). We tested the hypothesis that the interactions of the dummy H_i with the other regressors were zero and could not reject it except for the lagged dependent variable in the grant equation (2) for both bilateral and multilateral grants, and in the case of output growth in the multilateral grant equation. However, in the latter case, considering a different effect for HIPC does neither affect the overall explanatory power of output growth nor the values and significance of the other coefficients. Therefore, this suggests the estimation of the following equations:

$$\begin{aligned} L^j_{i,t} &= b_0 + b_1 L^j_{i,t-1} + b_2 L_{i,t-1} + b_3 B_{i,t-1} + b_4 G_{i,t-1} + \\ &\quad b_5 Z_{i,t-1} + b_6 F_{i,t-1} + b_7 C_i + b_8 T_t + b_9 H_i B_{i,t-1} \end{aligned} \tag{3}$$

$$\begin{aligned} G^j_{i,t} &= c_0 + c_1 G^j_{i,t-1} + c_2 G_{i,t-1} + c_3 B_{i,t-1} + c_4 L_{i,t-1} + \\ &\quad c_5 Z_{i,t-1} + c_6 F_{i,t-1} + c_7 C_i + c_8 T_t + c_9 H_i G^j_{i,t-1} + c_{10} H_i B_{i,t-1} \end{aligned} \tag{4}$$

3.1 The estimation method

We adopt a GLS fixed effect estimator in order to control for countries unobservables and to correct for heteroskedasticity across countries. To account for the short run dynamics of net loans and grants we include a lag of the dependent variable among the regressors. The dynamic specification allows for a correct estimation of the effect of high levels of debt by controlling for the autocorrelation of net loans and grants. Without correcting for the short run dynamics, a correlation between net loans and debt could reflect a common deterministic trend. The evidence we provide on the importance of defensive lending is thus robust to the latter problem that appears to affect other results in the literature (see e.g. Frey and Schneider 1986 and Birdsall et al. 2003). The time dummies capture the contemporaneous correlations across countries.

In a typical panel, which has vastly more individuals than time periods, the inclusion of the lagged dependent variable would introduce a bias since the dependent variable, and thus the lagged dependent variable (a right hand regressor), are functions of the individual specific component of the error term. Nickell (1981) shows that in the AR(1) case the bias in estimating a dynamic fixed effects model becomes less important as T grows. Judson and Owen (1999) test the performance of the fixed effects estimator by means of Monte Carlo simulations, concentrating on panels with typical macroeconomic dimensions, i.e. small N and T. Their analysis suggest that the fixed effects estimator performs well when T=30, i.e. with a T dimension fairly similar to ours. Moreover, with T =18 and N =52 our panel can be considered a typical macro panel.

The fixed effects assumes homoskedasticity and if the assumption is not met then the estimates will be inefficient. A groupwise likelihood ratio heteroskedasticity test was performed on the residuals of the baseline model estimated by OLS. The test is chi-squared distributed with N-1 degrees of freedom, where N is the number of groups in the sample,

52 countries in our case. The result of the test led to a rejection of the null hypothesis of homoskedasticity across groups for both net loans and grants regressions.

Baltagi and Li (1995) suggest an LM test for serial correlation in fixed effects models where the asymptotic distributions of the test statistics is calculated for large T. Under two alternative assumptions for the error autocorrelation structure (i.e. an AR(1) and a MA(1)) the null hypothesis of no serial correlation in the disturbance is rejected in two equations out of four. In any case, the size of the autocorrelation coefficient is negligible for all equations. Hence, we decided not to correct for the autocorrorrelations in the residuals and to adopt a feasible fixed effect GLS estimator, incorporating only heteroskedasticity across countries.

4 Estimation results

4.1 Net Loans

We estimate our panel of 52 countries for the period 1982 to 1999 by GLS with country-specific effects and time effects. The hypotheses of not significance of country dummies and time dummies were indeed rejected at any reasonable significance level, as shown in *Table 6* and *7*.

The results of the estimation of equation (3) for both bilateral and multilateral net loans (relative to GDP) are presented in *Table 6*. As expected, net loans are rather persistent, while most variables related to recipients' needs and economic performance are not significant. The effects of GDP growth and openness vary depending on the type of creditor considered. For instance, consistently with other results in the literature, a good economic performance in terms of GDP growth favours multilateral lending;[12] column 3 shows that GDP growth has a positive effect on multilateral loans and this effect is significant at the 5% level. By contrast, column 1 shows that GDP growth significantly lowers net loans from bilateral creditors at the 5% level. Larger flows of bilateral loans to low-growth countries can be explained by the greater needs of the recipients. While openness does not affect multilateral loans, it significantly increases net loans from bilateral creditors, though at the 10% level, an indication of the importance of commercial ties and/or the ability to service the external debt.

Interestingly, and consistently with other results in the literature, By contrast, openness does not significantly affect multilateral loans. Finally, both bilateral and multilateral loans are neither affected by "Political Rights and Civil Liberties" nor by per-capita GDP. A "post war" dummy is also not significant in both regressions, showing that loans from either source are not substantially higher in the four years following the end of a conflict.

[12] Burnside and Dollar (2000), for example, find that the quality of a country's policy has only a small impact on the allocation of aid, at least for bilateral donors which seem more respondent to donor interests. On the contrary, multilateral aid is allocated to countries with better policies.

The important evidence concerns the effect of the debt (relative to GDP), that we divide into bilateral, multilateral and private debt depending on the holder's type. As we focus on the behavior of bilateral creditors, column 1 shows that in the case of countries which are not HIPC (for which debt sustainability is not a problem) the coefficients on the debt ratios are all negative but not significant. In the case of HIPC, instead, the coefficient on the variable interacting the bilateral debt share with the dummy for being a HIPC is negative and significant at the 1% level. Since both coefficients are negative, we can conclude that a higher debt owed to bilateral creditors reduces their net loans, and significantly so in the case of HIPC (which is confirmed by the results presented in the first column of *Table 8*). Moreover, a credit restrain is induced by a higher stock of bilateral debt, while the amount of debt owed to multilateral and private creditors does not significantly affect the behaviour of bilateral creditors.

A completely different picture emerges as we look at the lending policy of multilateral creditors, in column 3. In fact, multilateral organisations are relatively more generous with high-debt HIPC countries than with other low-income countries, as shown by a coefficient on multilateral debt that is negative and significant at the 1% level, while the coefficient of the variable interacting the multilateral debt share with the HIPC dummy is positive and significant at the 1% level. For both HIPC and non-HIPC, multilateral net loans significantly decrease with the stock of multilateral debt, however, in the case of HIPC, such "correction" is much weaker (column 2 of *Table 8* documents the same result). Moreover, debt ownership appears to be an important determinant of the lending decisions of multilateral creditors, since the impact of both bilateral and private debt is not significant. Thus, this evidence provides some support to the hypothesis of defensive lending as the main motivation for the behavior of multilateral organisations.

We then examine the interaction between loans and grants and debt reduction. The estimated regressions show that net loans from both bilateral and multilateral creditors are not significantly related to previous-year grants from the same group of creditors (nor to loans by other creditors). This evidence suggests that, in spite of the concessional nature of most loans to low-income countries, in general such loans are not viewed as strong substitutes of grants. Incidentally, this supports our strategy of considering loans and grants separately in the empirical analysis. The interesting result that emerges from the analysis of the interaction between multilateral and bilateral policy is the significant flow of multilateral loans into countries that have received grants from bilateral donors in the previous year. Indeed, column 3 shows that the effect of bilateral grants on multilateral loans is significant at the 1% level. This positive relation might reflect the concessional nature of multilateral loans that could be provided to complement the aid policy of bilateral donors, but such explanation is somewhat inconsistent with the evidence of the little role played by the recipients' needs in motivating multilateral loans. The analysis of the determinants of bilateral and multilateral grants will shed more light on this issue.[13] Moreover, neither bilateral nor multilateral loans are affected by the amount of debt which

[13] We tested whether the relation between multilateral net loans and bilateral grants differs across HIPC and non-HIPC, but the hypothesis that the coefficients of bilateral grants is the same for the two groups of countries could not be rejected even at the 10% significant level.

has been forgiven.

Finally, we tested whether the results of the estimation of equation (3) are robust to the exclusion of non significant variables by sequentially excluding these variables. Columns 2 and 4 report a more parsimonious specification for the equations of bilateral and multilateral net loans, respectively. As can be seen by comparing columns 1 and 2, the coefficients of the variables explaining bilateral loans are remarkably stable across specifications.[14] As multilateral loans are concerned, no significant differences either in the size of the coefficients or in their significance emerge across the two specifications, as shown by comparing columns 3 and 4.

4.2 Grants

We now turn to the analysis of the determinants of bilateral and multilateral grants relative to GDP. Estimates of the grant equations (4) are presented in *Table 7* for both bilateral and multilateral grants. The explanatory variables also include the interaction between the dummy for HIPC and past bilateral and multilateral grants.

The high and significant coefficient on the lagged dependent variable in the bilateral grants equation (see column 1) shows that bilateral grants are highly persistent. More important, the flow of grants that HIPC receive from bilateral donors appears significantly more persistent than that received by non-HIPC, as shown by the significant interaction between the HIPC dummy and the lagged dependent variable. This result is an indication of the low quality of aid allocation: for any level of aid received in the past, HIPC tend to receive more aid today compared to non-HIPC, despite their poorer economic performance. As observed by Easterly (2002), aid to HIPC tends to perpetuate itself. Multilateral grants exhibit a much lower persistence compared to bilateral grants. Even in this case, however, grants received by HIPC are more persistent, as shown by the significant interaction between the HIPC dummy and the lagged dependent variable.

Grants from bilateral donors are not significantly affected by variables related to recipients' needs and economic performance. Column 1 shows that only "Political Rights and Civil Liberties" (PRCL) have a positive and significant effect, though only marginally at the 10% level. Focusing on the behaviour of multilateral donors, column 3 shows that a low growth performance, as measured by a low GDP growth, significantly increases the flow of grants at the 1% level. The strong intervention of international organisations in low growth environments is evidence of the importance of recipients' need motivations in their aid policy. Interestingly, and contrary to other results in the empirical literature (e.g. Burnside and Dollar, 2000, Collier and Dollar, 2002), economic performance, as measured by openness and inflation, does not seem to be a relevant factor of multilateral aid.

[14] The main changes concern openness that is now significant at the 5% level, GDP growth that is significant at the 1% level and the coefficient of bilateral debt forgiven which becomes significant only at 10% level.

A "post war" dummy displays a negative effect on both bilateral and multilateral grants, contrary to expectations, though it is significant only in the case of bilateral grants, even if only at the 10% level. The fact that grants from either sources are, if anything, lower in the four years following the end of a conflict is further evidence of a poor allocation of aid.[15]

The important evidence concerns the effect of the level of debt (relative to GDP). Column 1 shows that, in general, bilateral donors tend to reduce, though not significantly, the amount of grants as the debt increases (independently of the holder of the debt). But bilateral donors give more grants to HIPC as their bilateral debt increases; the coefficient of the variable interacting the HIPC dummy with the bilateral debt is positive and significant at the 1% level and, in absolute value, greater than the coefficient of the bilateral debt (this is also confirmed by the results presented in the first column of *Table 8*).

Evidence of a preferential treatment for HIPC is also discovered when we look at the estimated equation for multilateral grants in column 3. The amount of grants given to non-HIPC falls as the debt owed to multilateral creditors increases, as shown by a coefficient on multilateral debt which is negative and significant at the 1% level. This effect almost disappears in the case of HIPC: the coefficient on the variable interacting the multilateral debt with the dummy for being a HIPC is positive and significant at the 1% level and almost of the same magnitude as the coefficient on multilateral debt. Therefore, while a higher level of multilateral debt reduces grants to low-income countries, in the case of HIPC such a "correction" does not take place, which is confirmed by the results presented in the fourth column of *Table 8*.

As debt reduction is concerned, we find that the coefficient of bilateral debt forgiveness, in the bilateral grants equation, is negative and significant at the 5% level, while multilateral grants (as well as multilateral loans) are not influenced by the amount of debt forgiven. This effect is stronger for bilateral donors since debt reduction is classified as aid (at least to some extent) and, differently from the multilaterals that started only very recently to forgive part of their claims, bilateral lenders have forgiven their debt since the late 1980s. The fact that this coefficient is negative shows that debt forgiveness substantially reduces the flow of grants in the following year, independently of the type of country considered. The substitution of debt reductions for money transfers is a cause of concern since it is likely to reduce the amount of resources available to low-income countries (i.e., independently of being HIPC or not).

Therefore, the aid policy of both donor groups towards HIPC is significantly different from their policy towards non-HIPC. Importantly, debt ownership appears an important determinant of the aid policy of both bilateral and multilateral donors. The amount of grants that bilateral donors provide to HIPC significantly increases with their stock of debt, while multilateral donors do not reduce their grant to HIPC as their debt share

[15] To account for an eventual fall of aid during war years we also tried to include a dummy variable taking the value of one during the years of war but this was not significant neither in the net loans nor in the grants equations.

increases, as they do with non-HIPC. Thus, this evidence provides some support to the hypothesis of defensive granting. Moreover, since such correlation between grants and debt only emerges in the case of HIPC, the hypothesis of defensive granting appears to offer a more convincing explanation than humanitarian motivations for the positive link between aid and debt. In fact, even if HIPC are in more need than other low-income countries, the presence of country-specific effects should control for this motivation of aid.

The results in column 1 show that bilateral grants are independent of previous-year grants from multilateral organisations, but they tend to flow into countries that have received net loans from these institutions (multilateral loans are significant at the 1% level). A tentative explanation for this positive relation is that grants are usually given as a part of a broader adjustment programme coordinated by multilateral organisations (at least this is the case for programme aid or budget support). The adoption of an IMF or World Bank programme could actually work either as a pre-condition for receiving grants or it could signal a sound institutional and economic environment conducive to growth. As multilateral grants are concerned, we find that receiving a bilateral grant increases the probability to obtain a multilateral grant in the following year, where this impact is significant at the 1% level. The two pieces of evidence are consistent with the results presented in *Table 6*, namely that multilateral creditors significantly direct their loans to countries benefiting from bilateral grants.

The picture that emerges from the analysis of the interactions of bilateral and multilateral institutions is one where bilaterals try to decrease their debt exposure in HIPC by substituting grants for loans while multilateral organisations do not reduce their loans and grants when debt sustainability appears to become a problem. This may explain why both multilateral grants and loans strongly react to bilateral grants. Moreover, while multilateral organisations follow the same aid and lending strategy towards HIPC, bilateral donors provide HIPC with more grants while reducing their net loans. This evidence confirms that, as the debt problem worsened, bilateral donors may have used grants as substitutes for loans.

We also tested whether the results of the estimation of the grant equation (4) are robust to the exclusion of non-significant variables by sequentially excluding these variables. Columns 2 and 4 of *Table 7* report a more parsimonious specification for the equations of bilateral and multilateral grants, respectively. As can be seen by comparing columns 1 and 2, former results for bilateral grants are confirmed by the new estimates. On the contrary, the new equation estimated for multilateral grants presents a main difference relative to the baseline specification. As seen by comparing columns 3 and 4, the coefficient on private debt is now positive and significant at the 1% level. Except for this role of private debt in attracting multilateral grants, there are no other significant differences either in the size of the coefficients of the other variables or in their significance.

Finally, since the quality of the institutions has recently been found as a key aspect in determining economic development (see, among others, Knack and Kneefer, 1995, Mauro, 1995, Easterly and Levine, 2002) we would expect that a good quality of institutions be a potential factor motivating aid allocation. To test for this we have augmented our

specification with the indexes of Bureaucracy Quality, Corruption, Law and Order and Investment Profile from the ICRG. Since such indexes are probably highly correlated we use each indicator in isolation. The introduction of these proxies of "good quality" of institutions comes at the cost of restricting our sample to only 38 countries and to the period 1984 to 1999, but produces disappointing results as the coefficients of the indexes of institutional quality are never significant. This finding can be explained with the fact that our sample of countries is rather homogeneous with respect to the (poor) quality of their institutions. Since institutions do not appear to be a factor in aid allocation across HIPC countries, results obtained for the full sample of 52 countries appear more reliable.

5 Conclusions

In this paper we have examined the determinants of net loans and grants to low-income countries, focusing on the heavily indebted and poor ones. We estimate a dynamic panel of 52 low-income countries, for the period 1982 to 1999, by GLS with country-specific effects and time effects.

We find that a higher level of bilateral debt reduces bilateral net loans to HIPC, while multilateral creditors appear relatively more generous in the case of HIPC (contrary to the results of Birdsall et al., 2003, who find bilateral creditors more responsible for low selectivity). In particular, while a higher stock of debt owed to multilateral creditors significantly reduces the amount of their loans to non-HIPC, this effect tend to disappear in the case of HIPC. The aid policy of both bilateral and multilateral donors appears generally more generous with HIPC than with non-HIPC countries.

Therefore, the results of our analysis shows that the amount of resources that HIPC have received, compared to non-HIPC, have been influenced by their level of debt. As the HIPC dummy stands for an indicator of high debt, this evidence suggests that HIPC have received a preferential treatment just because of their high degree of indebtedness, thereby supporting, at least partially, both the hypothesis of defensive lending and granting. This kind of perverse incentive is even more serious when associated to the multilaterals which should, at the same time, both lending and monitoring the actual implementation of the reforms (Ramcharan, 2002).

In terms of policy implications there is a main conclusion that we can draw from our analysis. Since the concern for keeping the debt sustainable (or more generally the need to avoid a debt crisis) seems to have been the key issue in the case of HIPC, then a strong debt stock reduction should encourage a greater future selectivity in providing new resources to countries in need. More selectivity, in turn, would provide debtors with better incentives, since they would not anymore anticipate that lenders would lend them anyway. On this respect the HIPC Initiative, which for the first time provided for multilateral debt relief, has the merit to give multilaterals incentives for being selective when approving their loans, by making them paying a price for the debt reduction for the first time (see also the IOB Evaluation Report, 2003).

The analysis could then be extended to examine whether the greater debt relief efforts, under the enhanced HIPC Initiative since 1999 (the last year in our sample), have actually encouraged a greater selectivity in lenders and donors. The key issue then, after selectivity is made possible by a reduced debt stock, would be to find additional resources for development assistance behind those allocated to debt relief. In fact, encouraging selectivity would be useless if the current debt reduction will crowds out future aid.

References

[1] Alesina, A., Dollar, D., 2000. Who gives foreign aid to whom and why? Journal of Economic Growth 5, 33–63.

[2] Alesina, A., Weder, B., 2002. Do corrupt government receive less foreign aid. American Economic Review, 92.

[3] Arslanalp, S., Henry, P.B., 2004. Helping the poor to help themselves: debt relief or aid. NBER Working Paper No. 10230

[4] Arslanalp, S., Henry, P.B., 2004. Is debt relief efficient. NBER Working Paper No. 10217. Forthcoming in the Journal of finance.

[5] Baltagi, B., Li, Q., 1995. Testing AR(1) against MA(1) disturbances in error component model. Journal of Econometrics 68.

[6] Birdsall, N., Williamson, J., Deese, B., 2002. Delivering on Debt Relief. From IMF Gold to a New Aid Architecture. Centre for Global Development, Institute for International Economics. Washington, DC.

[7] Birdsall, N., Claessens, S., Diwan, I., 2003. Policy Selectivity Foregone: Debt and Donor Behaviour in Africa. World Bank Economic Review (WBER) 17, 409-435.

[8] Burnside, C., Dollar, D., 2000. Aid, Policies and Growth. American Economic Review 90, 847–868.

[9] Collier, P., Dollar, D., 2002. Aid Allocation and Poverty Reduction. European Economic Review 46, 1475–1500.

[10] Collier, P., Hoeffler, A., 2002. Aid, Policy and Growth in Post-Conflict Societies. World Bank Policy Research Working Paper No. 2902.

[11] Cordella, T., Dell'Ariccia, G., 2003. Budget Support versus Project Aid. IMF Working Paper No. 88

[12] Daseking, C., Powell, R., 1999. From Toronto terms to the HIPC Initiative: a brief history of debt relief for low-income countries. IMF Working Paper 142.

[13] Devarajan, S., Rajkumar, A.S., Swaroop, V., 1999. What Does Aid to Africa Finance? Development Research Group, World Bank, mimeograph.

[14] Development Committee (Joint Ministerial Committee of the Boards of Governors of the Bank and the Fund), 1998. The Initiative for Heavily Indebted Poor Countries Review and Outlook.

[15] Easterly, W., 2001. The Elusive Quest for Growth. Economists' Adventures and Misadventures in the Tropics. MIT Press.

[16] Easterly, W., 2002. How did highly indebted poor countries become highly indebted? Reviewing two decades of debt relief. World Development 30, 1677–1696.

[17] Easterly, W., Levine, R., 2002. Tropics, germs and crops: how endowments influence economic development. NBER Working Paper No. 9106

[18] Frey, B.S., Schneider, F., 1986. Competing Models of International Lending Activity. Journal of Development Economics 20, 225–245.

[19] Gleditsch, N.P., Wallensteen, P., Eriksson, M., Sollenberg, M., Strand, H., 2002. Armed Conflict 1946–2001: A New Dataset. Journal of Peace Research 39, 615—637.

[20] Judson, R.A., Owen, A.L., 1999. Estimating dynamic panel data models: a guide for macroeconomists. Economic Letters 65, 9–15.

[21] Knack, S., Keefer, P., 1995. Institutions and Economic Performance: Cross Country Tests Using Alternative Institutional Models. Economics and Politics 7, 207–227.

[22] Mauro, P., 1995. Corruption and Growth. Quarterly Journal of Economics 110, 681–712.

[23] Policy and Operations Evaluation Department (2003) "Results of International Debt Relief." IOB Evaluations No. 292, Dutch Ministry of Foreign Affairs.

[24] Nickell, S.J., 1981. Biases in Dynamic Models with Fixed Effects. Econometrica 49, 802–816.

[25] Nunziata, L., 2000. hetgrot.ado: a Stata command for a Likelihood Ratio test for groupwise heteroskedasticity.

[26] Nunziata, L , 2002. xtbac.ado: a Stata command for the Baltagi autocorrelation test in panel data.

[27] Ramcharan, R., 2002. IMF Surveillance and Lending: Separating the Church from the State. IMF, mimeograph.

[28] Renard, R., Cassimon, D., 2001. On the Pitfalls of Measuring Aid. WIDER Discussion Paper No. 2001/69.

Table 1: List of the 41 Heavily Indebted Poor Countries

1) Angola
2) Benin
3) Bolivia
4) Burkina Faso
5) Burundi
6) Cameroon
7) Chad
8) Central African Republic
9) Congo Dem Republic
10) Congo Republic
11) Cote d'Ivoire
12) Ethiopia
13) Gambia
14) Ghana
15) Guinea
16) Guinea-Bissau
17) Guyana
18) Honduras
19) Kenya
20) Lao PDR
21) Liberia
22) Madagascar
23) Malawi
24) Mali
25) Mauritania
26) Mozambique
27) Myanmar
28) Nicaragua
29) Niger
30) Rwanda
31) Sao Tome and Principe
32) Senegal
33) Sierra Leone
34) Somalia
35) Sudan
36) Tanzania
37) Togo
38) Uganda
39) Vietnam
40) Yemen
41) Zambia

Source: HIPC Initiative country documents (1996), IMF and WB.

Table 2: List of the low-income countries included in the control group

1) Bangladesh
2) Bhutan
3) Cambodia
4) Comoros
5) Haiti
6) India
7) Indonesia
8) Lesotho
9) Nepal
10) Nigeria
11) Pakistan
12) Solomon Islands
13) Zimbabwe

Table 3: List of all low-income countries

1) Afghanistan	35) Lesotho
2) Angola	36) Liberia
3) Armenia	37) Madagascar
4) Azerbaijan	38) Malawi
5) Bangladesh	39) Mali
6) Benin	40) Mauritania
7) Bhutan	41) Moldova
8) Bolivia	42) Mongolia
9) Burkina Faso	43) Mozambique
10) Burundi	44) Myanmar
11) Cambodia	45) Nepal
12) Cameroon	46) Nicaragua
13) Central African Rep.	47) Niger
14) Chad	48) Nigeria
15) Comoros	49) Pakistan
16) Congo, Dem. Rep. of	50) Rwanda
17) Congo, Republic of	51) São Tomé & Príncipe
18) Côte d'Ivoire	52) Senegal
19) Eritrea	53) Sierra Leone
20) Ethiopia	54) Solomon Islands
21) Gambia, The	55) Somalia
22) Georgia	56) Sudan
23) Ghana	57) Tajikistan
24) Guinea	58) Tanzania
25) Guinea-Bissau	59) Togo
26) Guyana	60) Turkmenistan
27) Haiti	61) Uganda
28) Honduras	62) Ukraine
29) India	63) Uzbekistan
30) Indonesia	64) Vietnam
31) Kenya	65) Yemen, Republic of
32) Korea DPR	66) Zambia
33) Kyrgyz Republic	67) Zimbabwe
34) Lao People's Dem.Rep	68) Lesotho

Source: World Bank.

Table 4: Variables definition

Variable	Definition	Units
Multilateral Grants	Multilateral Grants	Ratio to GDP
Bilateral Grants	Bilateral Grants	Ratio to GDP
Multilateral Net Loans	Mul Net Loan+IMF Net Loans	Ratio to GDP
Bilateral Net Loans	Bilateral Net Loan	Ratio to GDP
Private Net Loans	Private Net Loan	Ratio to GDP
Population	Population	Billions units
Pc-GDP	Gross Domestic Product	Ratio to Population (thousands units)
Inflation	Consumer Price Index	Annual Rate of change
Gr-GDP	Real GDP growth	Annual Rate of change
Openness	Imports+Exports	Ratio to GDP
PRCL	Political Right&Civil Liberties	Average Index
Multilateral Debt	Long term Mul Debt+IMF Debt	Ratio to GDP
Bilateral Debt	Long term Bilateral Debt	Ratio to GDP
Private Debt	Long term Bilateral Debt	Ratio to GDP
Debt Forgiven	Debt Forgiveness	Ratio to GDP
Bureaucracy quality	Bureaucracy quality	Index
Corruption	Corruption	Index
Inv Profile	Investment profile	Index
Law & Order	Law & Order	Index
Dummy Post War	Years of post conflict	Binary

Table 5: Data source

Variable	Source
Bilateral & Multilateral Grants	DAC (OECD)
Debt Forgiveness	DAC (OECD)
Total Grants	Global Development Finance (GDF)
Multilateral Net Loans	Global Development Finance (GDF)
Bilateral Net Loans	Global Development Finance (GDF)
Private Net Loans	Global Development Finance (GDF)
Population	International Financial Statistics (IFS)
Pc-GDP	World Economic Outlook (WEO)
Inflation	World Economic Outlook (WEO)
Gr-GDP	World Economic Outlook (WEO)
Openness	World Development Indicators (WDI)
Political Rights and Civil Liberties	Freedom House
Multilateral Debt	Global Development Finance (GDF)
Bilateral Debt	Global Development Finance (GDF)
Private Debt	Global Development Finance (GDF)
Bureaucracy quality	ICRG
Corruption	ICRG
Inv Profile	ICRG
Law & Order	ICRG
Dummy War/Post War	Gleditsch *et al.* (2002)

TABLE 6: Net Loans with interactions with HIPC

	Bilateral Net Loans	Bilateral Net Loans	Multilateral Net Loans	Multilateral Net Loans
Population	0.00002*	0.0000**	-0.00002	-0.0000
	(1.917)	(2.089)	(1.618)	(1.620)
Per capita GDP (-1)	-0.0031		-0.0014	
	(1.277)		(0.476)	
Inflation (-1)	0.0001		0.00001	
	(1.263)		(0.427)	
GDP Growth (-1)	-0.0175**	-0.0196***	0.0168**	0.0183**
	(2.243)	(2.639)	(2.072)	(2.358)
Openness (-1)	0.0052*	0.0063**	0.0003	
	(1.729)	(2.408)	(0.157)	
PRCL	-0.0003		0.0002	
	(0.954)		(0.477)	
Multilateral Debt (-1)	-0.0039		-0.0662***	-0.0673***
	(0.438)		(6.018)	(6.833)
Bilateral Debt (-1)	-0.0021	-0.0018	-0.0007	
	(0.931)	(0.779)	(0.325)	
Private Debt (-1)	-0.0242	-0.0198	0.0071	
	(1.538)	(1.364)	(0.623)	
HIPC x Multilater. Debt (-1)	0.0022		0.0401***	0.0449***
	(0.250)		(3.733)	(4.874)
HIPC x Bilateral Debt (-1)	-0.0173***	-0.0131***	0.0035	
	(4.274)	(3.741)	(1.022)	
HIPC x Private Debt (-1)	0.0258	0.0221	-0.0092	
	(1.547)	(1.445)	(0.770)	
Multilateral Net Loans (-1)	0.0235		0.5072***	0.5124***
	(1.112)		(16.971)	(17.752)
Bilateral Net Loans (-1)	0.4943***	0.5108***	0.0151	
	(16.264)	(17.750)	(0.663)	
Private Net Loans (-1)	0.0246		0.0287	
	(0.964)		(1.567)	
Multilateral Grants (-1)	-0.0044		-0.0104	
	(0.351)		(0.885)	
Bilateral Grants (-1)	0.0033		0.0895***	0.0861***
	(0.228)		(5.974)	(6.788)
Debt Forgiven	-0.2104	-0.0692*	-0.2656	
	(1.252)	(1.947)	(1.305)	
HIPC x Debt Forgiven	0.1350		0.2872	
	(0.799)		(1.391)	
Dummy Post War	-0.0009		-0.0015	
	(0.474)		(0.761)	
Constant	0.0025	0.0029	0.0000	-0.0020
	(0.414)	(0.680)	(0.009)	(0.975)
Observations	936	936	936	936
Number of countries	52	52	52	52
Number of years	18	18	18	18
SE of regression	0.0257	0.0256	0.0259	0.0257
SE of Dependent variable	0.0386	0.0386	0.0388	0.0388
CD joint significance test	Prob>chi2=0.028	Prob>chi2=0.048	Prob>chi2=0.000	Prob>chi2=0.000
TD joint significance test	Prob>chi2=0.004	Prob>chi2=0.000	Prob>chi2=0.023	Prob>chi2=0.006

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Generalised least squares allowing for heteroskedastic errors. Each equation contains country dummies and time dummies.

TABLE 7 : Grants with interactions with HIPC

	Bilateral Grants	Bilateral Grants	Multilateral Grants	Multilateral Grants
Population	-0.0000		-0.0000	
	(0.613)		(0.470)	
Per capita GDP (-1)	-0.0056	-0.0060*	-0.0026	-0.0027*
	(1.529)	(1.846)	(1.385)	(1.668)
Inflation (-1)	0.0000		0.0000	
	(0.338)		(0.791)	
GDP Growth (-1)	0.0148		-0.0272***	-0.0327***
	(1.132)		(4.472)	(6.082)
Openness (-1)	-0.0007		-0.0007	
	(0.209)		(0.443)	
PRCL	0.0009*	0.0009*	-0.0003	
	(1.672)	(1.846)	(1.448)	
Multilateral Debt (-1)	-0.0164	-0.0123*	-0.0229***	-0.0240***
	(1.170)	(1.853)	(3.391)	(3.921)
Bilateral Debt (-1)	-0.0038	-0.0052	-0.0007	
	(0.917)	(1.357)	(0.152)	
Private Debt (-1)	-0.0071		-0.0054	0.0050***
	(0.463)		(0.622)	(2.994)
HIPC x Multilater. Debt (-1)	0.0049		0.0190***	0.0196***
	(0.344)		(2.866)	(3.341)
HIPC x Bilateral Debt (-1)	0.0156***	0.0169***	-0.0007	
	(2.650)	(3.090)	(0.147)	
HIPC x Private Debt (-1)	0.0042		0.0112	
	(0.250)		(1.200)	
Multilateral Net Loans (-1)	0.1051***	0.1061***	0.0113	
	(2.806)	(2.853)	(0.744)	
Bilateral Net Loans (-1)	0.0381		0.0013	
	(1.108)		(0.110)	
Private Net Loans (-1)	0.0354		0.0118	
	(1.097)		(0.941)	
Multilateral Grants (-1)	0.0196		0.3088***	0.3188***
	(0.824)		(11.878)	(12.306)
HIPC x Multilateral Grants (-1)			0.0690*	0.0559
			(1.785)	(1.522)
Bilateral Grants (-1)	0.5989***	0.5997***	0.0720***	0.0624***
	(16.217)	(16.809)	(5.733)	(6.276)
HIPC x Bilateral Grants (-1)	0.0925***	0.1008***		
	(2.703)	(3.049)		
Debt Forgiven (-1)	-1.3087**	-0.5502***	-0.1321	
	(2.239)	(6.653)	(0.926)	
HIPC x Debt Forgiven (-1)	0.7564		0.1142	
	(1.290)		(0.808)	
Dummy Post War	-0.0053*	-0.0051*	-0.0012	
	(1.679)	(1.657)	(0.747)	
Constant	0.0104	0.0124**	0.0005	0.0040*
	(1.300)	(2.147)	(0.127)	(1.888)
Observations	936	936	936	936
Number of countries	52	52	52	52
Number of years	18	18	18	18
SE of regression	0.0396	0.0256	0.0186	0.026
SE of Dependent variable	0.0797	0.0797	0.0430	0.0430
TD joint significance test	Prob>chi2=0.000	Prob>chi2=0.048	Prob>chi2=0.000	Prob>chi2=0.000
CD joint significance test	Prob>chi2=0.000	Prob>chi2=0.000	Prob>chi2=0.000	Prob>chi2=0.006

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Generalised least squares allowing for heteroskedastic errors. Each equation contains country dummies and time dummies.

TABLE 8 : Net Loans and Grants with interactions with HIPC and with non-HIPC

	Bilateral Net Loans	Mul Net Loans	Bilateral Grants	Mul Grants
Population	0.00002**	-0.00002	-0.00001	-8.89e-06
	(1.964)	(1.608)	(0.683)	(0.546)
Per capita GDP (-1)	-0.0032	-0.0014	-0.0053	-0.0025
	(1.321)	(0.477)	(1.451)	(1.307)
Inflation (-1)	0.0001	0.00001	0.00001	0.00001
	(1.259)	(0.426)	(0.283)	(0.703)
GDP Growth (-1)	-0.0175**	0.0168**	0.0188	-0.0263***
	(2.243)	(2.075)	(1.429)	(4.329)
Openness (-1)	0.0049	0.0002	-0.0015	-0.0009
	(1.612)	(0.110)	(0.472)	(0.576)
PRCL	-0.0003	0.0002	0.0010*	-0.0004
	(0.938)	(0.482)	(1.868)	(1.481)
Non HIPC x Multilateral Debt (-1)	-0.0040	-0.0662***	-0.0189	-0.0238***
	(0.445)	(6.017)	(1.338)	(3.553)
Non HIPC x Bilateral Debt (-1)	-2.43e-09	-3.72e-10	-6.19e-09	-3.56e-09
	(1.158)	(0.192)	(1.567)	(0.660)
Non HIPC x Private Debt (-1)	-0.0255	0.0067	-0.0113	-0.0060
	(1.615)	(0.589)	(0.730)	(0.718)
HIPC x Multilater. Debt (-1)	-0.0017	-0.0262***	-0.0061	-0.0025
	(0.418)	(5.121)	(0.863)	(0.710)
HIPC x Bilateral Debt (-1)	-0.0193***	0.0029	0.0125***	-0.0013
	(5.580)	(1.011)	(2.858)	(0.878)
HIPC x Private Debt (-1)	0.0017	-0.0021	-0.0030	0.0064**
	(0.327)	(0.758)	(0.491)	(2.470)
Multilateral Net Loans (-1)	0.0232	0.5071***	0.1076***	0.0127
	(1.098)	(16.966)	(2.862)	(0.842)
Bilateral Net Loans (-1)	0.4925***	0.0152	0.0282	0.0008
	(16.134)	(0.665)	(0.816)	(0.071)
Private Net Loans (-1)	0.0253	0.0287	0.0384	0.0114
	(0.990)	(1.567)	(1.170)	(0.904)
Multilateral Grants (-1)	-0.0037	-0.0099	0.0200	0.3192***
	(0.307)	(0.855)	(0.867)	(12.528)
Bilateral Grants	0.0031	0.0894***	0.6330***	0.0738***
	(0.215)	(5.970)	(18.158)	(5.905)
Non HIPC x Debt Forgiven	-0.2075	-0.2644	-1.3108**	-0.1351
	(1.233)	(1.299)	(2.214)	(0.967)
HIPC x Debt Forgiven	-0.0751*	0.0218	-0.5654***	-0.0179
	(1.841)	(0.390)	(6.712)	(0.730)
Dummy Post War	-0.0009	-0.0014	-0.0053*	-0.0010
	(0.472)	(0.756)	(1.646)	(0.593)
Constant	0.0028	0.0001	0.0103	0.0002
	(0.466)	(0.023)	(1.265)	(0.041)
Observations	936	936	936	936
Number of countries	52	52	52	52
Number of years	18	18	18	18
SE of regression	0.026	0.026	0.040	0.01859
SE of Dependent variable	0.0386	0.0388	0.0797	0.0430
CD joint significance test	Prob>chi2=0.0239	Prob>chi2=0.000	Prob>chi2=0.000	Prob>chi2=0.000
TD joint significance test	Prob>chi2=0.0035	Prob>chi2=0.023	Prob>chi2=0.000	Prob>chi2=0.000

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Generalised least squares allowing for heteroskedastic errors. Each equation contains country dummies and time dummies.

FIGURE 1

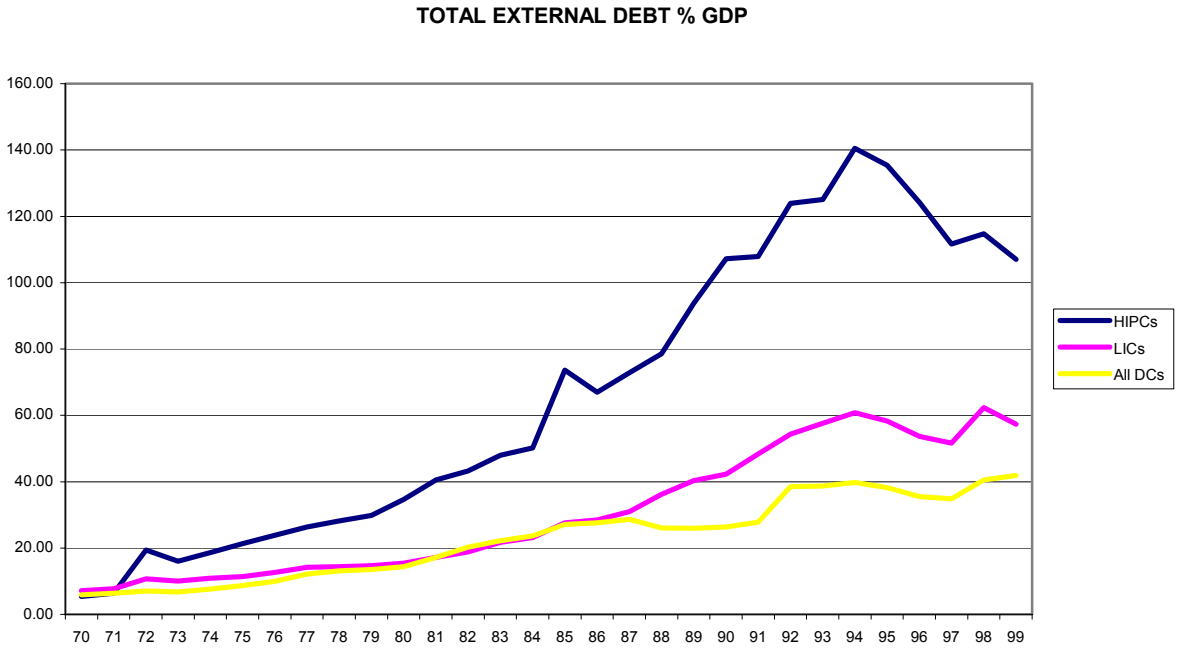


FIGURE 2

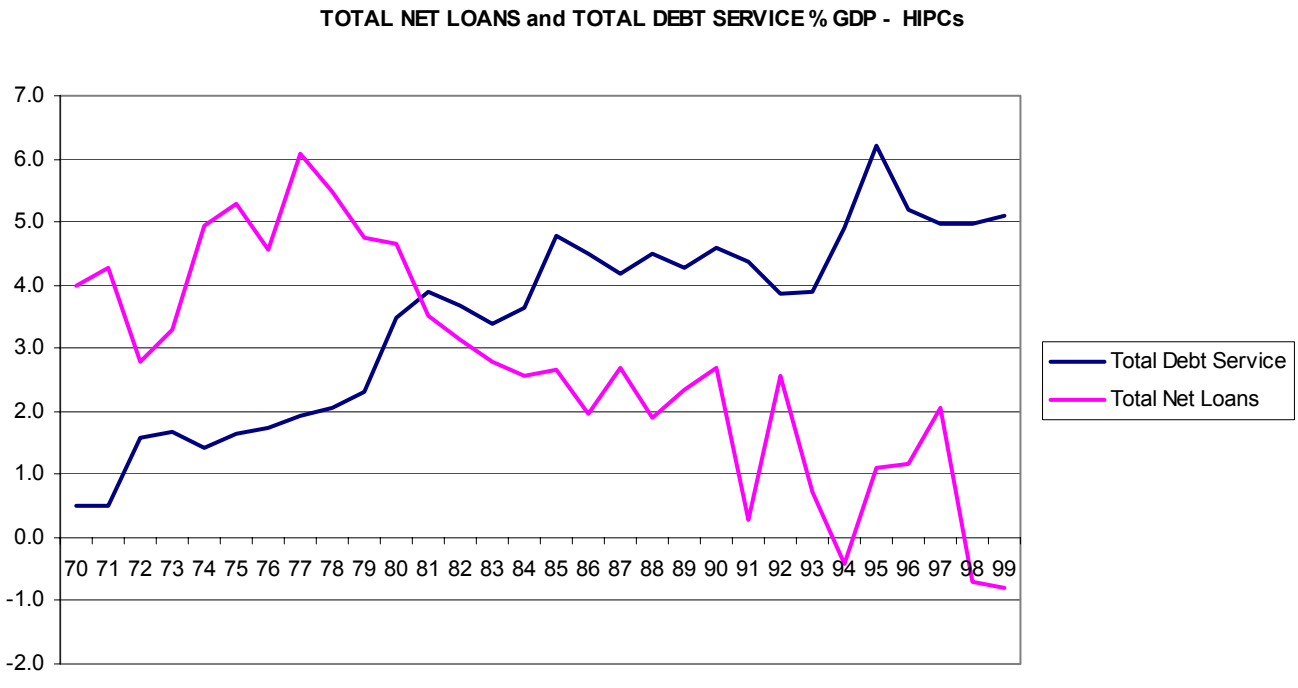


FIGURE 3

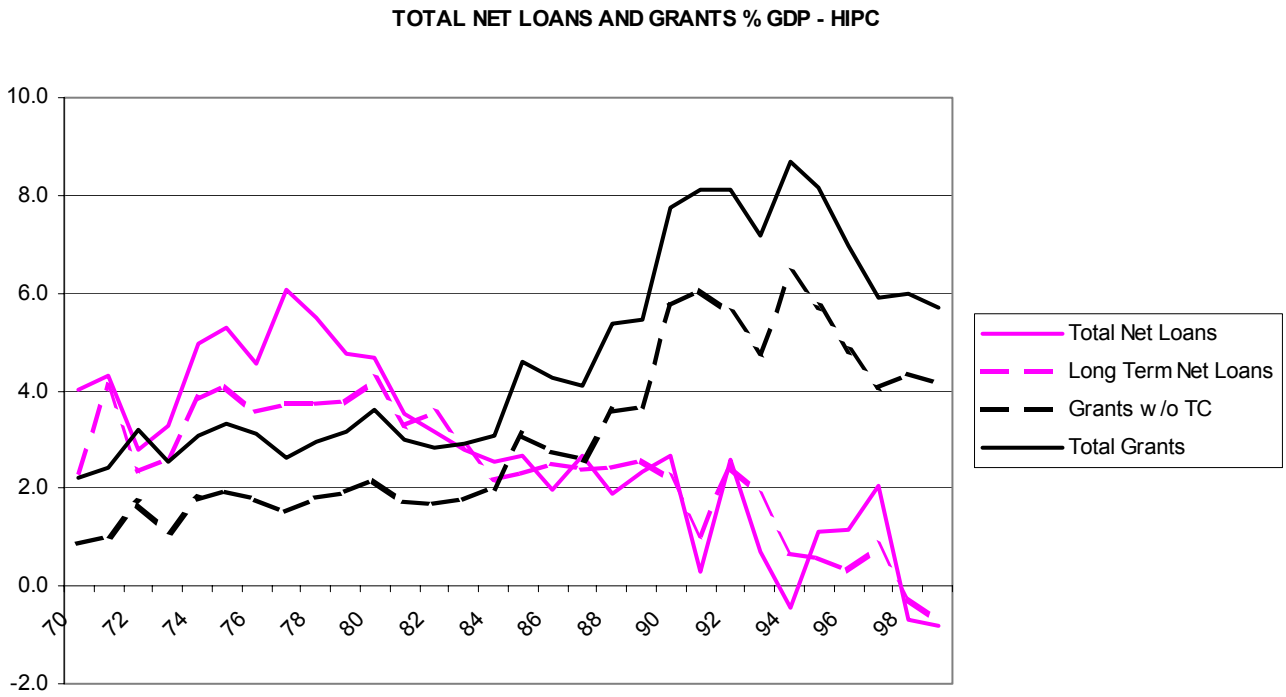


FIGURE 4

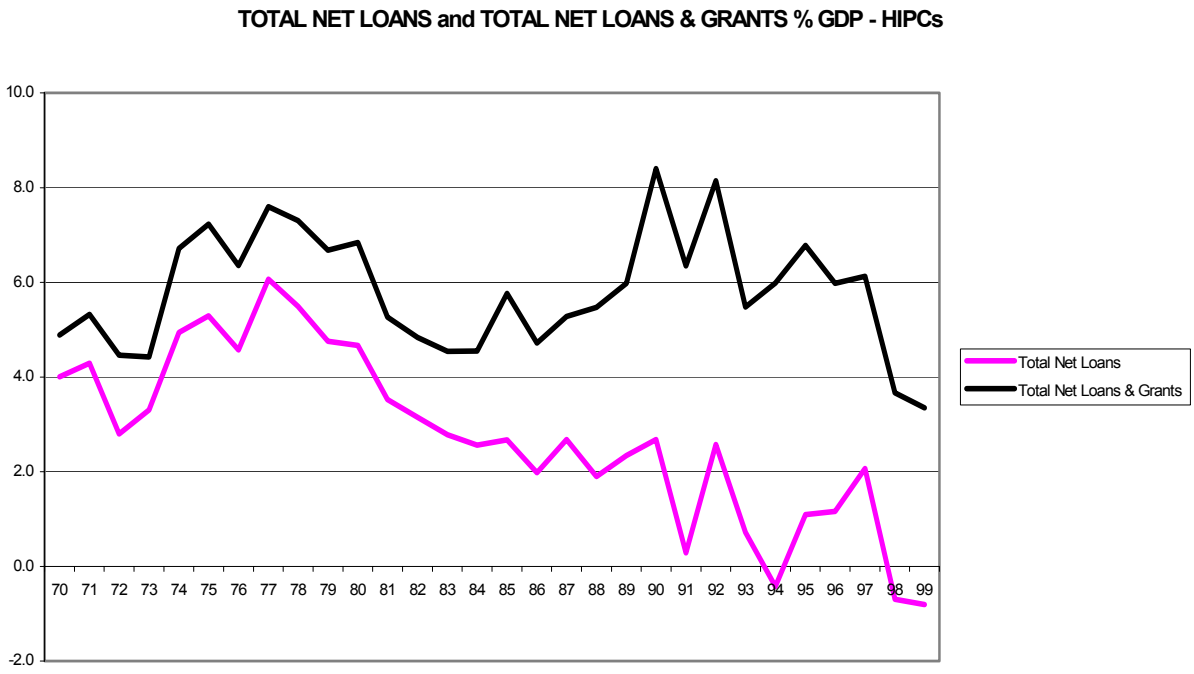


FIGURE 5

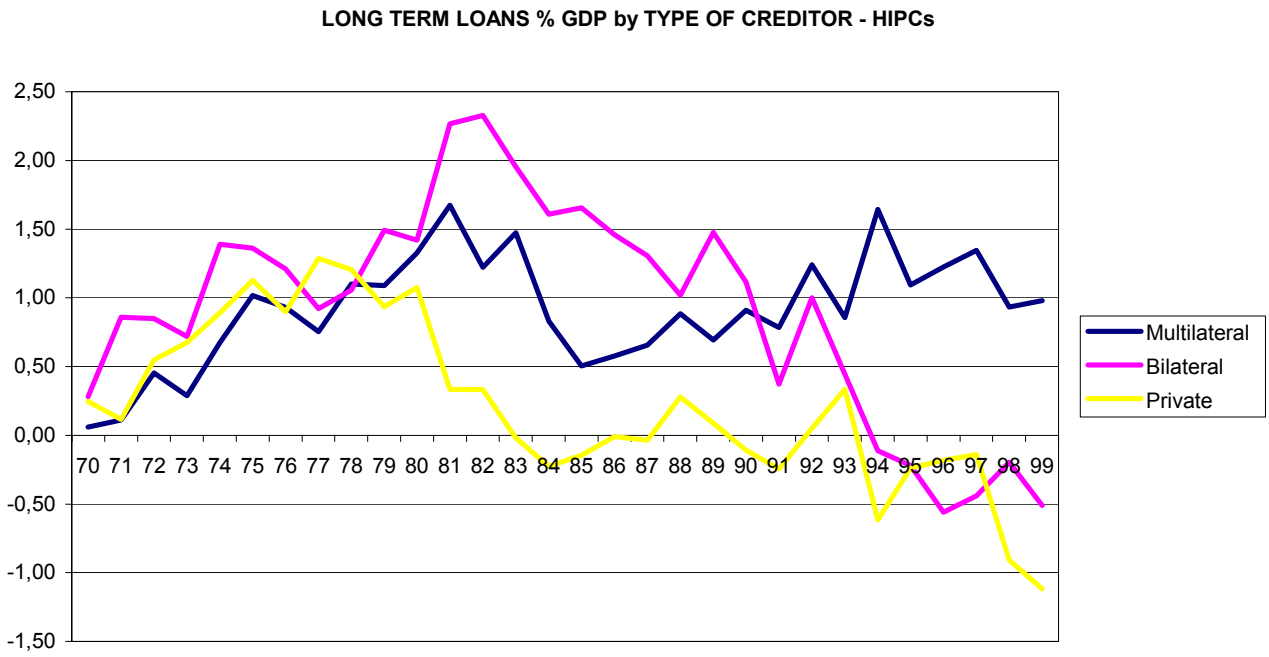


FIGURE 6

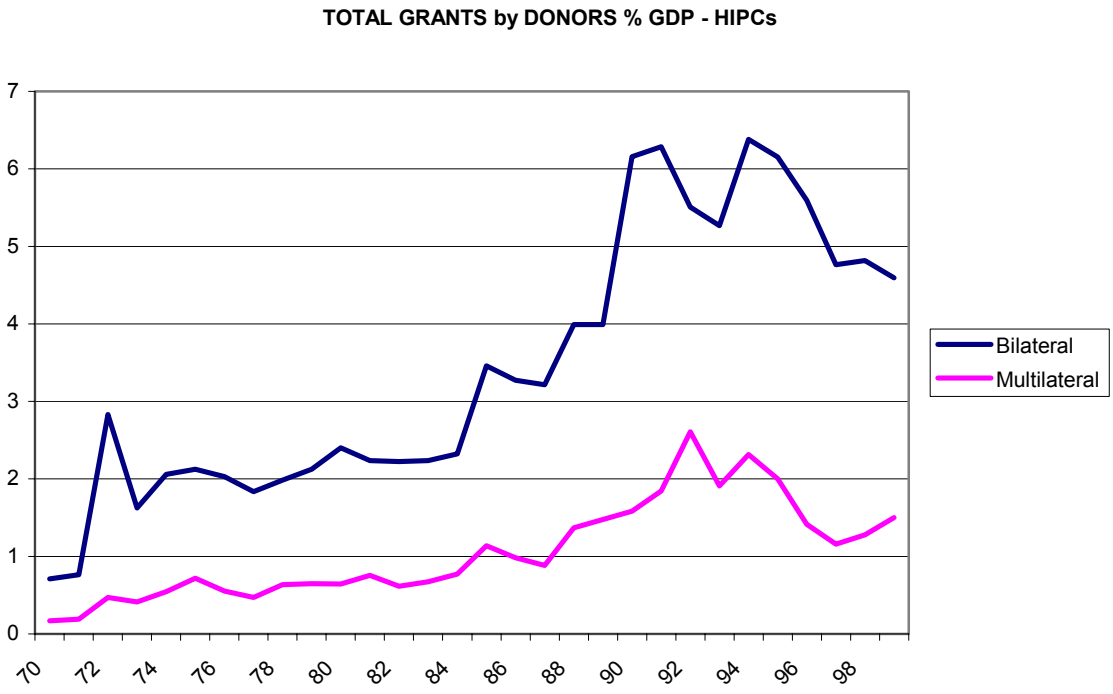
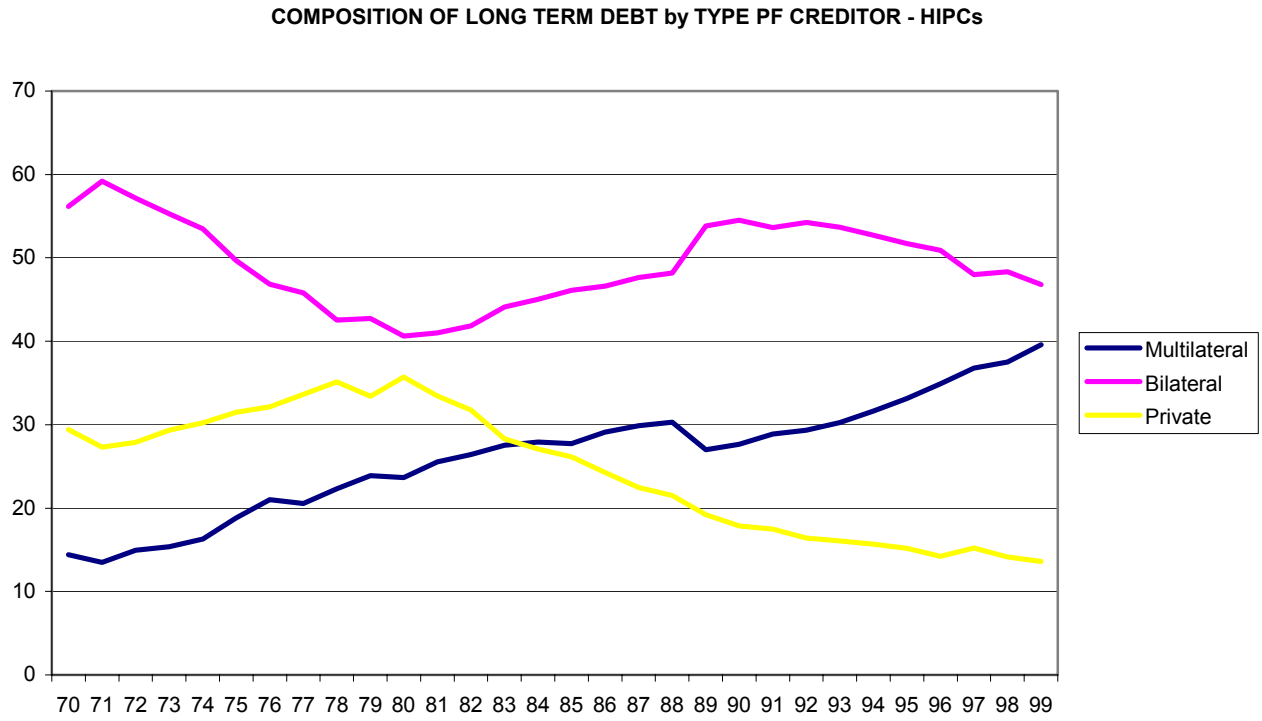


FIGURE 7


COMPOSITION OF LONG TERM DEBT by TYPE PF CREDITOR - HIPCs
70
60
50
40
30
20
10
0
70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99
Multilateral
Bilateral
Private