DEPARTMENT OF ECONOMICS

UNIVERSITY OF MILAN - BICOCCA

WORKING PAPER SERIES

Did high debts distort loans and grants allocation to IDA countries?

Silvia Marchesi and Alessandro Missale

No. 226 – August 2012

Dipartimento di Economia Politica
Università degli Studi di Milano - Bicocca
http://dipeco.economia.unimib.it

Did high debts distort loans and grants allocation to IDA countries?

Silvia Marchesi e Alessandro Missale*

August 2012

Abstract

We examine the allocation of net loans, grants and net transfers to IDA countries over the period 1982-2008 focusing on the role of debt, and debt sustainability, in the decisions of multilateral and bilateral donors. We estimate a dynamic panel of 75 IDA and IDA-Blend countries for the period 1982-2008, where the sample includes 40 HIPC and a control group of other 35 low-income countries. Our results point to no evidence of defensive lending as opposed to strong evidence of defensive granting. A significant negative reaction of net loans to the debt ratio characterizes the decisions of both multilateral and bilateral creditors. The impact of lower loans on the budget of debtor countries was however accommodated through the transfers of other resources, in the form of conventional grants (on top of debt forgiveness). This result is consistent with a substitution of grants for loans and the new approach to debt sustainability but questions the efficiency and selectivity of the aid policy.

Keywords: defensive lending, foreign aid, grants, highly indebted poor countries.

JEL Classification: C23, F34, F35, O19.

*Corresponding author: Silvia Marchesi, Dipartimento di Economia Politica, Piazza Ateneo Nuovo 1, I-20126 Milano. Tel. +39 02 64483057; Fax. +39 02 64483085; E-mail: silvia.marchesi@unimib.it. We thank Emanuele Bacchiocchi, Geske Dijkstra, Peter Kenen, Aart Kraay, Emanuela Marrocu, Luca Nunziata, Andrea Presbitero, Laura Sabani for useful comments. We also thank participants at the 2012 Nordic Conference of Development Economics (Göteborg), at the 2011 Annual Conference on the Political Economy of International Organizations (Zurich) and seminar participant at the University of Milano and Bergen. A preliminary version of this paper was presented at the Universities of Bari, Hamburg, Pavia, Roma, Rotterdam and Warwick.

1 Introduction

Since the last 20 years geopolitical and global economic changes have modified the way official aid is provided.[1] The so called "new rhetoric on aid" (e.g., see the 2005 Paris Declaration on aid effectiveness) among its objectives has emphasized the importance of increasing aid flows to achieve the Millennium Development Goals (MDGs), the importance of promoting a greater selectivity among donors at the same time encouraging recipient countries' ownership of development programs.[2] Furthermore, debt relief initiatives, such as the Heavily Indebted and Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI) have become a cornerstone of this new strategy and a consensus view has emerged that poor countries' debt write-offs are a precondition for a more effective aid policy.

Quite a few papers (Berthelemy and Tichit 2004; Roodman 2005; Dollar and Levin 2006; Easterly, 2007, Claessens et al. 2009) have examined the issue of donors' selectivity in aid allocation showing that poverty and/or institutional selectivity has improved in recent years. The high debt of low income countries, besides geopolitical motivations, is one of the reasons that may explain the past unsatisfactory allocation of aid (and its improvement as a result of debt relief). In particular, it can be argued that, in the past, loans and grants were directed to highly indebted countries with the aim to avoid their default. The role of debt in explaining a non-selective pattern of aid flows has scantly been investigated in the literature on aid selectivity cited above, and informally discussed in the literature on defensive lending (Easterly 2002; Bird and Milne 2003; Birdsall et al. 2003; Lerrick 2005; Cohen et al. 2007).

In this paper we explicitly investigate the role that debt (and its ownership) had in affecting official donors' decisions on allocating aid to low income countries. Specifically, we examine the allocation of net loans, grants and net transfers to International Develop-

ment Association (IDA) and IDA-Blend countries over the period 1982 to 2008 (hereafter IDA countries).[3]

Relying on Bohn's (1988) model of intertemporal debt sustainability, we first derive theoretical implications for net loans and net transfers in relation to external debt that imply no-Ponzi scheme financing and trade-deficit correction, respectively. We show that a negative reaction of net loans to the debt ratio is a sufficient condition for a sustainable (no-Ponzi) debt strategy, whereas a positive or no reaction would be evidence of defensive lending. Furthermore, since net transfers (i.e., the sum of loans and grants net of the debt service) must decrease with the debt ratio to enforce a correction of the trade deficit, such a relation allows us to investigate what we call a "no policy correction" hypothesis. Finally, a positive reaction of grants to the debt ratio would suggest that conventional grants were given to ease the debt-reduction process in highly indebted countries, a strategy that, lacking a better terminology, we call "defensive granting".

We estimate separate dynamic models of the allocation of net loans, grants and net transfers with panel data for 75 IDA countries over the period 1982 to 2008, using both fixed-effects GLS and difference GMM estimators.

We find no evidence of defensive lending in that a significant negative reaction of net loans to the debt-to-GDP ratio characterizes the decisions of both multilateral and bilateral creditors. Furthermore, each creditor group appear to react more strongly to the debt share it holds than to the share of debt held by the other group. This finding is consistent with the creditors' aim to reduce loans where they were more exposed, which is clearly at odds with a defensive strategy. The impact of lower loans on the budget of IDA countries was however accommodated through the transfers of other resources that allowed these countries to avoid a correction of their trade deficits as the debt increased. Indeed, focusing on the allocation of net transfers, we cannot reject the hypothesis of "no policy correction" that net transfers and thus trade deficits (net of FDI) are insensitive to

the debt ratio. This suggests that official donors substituted grants for loans leaving net transfers to IDA countries unaffected by their relative indebtedness. Indeed, we find that multilateral and bilateral grants significantly increase with the debt ratio. This finding points to a distortion of aid flows in favor of indebted countries. It suggests that grants were provided to offset the contemporaneous reduction in net loans in order to ease the debt adjustment process, a strategy that we have defined defensive granting.

We also allow the effect of debt on the allocation of net loans, transfers and grants to be different in the case of HIPC and non-HIPC countries by dividing our sample into a group of 40 HIPC countries and a control group of 35 non-HIPC countries. We still find no evidence of defensive lending and further support to the hypothesis of defensive granting. Both bilateral and multilateral creditors reduce their loans to HIPCs as the debt increases and each creditor group reacts more strongly to the share of debt it holds. Bilateral and multilateral donors also provide more grants to HIPC countries that owe a larger share of their debt to multilateral creditors. These findings are consistent with a substitution of grants for loans but, to the extent that such a shift is motivatd by relative indebtedness, our results question the selectivity of foreign aid.

Finally, as a robustness check, we estimate our model over two periods, from 1982 to 1999 and from 1999 to 2008, since the start of the Enhanced HIPC Initiative, arguably marked the beginning of a greater effort in debt reduction. For the first period we still do not find any evidence of defensive lending and confirm the evidence on defensive granting. Then, the evidence on the second period sheds some light on whether donors' selectivity, with respect to poverty and/or policy performance, has improved in recent years. While our results clearly points to a greater role of poverty reduction in the decisions of both multilateral and bilateral donors on allocating grants and net transfers, evidence on the role of sound economic policies and good governance of IDA countries is mixed.

This paper is organized as follows. Section 2 briefly describes the related literature

while in Section 3 we present a more rigorous definition of defensive lending and defensive granting. Section 4 develops the empirical framework and the results are discussed in Section 5. Finally, Section 6 concludes.

2 Related literature

This paper is related to two strands of literature. The first is the literature on aid allocation and selectivity. That aid works better in good policy and institutional environments is indeed a well known result (World Bank study Assessing Aid, 1998; Svensson, 1999; Burnside and Dollar, 2000; Chauvet, 2002; Chauvet and Guillamont, 2001). Although the robustness of some of this findings has been questioned (among others see Easterly et al., 2004, Rajan and Subramanian, 2008), nevertheless they have reinforced the view that aid should be targeted only to "deserving" countries. In too many cases, however, aid does not seem to have been allocated in this way, including in recent times.[4] Alesina and Dollar (2000), Alesina and Weder (2002), analyzing bilateral aid, show that noneconomic factors, including geopolitical factors, greatly influence aid allocation, in addition to economic and development considerations. More recently, Kuziemko and Werker, 2006 focusing on both bilateral and multilateral aid, find that being a temporary member of the United Nations Security Council (UNSC) positively affect the amount of aid a country receives both from the U. S. (bilateral) and from the United Nations (multilateral), even though the former is more affected than the latter. This effect is stronger during years in which key diplomatic events take place (when members' votes should be especially valuable), and the timing of the effect closely tracks a country's election to, and exit from, the council.[5]

Given the increasing attention that the efficiency and effectiveness of aid has gained in recent years, together with papers focusing on aid allocation, quite a few papers have explicitly analyzed whether selectivity has changed throughout the years. These paper (e.g., Berthelemy and Tichit 2004; Roodman 2005; Dollar and Levin 2006) show that

donors' selectivity toward country needs and policies has improved over time.[6] More recently, Claessens et al. (2009), focusing on bilateral aid, find that starting after 1989 (the year of the fall of the Berlin wall) but especially in the late 1990s, bilateral aid responded more to poverty and the quality of policies and institutions (as measured by the CPIA index) of the recipient countries. They also consider the present value of debt as one of the variables accounting for a non-selective behavior and show that the sensitivity of aid with respect to the debt burden has declined over time.

But how could aid and debt be connected?[7] The relation between the two could, in principle, go two ways. On the one hand, the relation between aid and debt could be negative. This would be the case if donors reduced their loans as the debt increased, pulling out of highly indebted countries in order to reduce their exposure to default risk. The overall effect on aid would however depend on grants as the latter could be reduced to force a correction of recipient countries' trade deficits or substituted for loans in order to ease the debt-reduction process. On the other hand, the relation between aid and debt could be positive. This would be the case if donors provided new loans to enable the borrowers to meet their debt service obligations with the aim of avoiding default, a practice that has been named defensive lending. Grants could also be used to free resources in the recipients' budget to service the debt. Therefore, the second stream of literature to which we relate is primarily concerned with defensive lending and defensive granting.

The idea of defensive lending was first suggested by Easterly (2002). As he puts it, the central paradox of the HIPCs 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 HIPCs and they may have given new loans to actually enable the old loans to be paid back. Despite popularity, however, the defensive lending hypothesis has received scant attention in the empirical

literature on the determinants of aid flows. Bird and Milne (2003) find evidence of a positive correlation between external debt and aid (loans plus grants). Most contributions focus on the relationship between gross loan disbursements and total debt service, i.e., the sum of interest and principal payments. Lerrick (2005) and Ratha (2005) find a positive correlation between new loans and total debt service. Cohen et al. (2007) show that this correlation is stronger in the case of multilateral loans than for bilateral and private loans. Geginat and Kraay (2007) also find a strong correlation between IDA loans and service payments on outstanding IDA debt, but provide several arguments why this correlation should not be interpreted as evidence of defensive lending.

Using a different approach, Birdsall et al. (2003) investigate whether high debt levels were a main determinant of net resource flows to Sub-Saharan African countries over the period 1978-98. Unlike in other studies, Birdsall at al. consider loans net of interest and principal payments and, realizing that grants can be used to free resources in the recipients' budget to service the debt, they focus on net transfers, i.e., on the sum of grants and net loans. They find that net transfers were higher in poorer countries, but the quality of their economic policy 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) provide evidence that 30% of aid in the period 1975-99 has been used to service the external debt.

Our paper's contribution is then twofold. First, drawing on the analogy between defensive lending and Ponzi finance, we derive a theoretical implication for the relation between net loans and debt that allows us to overcome a main problem in investigating defensive lending: the lack of a theoretical prediction that can be tested empirically. We also contribute to the empirical literature. We focus on IDA countries, which is an homogeneous group with respect to borrowing conditions, and among those we distinguish between HIPC and non-HIPC countries. We provide evidence for net loans and grants

separately, and discuss how the substitution of grants for loans can be related to the high debt of IDA countries. Finally, the use of a dynamic panel model is new and allows us to reach more robust conclusions.

3 A model-based test of defensive lending and defensive granting

A main problem in investigating whether defensive lending has motivated aid flows to highly indebted countries is the lack of a theoretical definition that can be tested empirically. Defensive lending is usually defined as the practice of providing new loans to enable the borrower to meet its debt service obligations with the aim of avoiding default. The practice of providing new loans to finance interest and redemption (or amortization) payments (and maturing obligations) is consistent with the idea of creditors allowing debtor countries to run a Ponzi scheme. This suggests that if defensive lending ever occurred, it would have put the debt on a divergent path thus violating intertemporal solvency. A formal test of intertemporal debt sustainability could then shed light on creditors' behavior, on whether they provided new loans to service debt obligations or reacted in a systematic way to prevent IDA countries' debt to get on to an ususstainable path.

Although intertemporal solvency can be viewed as weak criterion of debt sustainability compared to the requirement that the debt does not exceed specific ratios of GDP or exports, examining whether the dynamics of the debt satisfied an intertemporal budget constraint is informative on whether lenders forced a correction of debtor countries' policy or softened their budget constraints.

The model-based approach to debt sustainability proposed by Bohn (1998, 2008) provides a rigorous and intuitive test of intertemporal sustainability that can be applied to external debt. Bohn (1998) proved that in regression of the primary surplus against

public debt (and other controls) a positive coefficient on debt is a sufficient condition for the intertemporal budget constraint to hold. The intuition, as further explained below, is that a positive systematic reaction of the primary surplus-GDP ratio to the debt-GDP ratio introduces an error correction mechanism in the dynamics of the debt that ensures its sustainability in the long run.

The model-based sustainability approach can be applied to external debt as follows. The period-by-period equation for external debt accumulation is equal to

$$B_{t+1} = (1 + r_{t+1})(B_t + CAD_t) \tag{1}$$

Next period's debt-to-GDP ratio, B_{t+1}, is given by the debt ratio at the beginning of the current period, B_t, plus the current account deficit (net of interest payments and non-debt creating capital inflows), CAD_t, times the gross return $1 + r_{t+1}$. All variables are relative to GDP and $1 + r_{t+1} = (1 + i_{t+1})Y_t^{\$}/Y_{t+1}^{\$}$ is the growth and exchange-rate adjusted return on external debt, where i_{t+1} is the nominal interest rate and $Y_t^{\$}$ is the nominal GDP in US dollars.

The current account deficit, excluding interest payments, that must be financed with new debt is equal to

$$CAD_t = X_t - G_t - FDI_t + OTH_t \tag{2}$$

where X_t is the trade deficit in good and services, G_t are grants, FDI_t is the non-debt creating component of foreign direct investment, and OTH_t is a residual component that includes net transfers (other than grants) and net income excluding interest payments.

The net deficit, CAD_t, and the total debt service, TDS_t, i.e. the sum of interest and principal (or amortization) payments, are funded with new loan disbursements, LD_t, that are thus equal to:

$$LD_t = TDS_t + CAD_t \tag{3}$$

Net loans, L_t, defined as the difference between gross loan disbursements and the

debt service, are thus equal to the current account deficit excluding interest payments, $L_t \equiv LD_t - TDS_t = CAD_t$, and can be substituted for the latter in equation (1) to yield

$$B_{t+1} = (1 + r_{t+1})(B_t + L_t) \tag{4}$$

Then, the sufficient condition for intertemporal sustainability derived in Bohn (1998) for the primary deficit can be extended to net loans: if the net loans-GDP ratio, L_t, is a negative linear function of the initial debt-to-GDP ratio, B_t, after controlling for other determinants, Z_t, of net loans, so that

$$L_t = \beta Z_t - \rho B_t \qquad with \;\; \rho > 0 \tag{5}$$

where Z_t is a bounded stochastic process, and provided that the stream of GDP has a finite present value, then the lending policy does not violate the no-Ponzi game condition and the intertemporal budget constraint holds.

Hence, a model-based test of defensive lending consists of estimating a reaction function like equation (5) and testing the null hypothesis that $\rho \leq 0$. Finding that ρ is positive and statistically significant is sufficient to guarantee that lenders did not allow debtor countries to run a Ponzi scheme.

The intuition behind this result is that a systematic negative reaction of net loans to the debt ratio makes the latter grow asymptotically at a slower rate than r_t and thus ensures that the no-Ponzi game condition is satisfied, as can be seen from substituting equation (5) for L_t in equation (4):

$$B_{t+1} = (1 - \rho)(1 + r_{t+1})B_t + (1 + r_{t+1})\beta Z_t \tag{6}$$

The budget constraint (6) shows that the debt grows between t and $t + 1$ to a level that is $(1 - \rho)$ of the level that implies a Ponzi scheme, and n-periods ahead the debt is $(1 - \rho)^n$ the size of a Ponzi scheme. If $\rho > 0$ and Z_t is a bounded stochastic process,

then $E_t u_{t+n} B_{t+n} = (1-\rho)^n B_t + \sum_{i=1}^{n} (1-\rho)^{n-i} E_t V_{i-1} \to 0$ as $n \to \infty$, where u_{t+n} is the marginal rate of substitution between consumption in period t and $t+n$ and $E_t V_{i-1}$ is the present value of the process βZ_t discounted using u_{t+i}.[8]

It is worth noting that the linear, time-invariant, reaction of net loans to debt in equation (5) is sufficient but not necessary. As Bohn (1998) shows, intertemporal sustainability can also be ensured by a non-linear and/or time varying reaction insofar as the latter is strictly positive above a certain threshold debt ratio, or the reaction is at least positive almost surely. This suggests that, if $\widehat{\rho} \leq 0$ were not rejected, defensive lending should be further investigated by introducing in equation (5) non-linear terms in the debt ratio. Non-linearities can also be captured by separating high-debt countries from low debt countries. We follow this approach by distinguishing between HIPC and Non-HIPC countries in section 5.4.

Although empirical studies of the Bohn's test have mostly focused on US data, Mendoza and Ostry (2008) show how to extend the analysis to a panel of industrial and emerging countries. In this paper we examine the lending-policy reaction to the debt-GDP-ratio for a panel of IDA and IDA-blend countries. Focusing on a creditors' reaction function rather than on debtor countries' fiscal reactions is justified by the limited private-market access of the IDA group over the period considered; this makes the "fiscal space" of these countries credit-constrained by the lending decisions of official lenders. Moreover, the lending policy of official creditors as a function of recipient countries' characteristics is expected to be more homogeneous than individual countries' fiscal reaction functions and thus better suited for panel model estimation.

A further advantage of estimating equation (5) is that the point estimate of the debt coefficient, ρ, offers a simple measure of the extent of the correction that can be easily compared to the growth (and exchange rate) adjusted interest rate r_t to assess the extent of debt stabilization efforts.

To gain further insight in the motivations of aid, we also examine how grants were allocated among IDA and IDA-blend countries. In doing so we distinguish two cases depending on the previous evidence for net loans. Consider, first, the case that new loans covered the debt service of IDA countries, i.e. that $\widehat{\rho} = 0$. Then, it is unlikely that grants (other than debt forgiven) were used to further soften recipient countries' budget constraints and thus that grants were determined by high levels of debt. As a result, studying the relationship between grants and the debt ratio would be of limited interest.

Suppose instead, that a systematic negative reaction of net loans to high levels of debt, i.e. $\widehat{\rho} > 0$, is found in estimating equation (5). Then, it is interesting to examine whether this reduction of net loans forced a correction of debtor countries' policy or was offset by a corresponding increase in grants. In fact, a reduction of net loans, $L_t = X_t - G_t - FDI_t + OTH_t$, could either call for "good policy", i.e. a reduction of the trade deficit, X_t, and the attraction of foreign investment, FDI_t, or be accomplished through an increase in grants, especially if the latter freed up budget resources, that is, if they were not in the form of technical cooperation.

To investigate whether aid was consistent with a correction of borrowers' policy, we look at net transfers, i.e. the sum of net loans and grants, $NT_t = L_t + G_t$, as the latter are equal to the trade deficit less foreign investment, $NT_t = X_t - FDI_t + OTH_t$. Therefore, we shall consider the debt ratio as one of the determinants of net transfer and estimate the following equation:

$$NT_t = \gamma Z_t + \lambda B_t \tag{7}$$

The idea we want to explore is that intertemporal debt sustainability was achieved through a substitution of grants for loans that allowed for a looser policy adjustment. The absence of a reaction of net transfers to the debt ratio (or a positive one) would indicate that, because of aid, highly indebted countries could avoid a correction of their policies as the debt increased. The hypothesis of "no policy correction" can be tested as $\widehat{\lambda} \geq 0$ in

equation (7).

An alternative approach to equation (7) is to study the determinants of grants and their reaction to the debt ratio by estimating the following equation:

$$G_t = \delta Z_t + \mu B_t \tag{8}$$

The finding of a positive coefficient on the debt ratio, $\widehat{\mu} > 0$, after controlling for other country characteristics, Z_t, would point to a distortion of aid flows in favor of indebted countries in order to ease their debt adjustment process, an hypothesis that, we tentatively call defensive granting. Since, over the most recent period, debt forgiveness was a relevant component of total grants clearly targeted to hight-debt countries, the definition of grants used in the estimation of equations (7) and (8) excludes debt forgiven to make sure that a positive effect of debt on grants does not depend on debt relief.

4 Empirical Analysis

We examine the allocation of net loans, net transfers and grants to IDA and IDA-blend countries provided by multilateral and bilateral creditor-donors focusing on the role of external debt in affecting their decisions.

We estimate a model of net loans, net transfers and grants allocation (taken separately) for a sample of 75 IDA and IDA-Blend countries using panel data for the period 1982 to 2008. We start our analysis in 1982, since the debt crisis of the early 1980s arguably marked a shift in regime. The sample includes 40 HIPC countries, according to their classification in 1999, and a control group of other 35 countries (listed in Table A1 of the Appendix).[9]

The empirical models are the cross-country panel versions of equations (5), (7) and (8) derived in section 3. Using the subscript i to index IDA country recipients and t to

index time, the estimated models are

$$L_{it} = \alpha_i + \tau_t + \beta Z_{it} - \rho B_{it} + \varepsilon_{it}^{L} \quad (9)$$

$$NT_{it} = \alpha_i + \tau_t + \gamma Z_{it} + \lambda B_{i,t} + \varepsilon_{it}^{NT} \quad (10)$$

$$G_{it} = \alpha_i + \tau_t + \delta Z_{it} + \mu B_{it} + \varepsilon_{it}^{G} \quad (11)$$

where L_{it}, NT_{it} and G_{it} denote net loans, net transfers, and grants, respectively, and are measured relative to GDP, B_{it} is the external debt-to-GDP ratio, and Z_{it} is a set of explanatory variables capturing the other determinants of resource allocation. Finally, α_i are country-specific fixed effects, τ_t are yearly time dummies, and ε_{it}^{J} denote the error terms.[10]

We empirically examine the resource allocation provided by the two groups of multilateral and bilateral creditor-donors and thus provide two estimates for each model in equations (9)-(11); one for multilateral organizations (including the IMF) and the other for bilaterals.

Net loans, L_{it}, are defined as new loans minus total debt service (i.e. interest and principal repayments) and are referred to as "net transfers on external debt" in the World Bank's Global Development Finance (GDF). Hence, net loans give the amount of disbursements that are left to the borrowers once they have paid for the service of their debts, and thus take into account the fact that most of the new credit flows back to the creditors in the form of interests and principal repayments.

We consider all types of loans, either concessional or non-concessional, provided by multilateral and bilateral creditors, since this is the relevant aggregate for the debt sustainability analysis proposed in the previous section. As our dependent variable include non-concessional loans, the present study does not provide a formal analysis of aid allocation but naturally complements the empirical literature on aid. Data on loans come from the World Bank GDF database which reports total loans unlike the OECD Development

Assistance Committee (DAC) that considers only ODA concessional loans. Since GDF data on bilateral loans are not disaggregated by country of origin, we restrict our analysis to two groups of creditors-donors: multilateral organizations and bilateral creditors. We examine long-term net loans (and long-term debt) because data on the distribution by type of creditor are not available for short-term loans (and debt), which are, however, a minor component of total loans.

The dependent variable grants, G_{it}, is defined as total grants minus technical cooperation and total debt forgiven. Data on grants come from the OECD/DAC database (where debt forgiven is classified as grant) and are disaggregated by type of donor: multilateral and bilateral donors. We exclude debt forgiven for two reasons. First, forgiven debt is already accounted in our definition of net loans, since it leads to lower debt service payments in the GDF statistics (which do not include an offsetting entry for debt relief as in the OECD/DAC statistics). Secondly, as already discussed in section 3, we are interested in the effect of debt on grants in addition to that on debt forgiven. We also exclude technical cooperation from total grants because it is the least fungible form of aid and thus unlikely to free budget resources for debt service.[11]

Finally, net transfers, NT_{it}, are equal to the sum of net loans and grants as previously defined. Hence, our definition of net transfers measures the actual resource flows from the two groups of multilateral and bilateral creditor-donors to individual countries and is consistent with "country programmable aid", a measure proposed by Domeland and Kharas (2009) to capture the cash flow available to recipient countries.

We focus on the effect of the debt-to-GDP ratio, B_t on the donor decisions regarding the allocation of their resources to IDA countries. Consistently with the interpretation of equations (9)-(11) as reaction functions, we measure the debt outstanding at the beginning of each year t with the stock of debt at the end of the year $t-1$, as this is the relevant information available to donors when deciding on resource allocation. Debt stock data

are from the GDF database and refer to long-term debt.

Recalling that a negative reaction of net loans to the debt ratio, $\rho > 0$, is a sufficient condition for a sustainable (no-Ponzi) debt strategy, whereas a positive or no reaction would be evidence of defensive lending, the latter hypothesis can be tested as $\widehat{\rho} \leq 0$. A non-negative effect of the debt ratio on net transfers, $\lambda \geq 0$, would indicate that resources were transferred to IDA countries to avoid a correction of their deficits as the debt increased. The hypothesis of "no policy correction" can be tested as $\widehat{\lambda} \geq 0$. Finally, the reaction of grants to the debt ratio, μ, provides further insight in the policy of official donors. A positive and significant coefficient on the debt ratio, $\widehat{\mu} > 0$, would suggest that conventional grants (on top of debt relief) were given to ease the debt-reduction process in highly indebted countries, a strategy that we define defensive granting.

We shall also estimate extended specifications of equations (9)-(11) where long-term debt is decomposed into the shares held by multilateral, bilateral and private creditors, and the three debt-to-GDP ratios enter separately in order to investigate whether the creditor-donors' reaction to the level of debt differs depending on its holder.

The set of variables Z_{it} comprises other determinants of resource allocation related to poverty reduction and aid effectiveness that are standard in the empirical literature on aid allocation. We include the real per-capita GDP at PPP to account for poverty reduction; the CPIA index of the World Bank which reflects the Bank's internal evaluation of the countries' quality of policy and institutions that increases aid effectiveness; and population.[12]

We also include real GDP growth to correct for cyclical fluctuations affecting the funding needs of recipient countries. GDP growth can be taken as a simple proxy of the output gap, which is the variable suggested by Bohn (1998) and Mendoza and Ostry (2008). We conducted a sensitivity analysis and decomposed the GDP series, using the

Hodrick-Prescott filter, into the output gap and a non-linear trend which was used to normalize the debt stock, and the dependent variables. The estimates including the output gap yield similar results and are presented in Table A3 of the Appendix.

All variables in Z_{it} are lagged by one year as information on the contemporaneous values is not available to creditor-donors when deciding on resource allocation. The use of lagged variables also reduces potential endogeneity problems. Data on real per-capita GDP at PPP, real GDP growth and population come from the Penn World Table (2009). Further details on variable definitions, data sources and some descriptive statistics are reported in Table A2 of the Appendix.

Since the CPIA index does not exhaust the list of variables that possibly capture the quality of policies and institutions, we considered the rate of inflation and openness (exports plus imports as a share of GDP) as other possible measures of policy performance. While these additional variables were not significant at conventional levels, our main results were not affected by their inclusion (either including or excluding the CPIA index). The International Country Risk Guide (ICRG) rule of law was also investigated but found not to be significant.

While some multilateral agencies, such as the IDA window of the World Bank, explicitly follow allocation rules that take into account poverty and policy performance, other factors such as former colonial status, commercial ties, or geo-political considerations may influence aid allocation in the case of bilateral donors, as documented in the literature. To the extent that such factors are not varying over time, their impact on resource allocation is controlled by country-fixed effects, α_i; but the effects of colonial and commercial ties that link individual donors to recipient countries, cannot be explicitly estimated because multilateral and bilateral donors are aggregated in two groups. However, we controlled for whether a country votes (more or less) in line with the United States (or with key G7 countries) in the United Nations General Assembly (UNGA) and also considered a

dummy for temporary UNSC membership.[13] As shown in Table A4 of the Appendix, these controls are generally not significant and their introduction does not qualitatively change our results. In the same Table the index of "Political Rights and Civil Liberties" (PRCL) is also found not significant.

4.1 The estimation method

The full dataset is a panel of IDA and IDA-blend countries with 1747 observations for the period 1982 to 2008. The panel is almost balanced due to missing data for transition economies in the 1980s. Since we consider only two large groups of creditor-donors, there are no cases of IDA countries not receiving any net loans or grants and standard fixed-effects estimation methods can be applied.

We use a GLS fixed-effects estimator in order to correct for heteroskedasticity across countries and obtain efficient estimates. A groupwise likelihood ratio heteroskedasticity test, performed on the residuals of the baseline model estimated by OLS, led to a rejection of the null hypothesis of homoskedasticity across groups (countries) for all regressions. We also tested for serial correlation of the error terms within groups using the LM test suggested by Baltagi and Li (1995). 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 one equations out of four. Since the size of the autocorrelation coefficient is negligible for all equations, we decided not to correct for serial correlation and to adopt a feasible fixed effect GLS estimator, incorporating only heteroskedasticity across countries.

The basic models derived in section 3 do not account for the fact that aid is typically planned in the context of multiyear plans and disbursed in a number of installments over time. In fact, simple inspection reveals the presence of a significant autocorrelation in our dependent variables. Then, to account for the persistent nature of net loans, net transfers

and grants, we estimate a dynamic specification of models (9)-(11) by including the first lag of the dependent variable among the regressors. The dynamic models allow us to correctly estimate the effect of the debt-to-GDP ratio; i.e. to avoid the omitted variable bias that would arise from the exclusion of the lagged dependent variables.[14]

In a dynamic panel with country fixed-effects the lagged dependent variable is correlated with the country-specific component of the error term and, thus, the GLS fixed-effects estimator produces biased estimates. However, Nickell (1981) shows that, in the AR(1) case, the bias declines as the time series dimension of the panel, T, increases. 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 $T = 30$. As in our sample $T = 27$ we expect any bias introduced by the inclusion of the lagged dependent variable to be small.

We also provide, however, estimates using the difference GMM estimator proposed by Arellano and Bond (1991) treating the debt-to-GDP ratio and the other regressors as predetermined variables. The Arellano and Bond estimator uses the lags of the levels of the endogenous and predetermined variables as instruments, and is preferable, in our case, to system GMM (Blundell and Bond 1998), since net loans, net transfers and grants are not strongly autocorrelated, i.e. they are far from random walks, which implies that the lagged levels are good instruments for the first-differenced variables.

5 Estimation results

5.1 Multilateral and bilateral net loans

The results of the estimation of multilateral and bilateral net loans are presented in Table 1. Columns 1 and 2 report results for the static specification in equation (9), while

columns 3 and 4 for the dynamic specification of the same equation that includes the first lag of the dependent variable. In the Table a negative coeffcient on the debt ratio corresponds to a positive ρ in equation (9).

Both the static and the dynamic versions show a significant negative reaction of net loans to the debt-to-GDP ratio, both in the case of multilateral and bilateral creditors. In the dynamic specification the contraction of net loans reduces debt accumulation in the short run by 0.2% in the case of multilateral creditors and by 0.3% in the case of bilateral creditors, while the estimated impact on debt accumulation in the long run is about 0.4% $(= 0.02/(1 - 0.43))$ and 0.6% $(= 0.03/(1 - 0.49))$, respectively. Although the magnitude of this reaction is weaker than usually found for advanced and emerging economies, it is still consistent with a stable dynamics of the debt ratio, once we consider the highly concessional terms of IDA country debt and nominal GDP growth.[15]

INSERT TABLE 1 ABOUT HERE

The highly significant coefficient on previous-year net loans clearly points in favor of the dynamic model, but raises an endogeneity issue in that the lagged dependent variable could be correlated with the fixed-effect component of the error term. However, as shown in columns 7 and 8, the difference GMM estimator yields very similar results: if anything, the effect of the debt ratio on net loans is stronger, though less significant, for both groups of creditors.

Hence, official creditors reduced their exposure to IDA country debt, though at a slow pace, decreasing their loans to such countries as their debt increased. Indeed, we find no evidence of Ponzi-scheme financing; the hypothesis of defensive lending, that $\widehat{\rho} \leq 0$, is strongly rejected for both specifications and estimation methods. (Note that in Table 1 a negative coefficient on the debt ratio is equivalent to a positive $\widehat{\rho}$). This result is in line with the findings of Geginat and Kraay (2007) for IDA lending and in sharp contrast with

the literature on defensive lending.

To gain further insight in the lenders' decision, we decompose the stock of debt into the shares held by multilateral, bilateral and private and enter the three debt ratios in the dynamic regression separately. The results of this investigation are reported in columns 5-6 and 9-10 for the GLS and GMM estimation, respectively. Interestingly, each creditor group reacts more strongly to the debt share it holds than to the share of debt held by the other group. This finding is consistent with the creditors' aim to reduce loans where they were more exposed which is clear evidence against the defensive lending hypothesis.

While multilateral and bilateral creditors show the same reaction to the debt ratio, only the former take into account the policy performance of recipient countries, as measured by the CPIA index. The greater selectivity of multilateral organizations in deciding on loan allocation is shown by the positive coefficient on the CPIA index that is significant at the 1% level in all regressions. By contrast, a higher CPIA score lowers net loans from bilateral creditors, though such effect is not significant in GMM estimation. On the other hand, real GDP per capita at PPP, and thus poverty reduction, does not appear to play any role on loan allocation, as well as GDP growth, which is perhaps surprising in the case of multilateral organizations. Finally, IDA countries with large populations receive more loans from multilateral creditors.[16]

5.2 Multilateral and bilateral net transfers

Having provided evidence of a systematic negative reaction of net loans to debt, it is interesting to investigate whether this forced debtor countries to correct trade deficits (and attract foreign direct investment) or lower loans were accommodated through the transfers of other resources. Evidence on the allocation of net transfers is reported in Table 2 for the static model of equation (10) in columns 1 and 2, and for its dynamic version in the following columns.

INSERT TABLE 2 ABOUT HERE

The static model estimation shows that net transfers provided by either multilateral or bilateral donors increased with the debt-to-GDP ratio. However, the positive and significant coefficient on the debt ratio in the static specification is likely due to an omitted variable problem, as the first lag of net transfers is highly significant when it is added to the regressions in columns 3 and 4. Controlling for their persistence, net transfers display no reaction to the debt ratio, either in the GLS or GMM estimations reported in columns 3-4 and 7-8, respectively. In all cases, it appears that the resources provided by multilateral and bilateral creditor-donors allowed IDA countries to avoid a correction of their policies as the debt increased. Indeed, the hypothesis of "no policy correction", that $\lambda \geq 0$, cannot be rejected at any reasonable significance level.

Further details on official donors' allocation of net transfers are provided in columns 5-6 and 9-10 where the shares of debt held by multilateral, bilateral and private creditors enter the regressions separately. While multilateral net transfers are unrelated to the type of debt holder (the positive correlation with private debt disappears in GMM estimation), bilateral transfers are positively correlated with the share of debt that IDA countries owe to multilateral creditors, a fact already observed by Birdsall et al. (2003) for the period 1978 to 1998.

The estimation results also show an important role for poverty reduction in the decision of official creditor-donors on allocating net transfers, contrary to what found in the case of net loans. In fact, the coefficient on real GDP per capita is negative and significant in all but one regressions of Table 2. Furthermore, multilateral donors clearly accommodated cyclical downturns, as their transfers significantly decrease with GDP growth, and a similar effect is observed for bilateral transfers but only in GMM estimation. Finally, evidence for the CPIA index confirms the selectivity of multilateral organizations (as opposed to bilateral donors) in allocating their resources to IDA countries with better

policies and institutions, a result that is often found in the empirical literature on aid (e.g. Burnside and Dollar, 2000, Collier and Dollar, 2002).

Summing up, the analysis suggests that both multilateral and bilateral donors provided more grants to highly indebted countries, while reducing net loans, in an attempt to soften their budget constraints. While the substitution of grants for loans is well established in the new aid architecture (e.g., Bulow and Rogoff, 2005; Radelet, 2005; Cohen et al. 2007; Johansson, 2010), this substitution appears to have provided official donors with an exit strategy from high levels of debt along with debt relief. This hypothesis is investigated in the next section.

5.3 Multilateral and bilateral grants

To investigate whether grants were given to IDA countries to ease their debt adjustment process, Table 3 shows evidence on grants allocation for the static and dynamic specifications of equation (11) and for GLS and GMM estimation methods.

INSERT TABLE 3 ABOUT HERE

Both multilateral and bilateral grants increase with the debt-to-GDP ratio independently of whether a static or dynamic model is estimated. Evidence of a positive effect of the debt ratio on grants is strong in the case of bilateral donors, as the debt coefficient is significant at the 1% level in all regressions (see columns 2, 4 and 6). In the case of multilateral donors, the debt ratio significantly increases grants, at the 1% level, in GLS estimates while it is not significant in GMM estimates, as shown in column 7, though with a p-value of 15%. The mixed results for multilateral grants can however be explained by looking at the regressions in columns 5 and 9 where the debt shares held by multilateral, bilateral and private creditors enter separately. Both GLS and GMM estimations show that multilateral debt was a main determinant of multilateral grants, as opposed to bilat-

eral debt and, to a lesser extent, private debt. When this result is matched with previous evidence of a negative reaction of multilateral loans to multilateral debt (see columns 5 and 9 in Table 1), it provides further support to the idea that grants were substituted for loans as a part of the exit strategy of multilateral organizations from IDA countries' debt problems. Finally, columns 6 and 10 shows that bilateral donors also provided more grants to countries with high multilateral debt, a finding that likely reflects their greater involvement in debt relief initiatives until the mid 2000s.

While indebtedness was a main determinant of grant allocation, official donors were not insensitive to recipients' needs: poverty and low growth also played a significant role in donors' decisions. The coefficient on real GDP per capita is indeed negative and significant in all but one regressions for bilateral grants. Multilateral donors also provided more grants to dampen the impact of cyclical downturns, and a similar behavior is observed for bilateral donors but only in GMM estimation. The intervention of official donors in low growth environments is evidence of the importance of recipients' need in their aid policy. On the other hand, the policy performance of IDA countries, as measured by the CPIA index, does not seem a relevant factor in grants allocation even in the case of multilateral donors contrary to what previously found for net loans and net transfers.

The finding of a significant positive relation between debt and grants, after controlling for poverty and cyclical indicators (and excluding debt forgiven), points to a distortion of aid flows in favor of indebted countries. It suggests that grants were provided to offset the contemporaneous reduction in net loans so as to ease the debt adjustment process of high debt countries, a strategy that we have called defensive granting.

5.4 HIPC versus Non-HIPC

If official creditors aimed at reducing their exposure to default risk, the reaction of net loans to the debt ratio could be stronger at high levels of debt. Intertemporal sustainability

can indeed be ensured by a non-linear reaction that is strictly negative above a certain threshold debt ratio (see Bohn 1998). To capture possible non-linearities, we distinguish between HIPC and non-HIPC countries, rather than focusing on given thresholds of the debt ratio that would be arbitrary and vary across countries depending on the quality of their policies and institutions (see Kraay and Nehru 2006).

The condition of being an HIPC country is a relevant proxy for having an unsustainable (excessive) debt, since a debt ratio exceeding a given threshold is needed to qualify for the HIPC initiative, while the condition of being eligible for IDA borrowing is naturally satisfied in our sample. To investigate whether a high debt ratio changes the allocation of net loans, transfers and grants, we allow the effect of debt on donors' decisions to be different in the case of HIPC and non-HIPC countries. We do so by interacting the debt ratio with two dummies; a dummy H_i, taking the value of one in the case of a HIPC country and a dummy NH_i taking the value of one in the case of a non-HIPC country. Then, we estimate the following dynamic panel models:

$$L_{it} = \alpha_i + \tau_t + \beta Z_{it} - \rho_H H_i B_{it} - \rho_{NH} NH_i B_{it} + \nu L_{it-1} + \varepsilon \quad (12)$$

$$NT_{it} = \alpha_i + \tau_t + \gamma Z_{it} + \lambda_H H_i B_{i,t} + \lambda_{NH} NH_i B_{it} + \psi NT_{it-1} + \varepsilon_{it}^{NT} \quad (13)$$

$$G_{it} = \alpha_i + \tau_t + \delta Z_{it} + \mu_H H_i B_{it} + \mu_{NH} NH_i B_{it} + \chi G_{it-1} + \varepsilon_{it}^{G} \quad (14)$$

where the coefficients on the interacted debt ratios allow to examine whether their effect on net loans, transfers and grants differed between HIPC and non-HIPC countries.

The fixed-effect GLS estimates are shown in Table 4, while GMM estimates are reported in Table A5 of the Appendix. Columns 1 to 6 present results for the total debt-to-GDP ratio, while Columns 7 to 12 for the decomposition of the debt ratio in the shares held by multilateral, bilateral and private creditors.[17]

INSERT TABLE 4 ABOUT HERE

Evidence of a different effect of the debt ratio on resource allocation across HIPC and

non-HIPC countries is striking. At low levels of debt, that is, in the case of non-HIPCs, the debt ratio plays no role in the creditor-donors' decision on allocating either net loans, or grants, and affects significantly only bilateral net transfers but with the negative sign (see columns 2 to 6). By contrast, at high levels of debt, that is, for HIPCs, the reaction of net loans to the debt ratio is negative while grants increase and such effects are significant at the 1% level both in the case of multilateral and bilateral creditor-donors. The combined effects of the debt ratio on grants and net loans leave bilateral net transfers unaffected and even raise multilateral net transfers, though at the 10% significance level.

Evidence on net loans is consistent with a significant non-linearity in the response of official creditors to the debt ratio: a negative reaction emerges only at high levels of debt. The finding that official creditors reduced their exposure to the high debts of HIPC countries, while took no action in the case of sustainable non-HIPC debt, is further evidence against the hypothesis of defensive lending. On the other hand, both groups of donors provided more grants to HIPCs, as their debt increased, possibly to ease the debt adjustment process (on top of debt relief) that would have otherwise required a correction of their trade deficits or more foreign direct investments. These findings provide further support to hypothesis of defensive granting, to the idea that grants were used, in place of loans, to solve the HIPC debt problem.

While multilateral and bilateral institutions have a similar reaction to total debt, columns 7 and 8 show that debt ownership is another important determinant of their lending decisions. While multilateral creditors reduced net loans to HIPC countries independently of whether themselves or bilateral creditors were the holders of debt, bilateral creditors reacted only to their own share of debt. The concern of official creditors for their own exposure is also evident in the negative reaction to their own share of Non-HIPC debt. In fact, bilateral creditors did reduce net loans as their debt share increased, without distinguishing between HIPC and non-HIPC countries, while multilateral lenders' reaction

to their share of debt was even greater in the case of non-HIPCs. The fact that official creditors reduced net loans to countries where they were more exposed is inconsistent with a defensive lending strategy.

The effect of debt ownership on grants allocation is shown in columns 11 and 12. The estimation results confirm that multilateral and bilateral grants significantly increase with the debt ratio in the case of HIPC countries while the debt has no effect in non-HIPC countries (except when is owed to private creditors). The new interesting result is that only the share of debt owned by multilateral creditors has an impact on the donors' decision to allocate more grants to HIPC countries. A higher share of debt due to multilateral organizations increase both multilateral and bilateral grants at the 1% significance level. Interestingly, bilateral donors provide more grants when the debt is held by multilateral creditors, but they show no reaction to their own share of debt. A possible interpretation of this result is that assistance to HIPC countries with a high share of bilateral debt was mainly provided by bilateral donors in the form of debt relief, while conventional grants were used to ease debt consolidation in countries that were mostly indebted to multilateral organizations.

While we find no evidence of defensive lending, our analysis suggests that grants were provided to offset the contemporaneous reduction in net loans so as to ease the debt adjustment process of HIPCs, a strategy that we have called defensive granting. Since the correlation between grants and debt only emerges in the case of HIPCs, the hypothesis of defensive granting offers a more convincing explanation than poverty reduction and/or low growth for the positive link between grants and debt. In fact, even if HIPC were in more need than other IDA countries, the presence of GDP per capita, GDP growth and country-specific effects should control for this motivation of aid. This evidence points to a distortion of aid flows in favor of indebted countries, that is even more serious when associated to multilateral organizations which should lend and monitor the implementation

of the reforms associated with aid flows (e.g., Ramcharan, 2003, Celasun and Ramcharan, 2005, Marchesi and Sabani, 2007).

5.5 Robustness check

We have so far provided extensive evidence that the lending policy of official creditors was far from being defensive throughout various specifications and estimation methods. However, our analysis is not immune from the criticism that defensive lending was a practice of the past that was clearly abandoned in the late 1990s once official creditors moved to a debt relief strategy. Specifically, it can be argued that our sample cannot capture defensive lending since it covers the years 2000s when sustainable debt levels were achieved through debt-stock reductions. Even worse, one may think that the negative relation between net loans and the debt ratio is spurious; i.e. it is due to the increase in net loans and the fall in debt ratios brought about by the contemporaneous reduction in debt service and debt stocks following debt relief.

In this section, we address such concerns by dividing our sample in two periods: from 1982 to 1999 and from 1999 to 2008. The first period ends in 1999, a year which marked the beginning of greater efforts in debt reduction by both bilateral and multilateral lenders with the launch of the Enhanced HIPC Initiative. Evidence from the two sub-periods also allows us to investigate: i) whether donors' selectivity, with respect to poverty and/or policy performance, has improved in the most recent period, and; ii) whether the allocation of resources to HIPC and non-HIPC countries has changed with a greater use of debt relief.

The results of the estimation of models (12)-(14), which distinguish between HIPC and non-HIPC countries, over the two sub-periods 1982-1999 and 1999-2008 are shown in columns 1-6 and columns 7-12 of Table 5, respectively.

Columns 1 and 2 show a negative and significant reaction of net loans to the debt ratio for the reduced sample period 1982-1999. Contrary to what is commonly held, there is no evidence of defensive lending even before the implementation of the Enhanced HIPC Initiative.

The year 1999 however marks a change in the lending policy of multilateral organizations towards HIPCs; over the most recent period multilateral loans no longer react to the debt ratio (see columns 7 and 8). This finding may reflect the new strategy of relying on debt write-offs instead of loan reductions to ensure debt sustainability. A change in policy is also observed for bilateral donors, this time regarding their grants allocation. While in the earlier period bilateral grants significantly increase with the debt ratio of HIPC countries, this is no longer the case in the most recent period (when instead a positive relation with the debt ratio of non-HIPC countries emerges). A tentative explanation of this result is that multilateral debt relief removed the need for bilateral donors to ease the debt adjustment process in HIPC countries where the debt owed to multilateral creditors was substantial.

Interestingly, the new strategy had little impact on the relation between net transfer and debt in HIPC countries; if anything, the positive effect of the debt ratio on multilateral transfers becomes stronger and more significant. Recalling that net transfers exclude debt forgiveness, this suggests that debt relief did not crowd out conventional aid to HIPC countries, as shown more rigorously by Powell and Bird (2010). It is also clear that this transfer of resources allowed IDA countries to avoid a correction of their trade deficits as the debt increased even during the most recent period. The new regime also appears to considerably soften the budget constraint of non-HIPC countries; while in the period 1982-1999 net transfers to non-HIPCs significantly decreased with the debt ratio, the opposite pattern is observed for the period 1999-2008 (see columns 3-4 and columns 9-10).

Finally, Table 5 sheds some light on whether donors' selectivity, with respect to

poverty and/or policy performance, has improved in the most recent period. The estimation results clearly points to a greater role of poverty reduction in the decisions of both multilateral and bilateral donors on allocating grants and net transfers. Indeed, the coefficient on real GDP per capita becomes significant at the 1% level in all regressions of grants and net transfers over the period 1999-2008 and it increases in size in the case of multilateral transfers.

Evidence on the role of sound economic policies and good governance of IDA countries is instead mixed. Better policies and institutions, as measured by the CPIA index, seem to exert a significant influence on bilateral grants and net transfers that was absent in the earlier period (in line with the results of Claessens et al., 2009). The CPIA index also positively affect multilateral net loans in both periods but, though its coefficient remains the same, it is no longer significant in recent years. The latter result is, to some extent, at odds with what found by Dollar and Levin (2006) who report that multilaterals began to respond more to the quality of policies and institutions only in the late 1990s/early 2000s.

6 Conclusions

In this paper we have examined the allocation of net loans, grants and net transfers to IDA countries over the period 1982-2008 focusing on the role of debt, and debt sustainability, in the decisions of multilateral and bilateral donors. Relying on Bohn's (1988) model of intertemporal debt sustainability, we have derived theoretical implications for net loans and net transfers in relation to external debt that imply no-Ponzi scheme financing and trade-deficit correction, respectively. Then, the effect of debt and other determinants of aid flows on official donors' decisions on allocating net loans, transfers and grants has been estimated for a dynamic panel data model, using both fixed-effects GLS and difference GMM estimators.

Contrary to conventional wisdom and previous results in the literature, we find no evidence of defensive lending. Indeed, a significant negative reaction of net loans to the debt ratio characterizes the decisions of both multilateral and bilateral creditors, not only over the full sample period but even before the start of the Enhanced HIPC initiative. Furthermore, this negative relation is stronger at high levels of debt, namely in HIPC countries. This suggests that official creditors reacted to the debt crisis of the 1980s/1990s by reducing net loans to HIPCs as their debt increased, before and after the implementation of debt relief strategies.

The impact of lower loans on the budget of debtor countries was however accommodated through the transfers of other resources, in the form of conventional grants, on top of debt forgiveness. The resources provided by multilateral and bilateral donors allowed IDA countries to avoid a correction of their trade deficits as the debt increased. Indeed, we cannot reject the hypothesis of "no policy correction" that net transfers and, thus trade deficits (net of FDI) are insensitive to the debt ratio, except for non-HIPC countries in the period before 1999. This suggests that official creditor-donors substituted grants for loans leaving net transfers to HIPCs unaffected by the debt ratio as the latter increased. Both multilateral and bilateral grants significantly increased with the debt ratio, especially in HIPC countries. The strong dependence of grants on the debt ratio is suggestive of what we have called defensive granting, that is the use of grants by both multilateral and bilateral donors to offset the reduction in net loans, and ease the debt adjustment process of debtor countries.

While the substitution of grants for loans is an established trend of development assistance, when viewed in relation to debt this substitution appears to have provided official donors with an exit strategy from the IDA countries' debt problem along with debt relief. Further evidence on debt ownership shows that this strategy was mostly at work for HIPC countries which owed a large share of their debt to multilateral creditors.

A possible interpretation of this result is that assistance to countries with a high share of bilateral debt was mainly provided by bilateral donors in the form of debt relief, while conventional grants were used (by both multilateral and bilateral donors) to ease debt consolidation in HIPC countries that were mostly indebted to multilateral organizations. Indeed, the link between bilateral grants and multilateral debt disappears in the 2000s with a greater involvement of multilateral organizations in debt relief.

The results of our analysis clearly show that the amount of grants that HIPC received (after controlling for poverty and cyclical indicators, and excluding debt forgiveness) have been influenced by their high debt levels. The dependence of conventional grants on debt (and the irrelevance of the CPIA index) points to a distortion of aid flows in favor of indebted countries and questions the efficiency and selectivity of donors' aid policy.

Since grants have increased as a share of total aid and they definitely dominate loans, donors' selectivity in the allocation of grants, besides loans, will be crucial for aid effectiveness. Greater future selectivity requires that high levels of debt (and its ownership) do not affect donors' decisions on allocating conventional grants. Despite the external debt ratio in HIPC countries is now reduced to about 40% on average (thanks to the large amount of resources provided under the HIPC and the MDRI Initiative) such countries are still likely to rely on domestic debt and non-concessional borrowing due to their limited tax revenues, a fact that threatens their total debt sustainability (Arnone and Presbitero, 2010). As both bilateral and multilateral grants still account for a significant fraction of resource flows to HIPC countries (each around 5% of the GDP, in 2008), it is then crucial that the eventual accumulation of new debt will no longer distort donors' behavior.

NOTES

1. The end of the Cold War did soften the pressure of geopolitical motivations in aid allocation and globalization has increased private capital inflows in developing countries.

2. Indeed, as emphasized by Dixit (2009), Easterly (2006, 2008), Rajan (2008) and Marchesi et al. (2011), institutions, organizations, and policies are context-specific and thus International Financial Institutions (IFIs) have been urged to base their recommended policy changes (conditions) on a good understanding of the structure and properties of the recipient country's institutional, political and economic context.

3. Eligibility for IDA support depends most importantly on a country's relative poverty, defined as GNI per capita below an established threshold and updated annually (in fiscal year 2009: US$1,095). The Blend category is used to classify countries that are eligible for IDA resources on the basis of per capita income but also have limited creditworthiness to borrow from IBRD.

4. Among others Radelet (2006) provide general literature reviews that also cover aid allocation.

5. Dreher et al. (2009a, 2009b) also analyze the impact of temporary UNSC membership on multilaterals' assistance finding that whenever a country holds a seat as UNSC temporary member there is higher probability to be under an IMF and a WB program.

6. Easterly (2007) instead finds no evidence of an increase in selectivity with respect to policies and an only temporary increase in selectivity (in the late 1990s) with respect to corruption.

7. A review of the literature on the relationship between aid and debt is provided by Powell and Bird (2010).

8. The assumptions regarding Z_t and GDP, as stated in Bohn (1998b), are "technically sufficient, and much stronger than necessary."

9. The group of HIPC countries has changed several times since the beginning of the first Initiative in 1996 as the various debt relief programs have evolved over time. In this paper we choose the HIPC classification at the start of the Enhanced HIPC initiative in 1999. Our results are qualitatively similar using the classification in 2001 (see Table A1) and are available upon request.

10. The time dummies τ_t control for cross-sectional dependence and macroeconomic

factors, such as changes in the total amount of available resources for development assistance.

11. Country programmable aid is defined as total net Official Development Assistance less debt relief, technical assistance, humanitarian and food aid, and interest payments made to creditors.

12. The use of population is standard in the aid literature, where it is found that countries with a greater population receive less aid, probably because aid is more effective when given to small countries (e.g., see Alesina and Dollar, 2000).

13. Barro and Lee (2005) find that IMF loans tend to be more frequent and larger when a country is more connected politically and economically to the United States and major European countries. Kuziemko and Werker (2006) find that countries serving on the United Nations Security Council (UNSC) receive more United Nations Development Project support and direct foreign aid from the United States; Dreher et al. (2009a, 2009b) report the same for the IMF and for the World Bank.

14. Controlling for the lagged value of loans removes the natural correlation arising between current loans and previous period debt (i.e., previous period loans accumulate to a stock of debt).

15. For instance, IDA loans have a 10-year grace period and are provided at a mere 0.75% service charge.

16. The importance of population in explaining multilateral loans could be explained by the systemic importance of a single country (the so called "too big to fail" argument).

17. As the effects of the other determinants of resource allocation are qualitatively similar to those discussed in the previous sections, here we just focus on the effects of the debt ratio.

REFERENCES

Alesina, A., Dollar, D., 2000. Who gives foreign aid to whom and why? *Journal of Economic Growth*, 5, 33-63.

Alesina, A., Weder, B., 2002. Do corrupt government receive less foreign aid? *American Economic Review*, 92(4), 1126-1137

Arellano, M., Bond, S., 1991. Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies,* 58, 277-97.

Arnone, M., Presbitero, A.F., 2010. *Debt relief initiatives. Policy design and outcomes.* Global Finance Series, Ashgate.

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

Barro, R.J., Lee, J.W., 2005. IMF Programs: who is chosen and what are the effects? *Journal of Monetary Economics*, 52, 1245-1269.

Berthèlemy, J.C., Tichit, A., 2004. Bilateral donors aid allocation decisions: a three-dimensional panel analysis. *International Review of Economics and Finance*, 13(3), 253-74.

Bohn, H., 1998. The behaviour of U.S. public debt and deficits. *The Quarterly Journal of Economics*, 113, 949-963.

Bohn, H., 2008. The sustainability of fiscal policy in the United States. In R. Neck & J.E. Sturm (Eds.), *Sustainability of public debt* (15-49), Cambridge MA: MIT Press.

Bird, G., Milne, A., 2003. Debt relief for low income countries: is it effective and efficient? *The World Economy*, 26, 43-59.

Birdsall, N., Claessens, S., Diwan, I., 2003. Policy selectivity foregone: debt and donor behaviour in Africa. *World Bank Economic Review*, 17, 409-435.

Blundell, R., Bond, S., 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of International Econometrics*, 87, 115-143.

Bulow, J. and K. Rogoff, 2005. Grants versus Loans for Development Banks. *American Economic Review,* 95, 393-397.

Burnside, C., Dollar, D., 2000. Aid, policies and growth. *American Economic Review*, 90, 847-868.

Celasun, O., Ramcharan, R., 2005. The design of IMF-supported programs: does the balance sheet of the IMF matter? Unpublished manuscript, IMF.

Chauvet, L., 2002. Socio-political instability and the allocation of international aid by donors. *European Journal of Political Economy* 19, 33–59.

Chauvet, L., Guillamont, P., 2001. Aid and performances: a reassessment. *Journal of Development Studies*, 37, 66-92.

Claessens, S., Cassimon, D., Van Campenhout, B., 2009. Evidence on changes in aid allocation criteria. *The World Bank Economic Review*, 1-24.

Cohen, D., Jacquet, P., Reisen, H., 2007. Loans or grants? *Review of World Economics*, 143(4), 764-782.

Collier, P., Dollar, D., 2002. Aid allocation and poverty reduction. *European Economic Review*, 46, 1475-1500.

Devarajan, S., Rajkumar, A.S., Swaroop, V., 1999. What does aid to Africa finance? Development Research Group, World Bank, mimeograph.

Dixit, A., 2009. Governance, institutions and economic activity. *American Economic Review*, 99, 5-24.

Dollar D., Levin, V., 2006. The increasing selectivity of foreign aid, 1984–2003. *World Development*, 34(12), 2034-2046.

Dömeland, D., Kharas, H., 2009. Debt relief and sustainable financing to meet the MDGs. In Primo Braga, C.A., Dömeland, D. (Eds.), *Debt relief and beyond: lessons learned and challenges ahead* (117-140), Washington DC: The World Bank, .

Dreher, A., Sturm, J.E., Vreeland, J.R., 2009a. Global Horse Trading: IMF loans for votes in the United Nations Security Council. *European Economic Review*, 53, 742-757.

Dreher, A., Sturm, J.E., Vreeland, J.R., 2009b. Development aid and international politics: does membership on the UN Security Council influence World Bank decisions? *Journal of Development Economics*, 88, 1-18.

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

Easterly, W., 2006. *The white man's burden: why the west's efforts to aid the rest have done so much ill and so little good*. London: The Penguin Press.

Easterly, W., 2007. Are aid agencies improving? *Economic Policy*, 22(52), 633-78.

Easterly, W., 2008. Institutions: top down or bottom up?, *American Economic Review, Papers and Proceedings*, 98, 95-99.

Easterly, W., Levine, R., Roodman, D., 2004. Comment: aid, policies, and growth. *American Economic Review*, 94(3), 774-80.

Geginat, C., Kraay, A., 2007. Does IDA engage in defensive lending? Policy Research Working Paper 4328, The World Bank.

Johansson, P., 2010. Grants or loans? Determinants of aid composition. Mimeo.

Judson, R.A., Owen, A.L., 1999. Estimating dynamic panel data models: a guide for macroeconomists. *Economic Letters*, 65, 9-15.

Kraay, A., Nehru V., 2006. When is External Debt Sustainable? *The World Bank Economic Review*, 20(3), 341-365.

Kuziemko, I., Werker, E., 2006. How much is a seat on the Security Council worth? Foreign aid and bribery at the United Nations. *Journal of Political Economy*, 114, 905-930.

Lerrick, A., 2005. Aid to africa at risk: covering up corruption. International Economic Report. Pittsburgh, PA: Gailliot Center for Public Policy, Carnegie Mellon University.

Marchesi, S., Sabani, L., 2007. IMF concern for reputation and conditional lending failure: theory and empirics. *Journal of Development Economics*, 84, 640-666.

Marchesi, S., Sabani, L., Dreher, A., 2011. Read my lips: the role of information transmission in multilateral reform design. *Journal of International Economics*, 84, 86-98.

Mendoza, E.G., Ostry, J.D., 2008. International evidence on fiscal solvency: is fiscal policy responsible? *Journal of Monetary Economics*, 55, 1081-1093.

Nickell, S.J., 1981. Biases in dynamic models with fixed effects. *Econometrica*, 49, 802-816.

Powell, R., 2003. Debt relief, additionality, and aid allocation in low income countries. IMF Working Paper 175, Washington, DC: International Monetary Fund.

Powell, R., Bird, G., 2010. Aid and debt relief in Africa: have they been substitutes or complements? *World Development*, 38(3), 219-227.

Radelet, S., 2005. Grants for the world's poorest: how the World Bank should distribute its funds. Center for Global Development Brief.

Radelet, S., 2006. A Primer on Foreign Aid. Working Paper 92. Center for Global Development, Washington, D.C.

Rajan, R., 2008. The future of the IMF and the World Bank. *American Economic Review, Papers and Proceedings*, 98, 110-115.

Rajan, R., Subramanian, A., 2008. Aid and growth: what does the cross-country evidence really show? *The Review of Economics and Statistics*, 90(4), 643-665.

Ramcharan, R., 2003. Reputation, debt and policy conditionality. IMF working paper 192.

Ratha, D., 2005. Demand for World Bank lending. *Economic Systems*, 29, 408-421.

Roodman, D., 2005. An index of donor performance. Working Paper 67, Washington DC: Center for Global Development.

Svensson, J., 1999. Aid, growth and democracy. *Economics and Politics*, 11, 275-297.

World Bank, 1998. Assessing Aid: What Works, What Doesn't, and Why. New York: Oxford University Press.

Table 1: Multilateral and Bilateral Net Loans - 1982-2008

	GLS, static panels		GLS, dynamic panels				Difference GMM			
	Multilateral Net Loans	Bilteral Net Loans	Multilateral Net Loans	Bilteral Net Loans	Multilateral Net Loans	Bilteral Net Loans	Multilateral Net Loans	Bilteral Net Loans	Multilateral Net Loans	Bilteral Net Loans
Total Debt	-0.003***	-0.003***	-0.002***	-0.003***			-0.003**	-0.005**		
	(-3.272)	(-4.048)	(-2.656)	(-3.824)			(-2.008)	(-2.439)		
Multilateral Debt					-0.009***	0.001			-0.008**	0.002
					(-3.931)	(0.401)			(-2.292)	(0.594)
Bilateral Debt					-0.002**	-0.009***			-0.002	-0.013***
					(-1.997)	(-6.050)			(-0.381)	(-4.368)
Private Debt					0.005***	0.006***			0.007	0.011**
					(2.890)	(4.297)			(1.370)	(1.994)
Growth	0.005	-0.004	0.004	-0.003	0.006	-0.003	-0.006	-0.020	-0.005	-0.019
	(1.181)	(-0.988)	(1.033)	(-0.885)	(1.377)	(-0.998)	(-0.735)	(-1.444)	(-0.679)	(-1.289)
GDP per capita	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001	0.000	-0.002	0.000
	(-1.613)	(-0.744)	(-0.571)	(-0.455)	(-0.766)	(-0.804)	(-0.916)	(0.149)	(-1.430)	(0.319)
CPIA	0.007***	-0.002***	0.003***	-0.001*	0.003***	-0.001**	0.004**	-0.009	0.005***	-0.008
	(9.944)	(-3.030)	(5.159)	(-1.854)	(4.693)	(-2.005)	(2.282)	(-1.527)	(2.842)	(-1.624)
Poulation	0.061***	0.049**	0.039***	0.012	0.035**	0.018	0.093***	0.025	0.088***	0.046
	(3.302)	(2.325)	(2.779)	(1.176)	(2.458)	(1.570)	(2.818)	(0.768)	(2.820)	(1.095)
Dependent Var. (t-1)			0.434***	0.491***	0.438***	0.479***	0.361***	0.483***	0.356***	0.502***
			(20.674)	(23.056)	(20.674)	(22.619)	(6.210)	(15.236)	(6.118)	(13.857)
Observations	1,747	1,747	1,747	1,747	1,747	1,747	1,672	1,672	1,672	1,672
No. of countries	75	75	75	75	75	75	75	75	75	75
$AR(2)$ $P-value$							0.1279	0.4004	0.1289	0.4044

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Table 2: Multilateral and Bilateral Net Transfers - 1982-2008

	GLS, static pamel		GLS, dynamic panels				Difference GMM			
	Multilateral Net Transf	Bilteral Net Transf	Multilateral Net Transf	Bilteral Net Transf	Multilateral Net Transf	Bilteral Net Transf	Multilateral Net Transf	Bilteral Net Transf	Multilateral Net Transf	Bilteral Net Transf
Total Debt	0.007***	0.010***	0.002	-0.000			0.006	0.004		
	(5.245)	(6.334)	(1.543)	(-0.258)			(0.911)	(0.875)		
Multilateral Debt					-0.001	0.011***			0.022	0.020**
					(-0.154)	(3.418)			(1.277)	(2.298)
Bilateral Debt					-0.002	-0.006***			-0.004	-0.006
					(-1.256)	(-2.785)			(-0.839)	(-1.152)
Private Debt					0.008***	-0.002			0.008	0.005
					(3.311)	(-0.376)			(1.302)	(0.606)
Growth	-0.013**	-0.012	-0.014**	-0.004	-0.013**	-0.005	-0.049**	-0.039**	-0.046***	-0.040**
	(-1.990)	(-1.565)	(-2.374)	(-0.681)	(-2.270)	(-0.739)	(-2.349)	(-2.281)	(-2.584)	(-2.448)
GDP per capita	-0.004***	-0.003***	-0.002***	-0.002**	-0.002***	-0.001**	-0.006**	-0.002	-0.004**	-0.000
	(-5.687)	(-4.377)	(-3.209)	(-2.429)	(-3.117)	(-2.194)	(-2.532)	(-1.110)	(-2.521)	(-0.168)
CPIA	0.006***	-0.002*	0.002**	-0.000	0.002***	-0.001	0.005*	-0.007	0.005*	-0.005
	(6.209)	(-1.820)	(2.368)	(-0.246)	(2.616)	(-0.532)	(1.787)	(-1.190)	(1.844)	(-1.044)
Poulation	0.049*	0.225***	0.023	0.062**	0.023	0.076**	0.119*	0.161	0.120	0.169
	(1.837)	(4.268)	(1.052)	(1.996)	(0.942)	(2.229)	(1.655)	(1.355)	(1.613)	(1.422)
Dependent Var. (t-1)			0.472***	0.587***	0.466***	0.581***	0.320***	0.560***	0.335***	0.580***
			(22.199)	(29.820)	(21.152)	(29.234)	(3.104)	(18.335)	(2.686)	(15.600)
Observations	1,745	1,747	1,745	1,747	1,745	1,747	1,670	1,672	1,670	1,672
No. of countries	75	75	75	75	75	75	75	75	75	75
$AR(2)\ P-value$							0.1571	0.498	0.1342	0.5288

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Table 3: Multilateral and Bilateral Grants - 1982-2008

	GLS, static pamel		GLS, dynamic panels				Difference GMM			
	Multilateral Grants	Bilteral Grants	Multilateral Grants	Bilteral Grants	Multilateral Grants	Bilteral Grants	Multilateral Grants	Bilteral Grants	Multilateral Grants	Bilteral Grants
Total Debt	0.006***	0.014***	0.002***	0.002***			0.009	0.012***		
	(6.969)	(12.275)	(2.931)	(2.588)			(1.378)	(2.825)		
Multilateral Debt					0.006***	0.006**			0.032**	0.020*
					(3.350)	(2.221)			(1.993)	(1.946)
Bilateral Debt					-0.000	0.002			-0.000	0.010
					(-0.400)	(1.494)			(-0.042)	(1.490)
Private Debt					0.003***	-0.000			0.001	-0.006
					(2.629)	(-0.159)			(0.368)	(-0.472)
Growth	-0.007*	-0.003	-0.008**	-0.007	-0.008**	-0.008*	-0.051*	-0.026**	-0.047*	-0.025**
	(-1.745)	(-0.450)	(-2.402)	(-1.620)	(-2.571)	(-1.714)	(-1.830)	(-2.545)	(-1.934)	(-2.501)
GDP per capita	-0.003***	-0.003***	-0.001***	-0.001**	-0.001***	-0.001*	-0.005**	-0.003*	-0.003**	-0.002
	(-7.863)	(-5.671)	(-3.925)	(-2.042)	(-3.731)	(-1.715)	(-2.393)	(-1.716)	(-2.421)	(-0.990)
CPIA	-0.000	0.001	-0.000	0.000	-0.000	0.000	-0.000	-0.003	-0.001	-0.001
	(-0.433)	(1.116)	(-0.748)	(0.131)	(-1.055)	(0.142)	(-0.162)	(-1.108)	(-0.558)	(-0.737)
Poulation	-0.020	0.097**	-0.014	0.031	-0.009	0.038	0.019	0.143	0.032	0.118
	(-1.215)	(2.533)	(-1.089)	(1.265)	(-0.541)	(1.470)	(0.487)	(1.336)	(0.659)	(1.354)
Dependent Var. (t-1)			0.519***	0.649***	0.501***	0.646***	0.272**	0.520***	0.241	0.514***
			(20.683)	(33.856)	(19.373)	(33.133)	(2.436)	(16.980)	(1.634)	(18.085)
Observations	1,746	1,748	1,746	1,748	1,746	1,748	1,671	1,673	1,671	1,673
No. of countries	75	75	75	75	75	75	75	75	75	75
$AR(2)\ P-value$							0.3058	0.1716	0.2443	0.1916

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Table 4: Resource Allocation: HIPCs versus Non-HIPCs - 1982-2008

	GLS, dynamic panels											
	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants
H x Total Debt	-0.002**	-0.003***	0.002*	0.001	0.002***	0.003***						
	(-2.329)	(-4.010)	(1.658)	(0.429)	(2.716)	(3.152)						
NH x Total Debt	-0.002	-0.001	-0.001	-0.008**	0.001	-0.003						
	(-1.356)	(-0.549)	(-0.823)	(-2.293)	(1.001)	(-1.284)						
H x Multilat. Debt							-0.007***	0.000	0.006	0.013***	0.009***	0.008***
							(-2.768)	(0.280)	(1.400)	(3.718)	(4.178)	(3.046)
NH x Multilat. Debt							-0.046***	0.002	-0.044***	-0.005	-0.001	-0.007
							(-7.508)	(0.423)	(-5.689)	(-0.578)	(-0.426)	(-1.327)
H x Billateral Debt							-0.002**	-0.009***	-0.002	-0.005*	-0.000	0.003*
							(-2.175)	(-5.307)	(-1.616)	(-1.913)	(-0.624)	(1.770)
NH x Bilateral Debt							-0.002	-0.009***	-0.001	-0.012***	-0.000	-0.003
							(-0.901)	(-2.973)	(-0.443)	(-2.798)	(-0.127)	(-1.151)
H x Private Debt							0.000	0.007**	0.006	-0.007	0.003	-0.004
							(0.186)	(2.171)	(1.571)	(-1.088)	(1.559)	(-1.181)
NH x Private Debt							0.010***	0.005***	0.013***	0.006	0.004**	0.005
							(4.854)	(2.762)	(4.096)	(0.835)	(2.398)	(1.007)
Growth	0.004	-0.003	-0.013**	-0.005	-0.008**	-0.007	0.004	-0.003	-0.014**	-0.005	-0.009***	-0.006
	(1.026)	(-0.909)	(-2.276)	(-0.713)	(-2.546)	(-1.611)	(0.920)	(-1.037)	(-2.303)	(-0.757)	(-2.671)	(-1.441)
GDP per capita	-0.000	-0.000	-0.002***	-0.002**	-0.001***	-0.001**	-0.000	-0.000	-0.002***	-0.002**	-0.001***	-0.001**
	(-0.579)	(-0.395)	(-3.046)	(-2.445)	(-4.081)	(-2.098)	(-0.857)	(-0.854)	(-3.066)	(-2.316)	(-3.896)	(-2.135)
CPIA	0.003***	-0.001*	0.002**	-0.000	-0.000	0.000	0.003***	-0.001**	0.003***	-0.001	-0.000	0.000
	(5.136)	(-1.840)	(2.372)	(-0.260)	(-0.943)	(0.049)	(5.135)	(-1.966)	(3.194)	(-0.610)	(-1.113)	(0.070)
Poulation	0.039***	0.013	0.018	0.051*	-0.016	0.024	0.027*	0.017	0.014	0.082**	-0.010	0.044
	(2.704)	(1.326)	(0.874)	(1.705)	(-1.276)	(1.009)	(1.777)	(1.517)	(0.546)	(2.294)	(-0.639)	(1.593)
Dependent Var. (t-1)	0.435***	0.490***	0.472***	0.584***	0.520***	0.645***	0.438***	0.477***	0.458***	0.575***	0.488***	0.636***
	(20.646)	(22.993)	(22.229)	(29.610)	(20.847)	(33.531)	(20.979)	(22.453)	(20.918)	(28.901)	(18.832)	(32.333)
Observations	1,747	1,747	1,745	1,747	1,746	1,748	1,747	1,747	1,745	1,747	1,746	1,748
No. of countries	75	75	75	75	75	75	75	75	75	75	75	75
R-squared												

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Table 5: Resource Allocation: HIPCs versus Non-HIPCs - Different Periods: 1982-1999 and 1999-2008

	GLS, dynamic panels											
	1982 – 1999						1999 – 2008					
	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants
H x Total Debt	-0.002**	-0.003***	0.004*	0.003	0.003***	0.005***	0.001	-0.003***	0.006**	-0.000	0.003**	0.002
	(-2.178)	(-3.101)	(1.834)	(1.559)	(2.838)	(3.910)	(0.297)	(-3.202)	(2.417)	(-0.168)	(2.245)	(1.386)
NH x Total Debt	-0.004*	-0.002	-0.005*	-0.012**	-0.001	-0.005*	0.003	-0.000	0.006**	0.009**	0.004***	0.009***
	(-1.670)	(-0.652)	(-1.749)	(-2.543)	(-1.066)	(-1.858)	(1.013)	(-0.077)	(1.984)	(2.392)	(2.852)	(3.837)
Growth	0.006	-0.005	-0.017**	-0.019**	-0.015***	-0.016***	-0.003	0.005*	-0.007	0.006	-0.002	-0.003
	(1.171)	(-1.150)	(-2.330)	(-2.132)	(-3.762)	(-3.519)	(-0.527)	(1.701)	(-1.029)	(0.912)	(-0.642)	(-0.679)
GDP per capita	-0.001	-0.001	-0.002	-0.003**	-0.001*	-0.001	-0.000	0.000	-0.003***	-0.002***	-0.001***	-0.001***
	(-1.487)	(-0.752)	(-1.481)	(-2.014)	(-1.756)	(-1.320)	(-0.163)	(0.259)	(-2.637)	(-3.049)	(-3.216)	(-2.730)
CPIA	0.003***	-0.001*	0.002*	-0.001	-0.000	0.000	0.003	0.000	0.001	0.003*	-0.000	0.002**
	(4.127)	(-1.937)	(1.941)	(-0.959)	(-0.783)	(0.482)	(1.544)	(0.064)	(0.314)	(1.838)	(-0.230)	(2.272)
Poulation	0.065*	0.116***	0.049	0.225***	-0.013	0.052	0.067**	-0.003	0.022	-0.004	-0.028**	-0.004
	(1.882)	(2.579)	(0.741)	(2.874)	(-0.336)	(0.959)	(2.249)	(-0.243)	(0.752)	(-0.212)	(-2.051)	(-0.246)
Dependent Var. (t-1)	0.382***	0.458***	0.391***	0.478***	0.369***	0.518***	0.312***	0.327***	0.358***	0.384***	0.416***	0.470***
	(14.201)	(16.834)	(13.974)	(17.439)	(10.581)	(18.940)	(8.993)	(8.679)	(10.540)	(11.030)	(11.128)	(13.583)
Observations	1,096	1,096	1,096	1,096	1,096	1,096	724	724	722	724	723	725
No. of countries	74	74	74	74	74	74	74	74	74	74	74	74
R-squared												

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

APPENDIX

Table A1: Country Coverage - IDA and IDA-blend Countries

Highly Indebted Poor Countries (HIPCs) - Classification as of 1999

Angola[a]	Congo, Dem. Rep.	Honduras	Mozambique	Somalia
Benin	Congo, Rep.	Kenya[a]	Myanmar	Sudan
Bolivia	Cote d'Ivoire	Lao PDR	Nicaragua	Tanzania
Burkina Faso	Ethiopia	Liberia	Niger	Togo
Burundi	Ghana	Madagascar	Rwanda	Uganda
Cameroon	Guinea	Malawi	Sao Tome & Principe	Vietnam[a]
Central African Rep.	Guinea-Bissau	Mali	Senegal	Yemen, Rep.[a]
Chad	Guyana	Mauritania	Sierra Leone	Zambia

Non-HIPC Countries

Armenia	Comoros[b]	Haiti	Nepal	St. Lucia
Azerbaijan	Djibouti	India	Nigeria	St. Vincent & Grens
Bangladesh	Dominica	Kyrgyz Republic	Pakistan	Tajikistan
Bhutan	Eritrea	Lesotho	Papua New Guinea	Tonga
Bosnia-Herzegovina	Gambia, The[b]	Maldives	Samoa	Uzbekistan
Cambodia	Georgia	Moldova	Solomon Islands	Vanuatu
Cape Verde	Grenada	Mongolia	Sri Lanka	Zimbabwe

Notes: [a] Classified as HIPC in 2001. [b] Classified as Non-HIPC in 2001

Table A2: Variables definition, summary statistics and data sources

Variable	Mean	SD	Definition	Source
Multilat. Net Loans	0.02	0.03	Multilat. long-term loans minus debt service (to GDP) –including purchases less repurcheses from IMF	GDF (WorLd Bank)
Bilateral Net Loans	0.01	0.03	Bilateral long-term loans minus debt service (to GDP)	GDF (WorLd Bank)
Multilateral Grants	0.02	0.03	Multilateral grants (to GDP) –excluding technical cooperation and debt forgiven	DAC (OECD)
Bilateral Grants	0.04	0.05	Bilateral grants (to GDP) –excluding technical cooperation and debt forgiven	DAC (OECD)
Multilateral Debt	0.4	0.42	Long-term debt held by multilateral creditors (to GDP) –including debt owed to the IMF	GDF (WorLd Bank)
Bilateral Debt	0.35	0.48	Long-term debt held by bilateral creditors (to GDP)	GDF (WorLd Bank)
Private Debt	0.12	0.21	Long-term debt held by private creditors (to GDP)	GDF (WorLd Bank)
GDP growth	0.04	0.08	Annual growth rate of GDP in constant LCU	Penn World Table 6.3
GDP per capita	2.42	1.97	Constant price GDP at PPP divided by population	Penn World Table 6.3
CPIA	2.94	0.72	Country Policy and Institutional Assessment (Index)	World Bank
Population	0.02	0.10	Population (billion units)	Penn World Table 6.3

Notes: Ratios to GDP are obtained using current GDP in US dollars from WDI (World Bank).

Table A3: Net Loans, Net Transfers and Grants - 1982-2008

	GLS, dynamic panels with Output Gap											
	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants
Total Debt	-0.002**	-0.004***	0.002	-0.001	0.002***	0.003***						
	(-2.164)	(-4.279)	(1.429)	(-0.308)	(3.512)	(3.234)						
Multilateral Debt							-0.016***	-0.002	-0.011**	0.009**	0.005***	0.006**
							(-5.489)	(-1.316)	(-2.511)	(2.323)	(2.804)	(2.207)
Bilateral Debt							-0.001	-0.010***	-0.000	-0.007***	0.001	0.003**
							(-0.889)	(-6.434)	(-0.079)	(-2.613)	(0.689)	(2.160)
Private Debt							0.005***	0.006***	0.009***	0.002	0.003***	0.001
							(3.429)	(5.303)	(4.082)	(0.353)	(2.898)	(0.450)
Output Gap	0.001	0.001	-0.000	0.001	0.000	-0.001	0.001	0.001	0.000	0.001	0.000	-0.001
	(0.432)	(0.487)	(-0.131)	(0.428)	(0.097)	(-0.279)	(0.580)	(0.671)	(0.004)	(0.287)	(0.101)	(-0.314)
GDP per capita	-0.000	-0.000	-0.002***	-0.002***	-0.001***	-0.001***	-0.000	-0.000	-0.002***	-0.002***	-0.001***	-0.001***
	(-0.371)	(-0.377)	(-3.806)	(-3.064)	(-5.417)	(-3.244)	(-0.990)	(-0.946)	(-3.939)	(-2.963)	(-5.447)	(-3.184)
CPIA	0.003***	-0.001*	0.002***	-0.000	-0.000	-0.000	0.003***	-0.001**	0.002**	-0.001	-0.000	-0.000
	(4.639)	(-1.750)	(2.632)	(-0.455)	(-0.649)	(-0.289)	(4.471)	(-1.965)	(2.529)	(-0.917)	(-0.901)	(-0.287)
Poulation	0.037***	0.010	0.021	0.039	-0.017	0.016	0.032***	0.015	0.015	0.051*	-0.014	0.021
	(3.093)	(1.272)	(1.179)	(1.548)	(-1.567)	(0.799)	(2.721)	(1.588)	(0.832)	(1.785)	(-1.140)	(0.959)
Depend. Var.(t-1)	0.445***	0.523***	0.489***	0.604***	0.547***	0.677***	0.448***	0.507***	0.492***	0.602***	0.536***	0.674***
	(21.102)	(26.110)	(23.240)	(32.042)	(23.552)	(37.557)	(21.192)	(25.419)	(23.067)	(31.864)	(22.781)	(36.892)
Observations	1,749	1,749	1,747	1,749	1,748	1,750	1,749	1,749	1,747	1,749	1,748	1,750
No. of countries	75	75	75	75	75	75	75	75	75	75	75	75
R-squared												

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Table A4: Voting Variables and Resource Allocation - 1982-2008

	GLS, dynamic panels					
	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants
H x Total Debt	-0.001*	-0.003***	0.003*	0.001	0.002***	0.003***
	(-1.678)	(-3.968)	(1.804)	(0.546)	(2.748)	(3.087)
NH x Total Debt	-0.001	-0.001	-0.001	-0.008**	0.001	-0.002
	(-0.869)	(-0.780)	(-0.835)	(-2.468)	(0.846)	(-1.151)
Growth	0.003	-0.004	-0.013**	-0.003	-0.008**	-0.007
	(0.828)	(-1.177)	(-2.251)	(-0.444)	(-2.391)	(-1.440)
GDP per capita	-0.000	-0.000	-0.002***	-0.002**	-0.001***	-0.001*
	(-0.760)	(-0.335)	(-2.985)	(-2.368)	(-3.926)	(-1.802)
CPIA	0.003***	-0.001*	0.002**	-0.000	-0.000	-0.000
	(4.868)	(-1.741)	(1.986)	(-0.333)	(-1.016)	(-0.286)
Poulation	0.042***	0.014	0.012	0.042	-0.021	0.015
	(2.858)	(1.211)	(0.566)	(1.390)	(-1.538)	(0.660)
UNSC	-0.001	-0.001	-0.003*	-0.002	-0.001	-0.001
	(-0.923)	(-1.291)	(-1.700)	(-1.352)	(-0.737)	(-1.048)
Inline G7	-0.009	0.003	0.021*	0.017	0.014**	0.010
	(-1.033)	(0.371)	(1.654)	(1.295)	(2.096)	(1.072)
Inline US	-0.005	0.002	-0.005	0.006	0.000	0.004
	(-1.019)	(0.515)	(-0.749)	(0.822)	(0.116)	(0.804)
PRCL	0.001	-0.000	0.000	-0.001	0.000	0.000
	(1.536)	(-1.414)	(0.351)	(-1.611)	(0.145)	(0.542)
Dependent Var. (t-1)	0.432***	0.485***	0.470***	0.585***	0.514***	0.639***
	(20.424)	(22.245)	(22.082)	(29.414)	(20.152)	(32.708)
Observations	1,701	1,701	1,699	1,701	1,700	1,702
No. of countries	73	73	73	73	73	73
R-squared						

Notes: All regressions include country fixed effects and time dummies.
z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.

Table A5: Resource Allocation: HIPCs versus Non-HIPCs - 1982-2008

	Difference GMM, dynamic panels											
	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants	Multilat N. Loans	Bilateral N. Loans	Multilat N. Trans	Bilateral N. Trans	Multilat Grants	Bilateral Grants
H x Total Debt	-0.002*	-0.005**	0.007	0.007	0.010	0.011***						
	(-1.675)	(-2.212)	(1.001)	(1.277)	(1.482)	(2.695)						
NH x Total Debt	-0.005	-0.007*	-0.003	-0.009	0.001	0.002						
	(-1.161)	(-1.882)	(-0.537)	(-1.249)	(0.328)	(0.284)						
H x Multilat. Debt							-0.006*	0.002	0.026	0.022**	0.034**	0.019**
							(-1.903)	(0.520)	(1.491)	(2.366)	(2.185)	(1.962)
NH x Multilat. Debt							-0.046***	-0.001	-0.048***	0.001	0.001	-0.006
							(-3.348)	(-0.102)	(-2.577)	(0.038)	(0.141)	(-0.424)
H x Billateral Debt							-0.002	-0.012***	-0.002	0.000	-0.002	0.012
							(-0.417)	(-3.569)	(-0.300)	(0.011)	(-0.670)	(1.561)
NH x Bilateral Debt							-0.001	-0.014*	0.002	-0.022***	0.000	-0.004
							(-0.155)	(-1.814)	(0.303)	(-2.881)	(0.149)	(-0.819)
H x Private Debt							0.001	0.012**	0.006	-0.014	0.004	-0.018
							(0.125)	(2.120)	(0.615)	(-0.749)	(0.482)	(-0.983)
NH x Private Debt							0.014***	0.003	0.017***	0.011	0.004	0.014***
							(3.920)	(0.560)	(3.261)	(1.156)	(1.460)	(3.679)
Growth	-0.006	-0.020	-0.050**	-0.043**	-0.047*	-0.025**	-0.004	-0.017	-0.047**	-0.043***	-0.045**	-0.025***
	(-0.727)	(-1.438)	(-2.421)	(-2.496)	(-1.799)	(-2.528)	(-0.580)	(-1.280)	(-2.525)	(-2.645)	(-2.023)	(-2.641)
GDP per capita	-0.001	0.000	-0.006**	-0.002	-0.004**	-0.003*	-0.002**	0.001	-0.004**	-0.002	-0.002**	-0.002
	(-0.966)	(0.265)	(-2.356)	(-1.160)	(-2.310)	(-1.743)	(-2.146)	(0.756)	(-2.475)	(-0.981)	(-2.199)	(-1.162)
CPIA	0.004**	-0.008	0.004	-0.010*	-0.002	-0.003*	0.005***	-0.005	0.004	-0.007	-0.001	-0.002
	(2.135)	(-1.619)	(1.197)	(-1.696)	(-1.132)	(-1.804)	(3.237)	(-1.273)	(1.550)	(-1.151)	(-1.070)	(-0.968)
Poulation	0.080***	0.033	0.103	0.139	-0.003	0.113	0.067**	0.033	0.091	0.150	0.015	0.118
	(2.805)	(0.871)	(1.559)	(1.210)	(-0.081)	(1.232)	(2.469)	(0.926)	(1.209)	(1.271)	(0.360)	(1.234)
Dependent Var. (t-1)	0.366***	0.491***	0.304***	0.538***	0.314***	0.541***	0.385***	0.517***	0.278**	0.536***	0.303**	0.546***
	(6.308)	(14.736)	(2.818)	(18.930)	(2.820)	(19.871)	(6.923)	(13.276)	(2.134)	(15.635)	(2.048)	(15.932)
Observations	1,672	1,672	1,670	1,672	1,671	1,673	1,672	1,672	1,670	1,672	1,671	1,673
No. of countries	75	75	75	75	75	75	75	75	75	75	75	75
$AR(2)$ $P-value$	0.1281	0.4019	0.1544	0.4771	0.3077	0.1648	0.1251	0.4064	0.1264	0.5082	0.2686	0.1345

Notes: All regressions include country fixed effects and time dummies. z statistics in parentheses; *** p<0.01, ** p<0.05, * p<0.10.