Did High Debts Distort Loan and Grant Allocation to IDA Countries?

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Summary. — We examine the allocation of net loans, net transfers, and grants 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 find no evidence of defensive lending but strong evidence of defensive granting. A significant negative reaction of net loans to the debt ratio indeed characterizes the decisions of both multilateral and bilateral creditors. The impact of lower loans on the budget of debtor countries is however accommodated through higher grants, in addition to debt relief. These findings are consistent with a substitution of grants for loans and with the new approach to debt sustainability but question the efficiency and selectivity of foreign aid.
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1. INTRODUCTION

Over 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" has emphasized the importance of increasing aid flows to achieve the Millennium Development Goals and promoting a greater selectivity among donors while encouraging recipient countries' ownership of development programs[2] (e.g., see the 2005 Paris Declaration on aid effectiveness). Furthermore, debt relief initiatives, such as the Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI), have become a cornerstone of this new strategy since a consensus view has emerged that poor countries' debt write-offs are a precondition for a more effective aid policy.

Berthèlemy and Tichit (2004), Roodman (2005), Dollar and Levin (2006), Easterly (2007), Claessens, Cassimon, and Van Campenhout (2009) have all examined the issue of selectivity in aid allocation showing that in recent years donors have become more selective with respect to poverty and/or institutional factors. The high debt of low income countries, besides geopolitical motivations, is one of the reasons that may explain the past allocation of foreign aid. 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 nonselective pattern of aid flows has been scantly investigated in the literature on aid selectivity, and informally discussed in the literature on defensive lending (Bird & Milne, 2003; Birdsall, Claessens, & Diwan, 2003; Cohen, Jacquet, & Reisen, 2007; Easterly, 2002; Lerrick, 2005). In this paper we explicitly examine the role of debt (and its ownership) in affecting official donors' decisions on allocating aid to low income countries.

Relying on Bohn's (1998) model of intertemporal debt sustainability, we first derive theoretical implications for net loans and net transfers (net of debt service) 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 positive or no reaction would be evidence of defensive lending. Furthermore, since net transfers should decrease with the debt ratio to force a correction of the trade deficit (or greater FDI inflows), the relation between net transfers and debt allows us to investigate whether debtor countries' policies were "constrained" by foreign aid. Further insight is obtained by studying the allocation of grants excluding debt relief. A positive reaction of conventional grants to the debt ratio together with a reduction of net loans suggests that grants, in addition to debt relief, were given to ease the debt reduction process in highly indebted countries. We call this strategy "defensive granting," for lack of a better term.

We estimate separate dynamic models of the allocation of net loans, grants, and net transfers with panel data for 75 International Development Association (IDA) and IDA-Blend countries (hereafter IDA countries) over the period from 1982 to 2008, using both fixed-effects GLS and difference GMM estimators.[3]

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. Furthermore, each creditor group shows a stronger reaction 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 in contrast with a defensive strategy. On the other hand, we cannot reject the hypothesis that net transfers were insensitive to the debt ratio. This suggests that the impact of lower loans on the budget of debtor countries was accommodated through the transfers of other resources that allowed these countries to avoid a correction of their trade deficits as the debt increased. 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. Conventional grants were provided, in addition to debt relief, to mitigate the impact of lower allocations of loans and to ease the debt adjustment process, a strategy that we define as 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 nonHIPC countries by dividing our sample into a group of 40 HIPC countries and a control group of 35 nonHIPC countries. We still find no evidence of defensive lending but further support for the hypothesis of defensive granting. Although the substitution of grants for loans is an established trend of development assistance, the fact that this substitution is conditional on high levels of debt points to a distortion of aid flows in favor of indebted countries and questions the efficiency and selectivity of foreign aid.

The rest of this paper is organized as follows. Section 2 briefly discusses the related literature. Section 3 presents our definition of defensive lending and defensive granting. Section 4 develops the empirical framework. The estimation results are presented and discussed in Section 5. 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. An important finding of this literature is that aid is more effective in good policy and institutional environments (see, e.g., Burnside & Dollar, 2000; Chauvet, 2002; Chauvet & Guillamont, 2001; Svensson, 1999; World Bank, 1998). Although the robustness of some results has been questioned (see, e.g., Easterly, Levine, & Roodman, 2004; Rajan & Subramanian, 2008), the principle that aid should be targeted to "deserving" countries is now well established. In many cases, however, geopolitical considerations played a significant role in donors' decisions (see, e.g., Alesina & Dollar, 2000; Alesina & Weder, 2002; Dreher, Sturm, & Vreeland, 2009a, Dreher, Sturm, & Vreeland, 2009b; Kuziemko & Werker, 2006). [4]

As the efficiency and effectiveness of aid have gained increasing attention, quite a few papers on aid allocation have explicitly analyzed whether donor selectivity has changed throughout the years. Berthèlemy and Tichit (2004), Roodman (2005), Dollar and Levin (2006) show that donors have become more selective with respect to country needs and policies over time. [5] Focusing on bilateral aid, Claessens et al. (2009) find that after the fall of the Berlin wall in 1989, and especially in the late 1990s, bilateral aid responded more to poverty and to the quality of policies and institutions of recipient countries. They also consider the present value of debt as one of the variables accounting for a nonselective behavior and show that the sensitivity of aid to the debt burden has declined over time.

But how could aid and debt be connected? [6] In principle, the relation could go two ways. On the one hand, aid could be negatively related to debt. This would be the case if donors reduced their loans as the debt increased, pulling out of highly indebted countries in order to contain their exposure to default risk. The overall effect on aid would however depend on grants, as the latter could either remain unchanged or be substituted for loans in order to ease the debt adjustment process. On the other hand, the relation between aid and debt could be positive. This would be the case if donors extended new loans to enable the borrowers to meet their debt service obligations and avoid 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, that is, 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 as to why this correlation should not be interpreted as evidence of defensive lending.

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 other studies, Birdsall et al. consider loans net of interest and principal payments and, realizing that grants can be used to free resources in the recipients' budgets to service the debt, they focus on net transfers, that is, on the sum of grants and net loans. They find that net transfers were higher in poorer countries but that the quality of their economic policy mattered little in explaining net transfers. Indeed, donors, especially bilaterals, made greater transfers to countries with high multilateral debt, despite their bad policies. Finally, Devarajan, Rajkumar, and Swaroop (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 an important problem in the investigation of defensive lending: the lack of a theoretical prediction that can be tested empirically. Second, we contribute to the empirical literature as follows. We focus on IDA countries, which are a homogeneous group with respect to borrowing conditions, and distinguish between HIPC and nonHIPC 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 key 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 extending new loans to enable the borrower to meet his debt service obligations and avoid default. [7]

The practice of providing new loans to finance interest and principal payments 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 can then shed light on creditors' behavior, as to whether they provided new loans to service debt obligations or reacted in a systematic way to prevent IDA countries' debt from getting on an unsustainable path. Although intertemporal solvency can be viewed as a 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' policies 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 a 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 external-debt-accumulation equation is equal to

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

where the debt-to-GDP ratio in the next period, 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 nondebt 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

$$CAD_t = X_t - G_t - FDI_t + OTH_t \qquad (2)$$

where X_t is the trade deficit in goods and services, G_t are grants, FDI_t is the nondebt 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.

As the net deficit, CAD_t, and the total debt service, TDS_t, that is, the sum of interest and principal payments, are funded with new loan disbursements, LD_t, the latter are equal to

$$LD_t = TDS_t + CAD_t \qquad (3)$$

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 Eqn. (1) to yield

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

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–GDP ratio, B_t, after controlling for other determinants, Z_t, of net loans, so that

$$L_t = \beta Z_t + \rho B_t \quad \text{with } \rho < 0 \qquad (5)$$

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 Eqn. (5) and testing the null hypothesis that $\rho \geqslant 0$. Finding that ρ is negative 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, $\rho < 0$, makes the debt 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 Eqn. (5) for L_t in Eqn. (4):

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

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, negative reaction of net loans to debt in Eqn. (5) is sufficient but not necessary to rule out a Ponzi scheme. As Bohn (1998) shows, intertemporal sustainability can also be ensured by a nonlinear and/or time varying reaction insofar as the latter is strictly negative above a certain threshold debt ratio, or the reaction is at least negative almost surely. This suggests that, if the hypothesis of defensive lending, $\rho \geqslant 0$, were not rejected, it should be further investigated by introducing in Eqn. (5) nonlinear terms in the debt ratio. Nonlinearities can also be captured by separating high-debt countries from low-debt countries. We follow this approach by distinguishing between HIPC and nonHIPC countries in Section 5(d).

Although empirical studies of the Bohn 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 in a panel of IDA countries. Focusing on the 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 reactions and thus better suited for panel model estimation.

A further advantage of estimating Eqn. (5) is that the point estimate of the debt coefficient, ρ, offers (if negative) 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 countries. In doing so we distinguish between two cases depending on the evidence for net loans. Consider, first, the case of defensive lending, that new loans were used to service the existing debt. Then, it is unlikely that grants (other than debt forgiveness) were given to further soften recipient countries' budget constraints and thus that grants were determined by high levels

of debt. As a result, studying the relation between grants and the debt ratio would be of limited interest.

Suppose, instead, that a systematic negative reaction of net loans to the level of debt, $\rho < 0$, is found in estimating equation (5). Then, it is interesting to examine whether this reduction of net loans forced a correction of debtor countries' trade deficits (and led to more FDI inflows) 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 lower trade deficits, X_t, and the attraction of foreign investment, FDI_t, or be accomplished through an increase in grants. This would be the case 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 reduction of borrowers' trade deficits and greater FDI attraction, we look at net transfers, that is, the sum of net loans and grants, $NT_t = L_t + G_t$, as the latter are approximately equal to the trade deficit less foreign investment, $NT_t = X_t - FDI_t + OTH_t$. We shall examine the effect of the debt ratio on net transfers by estimating the following equation:

$$NT_t = \gamma Z_t + \lambda B_t \qquad (7)$$

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 highly indebted countries could avoid a correction of their trade deficits, as the debt increased, because of aid. The hypothesis of "unreactive transfers" $\lambda \geqslant 0$, can be tested by estimating Eqn. (7).

An alternative approach to Eqn. (7) is to study how the debt ratio affected the allocation of grants by estimating the following equation:

$$G_t = \delta Z_t + \mu B_t \qquad (8)$$

The finding of a positive effect of the debt ratio on grants, that is, $\mu > 0$, 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 reduction process, a hypothesis that we call defensive granting. Since debt forgiveness was a relevant component of total grants clearly targeted to high-debt countries over the most recent period, the definition of grants used in the estimation of Eqns. (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 how multilateral and bilateral creditor–donors allocated net loans, net transfers, and grants to IDA and IDA-blend countries, focusing on the role of external debt in their decisions.

We estimate a model of the allocation of net loans, net transfers, and grants (taken separately) for a sample of 75 IDA and IDA-Blend countries using panel data for the period from 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 6 of the Appendix).[9]

The empirical models are the cross-country panel versions of Eqns. (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

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

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

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

where L_{it}, NT_{it} and G_{it} denote net loans, net transfers, and grants, respectively, which are all 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 carried out by the two groups of multilateral and bilateral creditor–donors and thus provide two estimates for each model in Eqns. (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 payments) and are referred to as "net transfers on external debt" in the World Bank's Global Development Finance (GDF) database. Hence, net loans give the amount of disbursements that are left to the borrowers once they have paid for the service of their debts. It thus takes into account the fact that a large part of new loans flows back to the creditors in the form of interest and principal repayments.

We consider all types of loans, either concessional or nonconcessional, 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 includes nonconcessional 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 the type of donor: multilateral and bilateral donors. We exclude debt forgiven for two reasons. First, forgiven debt is already accounted for 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 forgiveness. 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.

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. This is consistent with "country programmable aid," a measure proposed by Dömeland and Kharas (2009) to capture the cash flow available to recipient countries.[11]

We focus on the effect of the debt-to-GDP ratio, B_t, on donor decisions regarding the allocation of their resources to IDA countries. Consistently with the interpretation of Eqns. (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, the hypothesis of defensive lending can be tested as $\rho \geqslant 0$. A nonnegative effect of the debt ratio on net transfers, $\lambda \geqslant 0$, would indicate that, because of the transfers received, IDA countries could avoid a correction of their trade deficits as the debt increased. The hypothesis of "unreactive transfers" can be tested as $\lambda \geqslant 0$. Finally, the reaction of grants to the debt ratio, μ, provides further insight in the policy of official donors. Evidence of a positive effect of the debt ratio, $\mu > 0$, 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 have defined defensive granting.

We shall also estimate extended specifications of Eqns. (9)–(11) where long-term debt is decomposed into the shares held by multilateral, bilateral, and private creditors. The three debt-to-GDP ratios are entered 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 loan and grant 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 World Bank's Country Policy and Institutional Assessment (CPIA) index [12] which reflects the Bank's internal evaluation of the countries' quality of policy and institutions that increases aid effectiveness; and population. We also include the growth rate of real GDP to correct for cyclical fluctuations affecting the funding needs of recipient countries. The growth rate of GDP is taken as a simple proxy for the output gap, which is the variable suggested by Bohn (1998) and Mendoza and Ostry (2008). We shall use an estimate of the output gap in the sensitivity analysis.

All variables in Z_{it} are lagged by 1 year since their contemporaneous values are not available to creditor–donors at the time when resources are allocated. 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 7 of the Appendix.

Since the CPIA index does not exhaust the list of variables that possibly capture the quality of policies and institutions, we have considered the rate of growth of government spending, 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 was not found 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 geopolitical 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 into two groups.

(a) The estimation method

The full dataset is a panel of IDA and IDA-blend countries with 1747 observations for the period from 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.

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 is disbursed into 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 also 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; that is, to avoid the omitted variable bias that would arise from the exclusion of the lagged dependent variables. [13]

We use a fixed-effects GLS 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 equation 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-effects GLS estimator, incorporating only heteroskedasticity across countries.

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, that is, small N and T. Their analysis suggests 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. However, we also provide 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 & Bond, 1998), since net loans, net transfers, and grants are not strongly autocorrelated, that is, they are far from random walks, which implies that the lagged levels are good instruments for the first-differenced variables. In particular, the set of instruments includes six suitable lags of the dependent variable and the predetermined variables; that is, from lag $t - 2$ to $t - 7$ of L_t (or NT_t, G_t), and from lag $t - 1$ to $t - 6$ of B_t and Z_t. We limit the number of lags used as instruments to avoid the weak-instrument problem that arises because of the excessive number of instruments in our sample where $T = 27$ (see, e.g., Roodman, 2009).

Table 1. *Multilateral and bilateral net loans – 1982–2008*

	GLS, static panels		GLS, dynamic panels				Difference GMM			
	Multilateral net loans	Bilateral net loans	Multilateral net loans	Bilateral net loans	Multilateral net loans	Bilateral net loans	Multilateral net loans	Bilateral net loans	Multilateral net loans	Bilateral net loans
Total debt	−0.003*** (−3.272)	−0.003*** (−4.048)	−0.002*** (−2.656)	−0.003*** (−3.824)			−0.003** (−2.008)	−0.005** (−2.439)		
Multilateral debt					−0.009*** (−3.931)	0.001 (0.401)			−0.008** (−2.292)	0.002 (0.594)
Bilateral debt					−0.002** (−1.997)	−0.009*** (−6.050)			−0.002 (−0.381)	−0.013*** (−4.368)
Private debt					0.005*** (2.890)	0.006*** (4.297)			0.007 (1.370)	0.011** (1.994)
Growth	0.005 (1.181)	−0.004 (−0.988)	0.004 (1.033)	−0.003 (−0.885)	0.006 (1.377)	−0.003 (−0.998)	−0.006 (−0.735)	−0.020 (−1.444)	−0.005 (−0.679)	−0.019 (−1.289)
GDP per capita	−0.001 (−1.613)	−0.000 (−0.744)	−0.000 (−0.571)	−0.000 (−0.455)	−0.000 (−0.766)	−0.000 (−0.804)	−0.001 (−0.916)	0.000 (0.149)	−0.002 (−1.430)	0.000 (0.319)
CPIA	0.007*** (9.944)	−0.002*** (−3.030)	0.003*** (5.159)	−0.001* (−1.854)	0.003*** (4.693)	−0.001** (−2.005)	0.004** (2.282)	−0.009 (−1.527)	0.005*** (2.842)	−0.008 (−1.624)
Population	0.061*** (3.302)	0.049** (2.325)	0.039*** (2.779)	0.012 (1.176)	0.035** (2.458)	0.018 (1.570)	0.093*** (2.818)	0.025 (0.768)	0.088*** (2.820)	0.046 (1.095)
Dependent var. ($t − 1$)			0.434*** (20.674)	0.491*** (23.056)	0.438*** (20.674)	0.479*** (22.619)	0.361*** (6.210)	0.483*** (15.236)	0.356*** (6.118)	0.502*** (13.857)
Observations	1747	1747	1747	1747	1747	1747	1672	1672	1672	1672
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.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

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Table 2. *Multilateral and bilateral net transfers – 1982–2008*

	GLS, static panel		GLS, dynamic panels				Difference GMM			
	Multilateral net transfers	Bilateral net transfers	Multilateral net transfers	Bilateral net transfers	Multilateral net transfers	Bilateral net transfers	Multilateral net transfers	Bilateral net transfers	Multilateral net transfers	Bilateral net transfers
Total debt	0.007*** (5.245)	0.010*** (6.334)	0.002 (1.543)	−0.000 (−0.258)			0.006 (0.911)	0.004 (0.875)		
Multilateral debt					−0.001 (−0.154)	0.011*** (3.418)			0.022 (1.277)	0.020** (2.298)
Bilateral debt					−0.002 (−1.256)	−0.006*** (−2.785)			−0.004 (−0.839)	−0.006 (−1.152)
Private debt					0.008*** (3.311)	−0.002 (−0.376)			0.008 (1.302)	0.005 (0.606)
Growth	−0.013** (−1.990)	−0.012 (−1.565)	−0.014** (−2.374)	−0.004 (−0.681)	−0.013** (−2.270)	−0.005 (−0.739)	−0.049** (−2.349)	−0.039** (−2.281)	−0.046*** (−2.584)	−0.040** (−2.448)
GDP per capita	−0.004*** (−5.687)	−0.003*** (−4.377)	−0.002*** (−3.209)	−0.002** (−2.429)	−0.002*** (−3.117)	−0.001** (−2.194)	−0.006** (−2.532)	−0.002 (−1.110)	−0.004** (−2.521)	−0.000 (−0.168)
CPIA	0.006*** (6.209)	−0.002* (−1.820)	0.002** (2.368)	−0.000 (−0.246)	0.002*** (2.616)	−0.001 (−0.532)	0.005* (1.787)	−0.007 (−1.190)	0.005* (1.844)	−0.005 (−1.044)
Population	0.049* (1.837)	0.225*** (4.268)	0.023 (1.052)	0.062** (1.996)	0.023 (0.942)	0.076** (2.229)	0.119* (1.655)	0.161 (1.355)	0.120 (1.613)	0.169 (1.422)
Dependent var. ($t − 1$)			0.472*** (22.199)	0.587*** (29.820)	0.466*** (21.152)	0.581*** (29.234)	0.320*** (3.104)	0.560*** (18.335)	0.335*** (2.686)	0.580*** (15.600)
Observations	1745	1747	1745	1747	1745	1747	1670	1672	1670	1672
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.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Table 3. *Multilateral and bilateral grants – 1982–2008*

	GLS, static panel		GLS, dynamic panels				Difference GMM			
	Multilateral grants	Bilateral grants	Multilateral grants	Bilateral grants	Multilateral grants	Bilateral grants	Multilateral grants	Bilateral grants	Multilateral grants	Bilateral grants
Total debt	0.006*** (6.969)	0.014*** (12.275)	0.002*** (2.931)	0.002*** (2.588)			0.009 (1.378)	0.012*** (2.825)		
Multilateral debt					0.006*** (3.350)	0.006** (2.221)			0.032** (1.993)	0.020* (1.946)
Bilateral debt					−0.000 (−0.400)	0.002 (1.494)			−0.000 (−0.042)	0.010 (1.490)
Private debt					0.003*** (2.629)	−0.000 (−0.159)			0.001 (0.368)	−0.006 (−0.472)
Growth	−0.007* (−1.745)	−0.003 (−0.450)	−0.008** (−2.402)	−0.007 (−1.620)	−0.008** (−2.571)	−0.008* (−1.714)	−0.051* (−1.830)	−0.026** (−2.545)	−0.047* (−1.934)	−0.025** (−2.501)
GDP per capita	−0.003*** (−7.863)	−0.003*** (−5.671)	−0.001*** (−3.925)	−0.001** (−2.042)	−0.001*** (−3.731)	−0.001* (−1.715)	−0.005** (−2.393)	−0.003* (−1.716)	−0.003** (−2.421)	−0.002 (−0.990)
CPIA	−0.000 (−0.433)	0.001 (1.116)	−0.000 (−0.748)	0.000 (0.131)	−0.000 (−1.055)	0.000 (0.142)	−0.000 (−0.162)	−0.003 (−1.108)	−0.001 (−0.558)	−0.001 (−0.737)
Population	−0.020 (−1.215)	0.097** (2.533)	−0.014 (−1.089)	0.031 (1.265)	−0.009 (−0.541)	0.038 (1.470)	0.019 (0.487)	0.143 (1.336)	0.032 (0.659)	0.118 (1.354)
Dependent var. $(t-1)$			0.519*** (20.683)	0.649*** (33.856)	0.501*** (19.373)	0.646*** (33.133)	0.272** (2.436)	0.520*** (16.980)	0.241 (1.634)	0.514*** (18.085)
Observations	1746	1748	1746	1748	1746	1748	1671	1673	1671	1673
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.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

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Table 4. *Resource allocation: HIPCs versus nonHIPCs – 1982–2008*

GLS, dynamic panels

	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants
H × Total debt	−0.002** (−2.329)	−0.003*** (−4.010)	0.002* (1.658)	0.001 (0.429)	0.002*** (2.716)	0.003*** (3.152)						
NH × Total debt	−0.002 (−1.356)	−0.001 (−0.549)	−0.001 (−0.823)	−0.008** (−2.293)	0.001 (1.001)	−0.003 (−1.284)						
H × Multilateral debt							−0.007*** (−2.768)	0.000 (0.280)	0.006 (1.400)	0.013*** (3.718)	0.009*** (4.178)	0.008*** (3.046)
NH × Multilateral debt							−0.046*** (−7.508)	0.002 (0.423)	−0.044*** (−5.689)	−0.005 (−0.578)	−0.001 (−0.426)	−0.007 (−1.327)
H × Bilateral debt							−0.002** (−2.175)	−0.009*** (−5.307)	−0.002 (−1.616)	−0.005* (−1.913)	−0.000 (−0.624)	0.003* (1.770)
NH × Bilateral debt							−0.002 (−0.901)	−0.009*** (−2.973)	−0.001 (−0.443)	−0.012*** (−2.798)	−0.000 (−0.127)	−0.003 (−1.151)
H × Private debt							0.000 (0.186)	0.007** (2.171)	0.006 (1.571)	−0.007 (−1.088)	0.003 (1.559)	−0.004 (−1.181)
NH × Private debt							0.010*** (4.854)	0.005*** (2.762)	0.013*** (4.096)	0.006 (0.835)	0.004** (2.398)	0.005 (1.007)
Growth	0.004 (1.026)	−0.003 (−0.909)	−0.013** (−2.276)	−0.005 (−0.713)	−0.008** (−2.546)	−0.007 (−1.611)	0.004 (0.920)	−0.003 (−1.037)	−0.014** (−2.303)	−0.005 (−0.757)	−0.009*** (−2.671)	−0.006 (−1.441)
GDP per capita	−0.000 (−0.579)	−0.000 (−0.395)	−0.002*** (−3.046)	−0.002** (−2.445)	−0.001*** (−4.081)	−0.001** (−2.098)	−0.000 (−0.857)	−0.000 (−0.854)	−0.002*** (−3.066)	−0.002** (−2.316)	−0.001*** (−3.896)	−0.001** (−2.135)
CPIA	0.003*** (5.136)	−0.001* (−1.840)	0.002** (2.372)	−0.000 (−0.260)	−0.000 (−0.943)	0.000 (0.049)	0.003*** (5.135)	−0.001** (−1.966)	0.003*** (3.194)	−0.001 (−0.610)	−0.000 (−1.113)	0.000 (0.070)
Population	0.039*** (2.704)	0.013 (1.326)	0.018 (0.874)	0.051* (1.705)	−0.016 (−1.276)	0.024 (1.009)	0.027* (1.777)	0.017 (1.517)	0.014 (0.546)	0.082** (2.294)	−0.010 (−0.639)	0.044 (1.593)
Dependent var. (t − 1)	0.435*** (20.646)	0.490*** (22.993)	0.472*** (22.229)	0.584*** (29.610)	0.520*** (20.847)	0.645*** (33.531)	0.438*** (20.979)	0.477*** (22.453)	0.458*** (20.918)	0.575*** (28.901)	0.488*** (18.832)	0.636*** (32.333)
Observations	1747	1747	1745	1747	1746	1748	1747	1747	1745	1747	1746	1748
No. of countries	75	75	75	75	75	75	75	75	75	75	75	75

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

5. ESTIMATION RESULTS

(a) 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 Eqn. (9), while columns 3 and 4 for the dynamic specification of the same equation that includes the first lag of the dependent variable.

Both the static and the dynamic versions show a significant negative reaction of net loans to the debt 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,[14] it is still consistent with a stable dynamics of the debt ratio, once we consider the highly concessional terms of IDA countries' debt and nominal GDP growth.[15]

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 $\rho \geqslant 0$, is strongly rejected for both specifications and estimation methods. 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 creditors 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 estimations, 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 takes 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 relative poverty, does not appear to play a role in loan allocation, nor does GDP growth, which is perhaps surprising in the case of multilateral organizations. Finally, IDA countries with large populations receive more loans from multilateral creditors.

(b) 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 reaction 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 Eqn. (10) in columns 1 and 2, and for its dynamic version in the columns that follow.

The static model estimation shows that net transfers provided by either multilateral or bilateral donors increased with the debt 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. After 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 reduction of the trade deficit as the debt increased. Indeed, the hypothesis of "unreactive transfers," that $\lambda \geqslant 0$, 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 debts held by multilateral, bilateral, and private creditors enter the regressions separately. While multilateral net transfers are unaffected by 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 from 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 has been found in the case of net loans. In fact, the coefficient on real GDP per capita is negative and significant in all but one regression 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 & Dollar, 2000; Collier & 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 & Rogoff, 2005; Cohen et al., 2007; Johansson, 2010; Radelet, 2005), this substitution appears to have provided official donors with an exit strategy from high levels of debt in addition to debt relief. This hypothesis is investigated in the next section.

(c) Multilateral and bilateral grants

The relation between grants and debt may shed light on whether grants were given to IDA countries to ease their debt adjustment process. Table 3 shows evidence on grant allocation for the static and dynamic specifications of Eqn. (11) and for GLS and GMM estimation methods.

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Table 5. *Resource allocation: HIPCs versus nonHIPCs – different periods: 1982–99 and 1999–2008*

	GLS, dynamic panels											
	1982–99						1999–2008					
	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants
H × 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 × 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)
Population	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	1096	1096	1096	1096	1096	1096	724	724	722	724	723	725
No. of countries	74	74	74	74	74	74	74	74	74	74	74	74

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

Both multilateral and bilateral grants increase with the debt 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, though with a *p*-value of 15%, (see column 7). 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 are entered separately. Both GLS and GMM estimations show that multilateral debt was a main determinant of multilateral grants, as opposed to bilateral 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 lends further support to the conjecture 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 show 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 regression 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' needs in their aid policy. On the other hand, the policy performance of IDA countries, as measured by the CPIA index, does not seem to be a relevant factor in grant 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 conventional grants, after controlling for poverty and cyclical indicators, 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.

(d) *HIPC versus nonHIPC countries*

If official creditors aimed at reducing their exposure to default risk, the reaction of net loans to the debt ratio could be stronger at higher levels of debt. Intertemporal sustainability can indeed be ensured by a nonlinear reaction that is strictly negative above a certain threshold debt ratio (Bohn, 1998). To capture possible nonlinearities, we distinguish between HIPC and nonHIPC countries rather than focusing on given thresholds of the debt ratio, which would be arbitrary and vary across countries depending on the quality of their policies and institutions (Kraay & Nehru, 2006).

The condition of being a HIPC country is a relevant proxy for having a high level of 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. Hence, to investigate whether a high debt ratio changes the allocation of net loans, net transfers, and grants, we allow the effect of debt on donors' decisions to be different in the case of HIPC and nonHIPC 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 nonHIPC country. Then, we estimate the following dynamic panel models:

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

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

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

The coefficients on the interacted debt ratios allow us to examine whether the effect of the debt ratio on net loans, net transfers, and grants differs between HIPC and non-HIPC countries.

The fixed-effects GLS estimates are shown in Table 4, and they are robust to a GMM estimation which is reported in Table 8 of the Appendix. Columns 1–6 present results for the total debt ratio, while columns 7–12 for the decomposition of the debt ratio in the shares held by multilateral, bilateral, and private creditors.[16]

Evidence of a different effect of the debt ratio on resource allocation across HIPC and nonHIPC countries is striking. At low levels of debt, as in the case of nonHIPC countries, the debt ratio plays no role in the creditor–donors' decisions on allocating either net loans or grants. The debt ratio significantly affects only bilateral net transfers but with a negative sign (see columns 2–6). By contrast, at high levels of debt, that is for HIPC countries, the reaction of net loans to the debt ratio is negative while grants increase. 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 nonlinearity 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 they took no action in the case of sustainable nonHIPC debt, is further evidence against defensive lending. On the other hand, both groups of donors provided more grants to HIPC countries as their debt increased. This was 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 lend further support to the hypothesis of defensive granting, 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 their loans to HIPC countries independently of whether they or bilateral creditors held the debt, bilateral creditors only reacted 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 nonHIPC debt. In fact, bilateral creditors reduced net loans as their debt share increased, without distinguishing between HIPC and nonHIPC countries, while multilateral lenders' reaction to their share of debt was even stronger in the case of nonHIPC countries. 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 grant allocation is shown in columns 11 and 12. Multilateral and bilateral grants significantly increase with the debt ratio in the case of HIPC countries while the debt has no effect in nonHIPC countries (except when it is owed to private creditors). The new interesting result is that only the share of debt held by multilateral creditors has an impact on the donors' decision to allocate more grants to HIPC countries. A higher share of debt owed to multilateral organizations increases 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 bilateral assistance to HIPC countries with a high share of bilateral debt mainly took 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 given to mitigate the impact of lower loans and to ease the debt adjustment process of HIPC countries, a strategy that we have called defensive granting. Since the correlation between grants and debt only emerges in the case of HIPC countries, the hypothesis of defensive granting offers a more convincing explanation of the positive link between grants and debt than poverty reduction and/or low growth. In fact, even if HIPC countries were in more need for grants 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., Celasun & Ramcharan, 2005; Marchesi & Sabani, 2007; Ramcharan, 2003).

(e) Robustness checks

Thus far we have provided extensive evidence that the lending policy of official creditors was far from defensive through 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 2000s when sustainable debt levels were achieved through debt-stock reductions. Moreover, one may think that the negative relation between net loans and the debt ratio is spurious; that is, 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.

To address such concerns and to check the robustness of our results, we divide 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 nonHIPC countries has changed with a greater use of debt relief.

The results of the estimation of models (12)–(14), which distinguish between HIPC and nonHIPC countries, over the two sub-periods 1982–99 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 1982–99. 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 toward HIPC countries as multilateral loans no longer react to the debt ratio over the most recent period (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 with respect to their grant allocations. 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 where a positive relation with the debt ratio of nonHIPC countries emerges instead. A tentative explanation of this result is that, because of multilateral debt relief in the 2000s, bilateral assistance was no longer needed to ease the debt adjustment process in HIPC countries that were highly indebted to multilateral organizations.

Interestingly, the new strategy has 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 for this country group. 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 even during the most recent period. The new regime also appears to considerably soften the budget constraint of nonHIPC countries. While in the period 1982–99 net transfers to nonHIPC countries significantly decrease 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 point 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 policies and good governance in aid alllocation 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 which was absent in the earlier period (in line with the results of Claessens et al., 2009). Multilateral net loans also depend positively on the CPIA index in both periods but this effect is no longer significant in the most recent period, though the coefficient remains the same. The latter result contrasts with 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.

We have also checked the robustness of our results to the use of an estimate of the output gap (instead of the growth rate of GDP) in models (9)–(11), as suggested by Bohn (1998) and Mendoza and Ostry (2008). Specifically, we have decomposed the GDP series, using the Hodrick–Prescott fil-

ter, into the output gap and a nonlinear trend which was used to normalize the debt stock and the dependent variables. The estimates obtained using the output gap yield similar results and are presented in Table 9 of the Appendix.

Finally, as a large literature documents the importance of geopolitical considerations in the allocation of aid (especially in the case of bilateral donors), we examined whether more aid was allocated to countries voting in line with the United States or with key G7 countries in the United Nations General Assembly (UNGA). In particular, we introduced in Eqns. (12)–(14) two dummy variables for whether a country votes (more or less) in line with the United States and the key G7 countries in the UNGA and also considered a dummy for temporary membership to United Nations Security Council (UNSC). [17] As shown in Table 10 of the Appendix, while voting in line with G7 countries significantly increases multilateral grants and net transfers, voting in line with the US and UNSC membership does not affect aid allocation. The index of "Political Rights and Civil Liberties" (PRCL) is also not significant. However, what is important for our analysis is that the introduction of these controls does not qualitatively change our results regarding the effect of the debt ratio on aid allocation.

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 (1998) 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 effects of debt and other determinants on official donors' allocation of net loans, transfers, and grants have been estimated for dynamic panel data models, 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 for HIPC countries. This suggests that official creditors reacted to the debt crisis of the 1980s/1990s by reducing net loans to HIPC countries 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 that net transfers and, thus, trade deficits (net of FDI) are insensitive to the debt ratio, except for nonHIPC countries in the period before 1999. This suggests that official donors substituted grants for loans so as to leave net transfers to HIPC countries 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 accommodate the reduction in net loans and to ease the 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 debts 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 efforts.

The results of our analysis clearly show that the amount of grants that HIPC countries 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 foreign aid.

Since grants have increased as a share of total aid that definitely dominate loans, donors' selectivity in the allocation of grants will be crucial for aid effectiveness. Greater future selectivity requires that high debts do not affect donors' decisions on allocating conventional grants. Although 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 Initiatives) such countries are still likely to rely on domestic debt and nonconcessional borrowing, which threaten the sustainability of their total debt (Arnone & 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 crucial that the eventual accumulation of new debt will no longer distort donors' behavior.

7. UNCITED REFERENCE

Powell (2003).   Q3

NOTES

1. The end of the Cold War softened the pressure of geopolitical motivations in aid allocation, and globalization has increased private capital flows to developing countries.

2. Indeed, as emphasized by Dixit (2009), Easterly (2006, 2008), Rajan (2008) and Marchesi, Sabani, and Dreher (2011), institutions, organizations, and policies are context-specific and thus International Financial

Institutions have been urged to base their recommended policy changes 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 level of poverty. The latter is defined as GNI per capita that is below an established threshold which is updated annually (US $1165 in fiscal year 2011). The IDA-Blend category is used to classify countries that are eligible for IDA resources on the basis of GNI per capita but also have limited creditworthiness to borrow from IBRD.

4. See Radelet (2006) for a literature review that also covers aid allocation.

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

6. See Powell and Bird (2010) for a review of the literature on the relation between aid and debt.

7. The idea is that a creditor may want to extend new loans to enable the borrower to repay the existing ones and avoid default, if the creditor expects a future improvement in the borrower's capacity to pay or wants to postpone the recording of a loss.

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

9. The composition of 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 6) 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 debt service payments made to creditors.

12. The Bank's Country Policy and Institutional Assessment (CPIA) assesses the conduciveness of a country's policy and institutional framework to poverty reduction, sustainable growth, and the effective use of development assistance. The CPIA's 16 criteria are grouped into four clusters that are equally weighted to derive the overall CPIA rating, including: economic management; structural policies; policies for social inclusion and equity; and public sector management and institutions.

13. Controlling for the lagged value of loans also removes the correlation between current loans and previous period debt that arises if loans are autocorrelated, because previous period loans accumulate into the stock of debt.

14. Mendoza and Ostry (2008) find a response of the primary surplus to the debt ratio that implies a 2% correction of the growth rate of the debt ratio in industrial countries and a 3.6% correction in the case of emerging economies. However, these stronger responses have to be compared to the greater market return on debt of the latter countries.

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

16. 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.

17. 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 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.

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APPENDIX A

Table 6. *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

NonHIPC 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

[a] Classified as HIPC in 2001.
[b] Classified as nonHIPC in 2001.

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Table 7. *Variables definition, summary statistics and data sources*

Variable	Mean	SD	Definition	Source
Multilateral net loans	0.02	0.03	Multilateral long-term loans minus debt service (to GDP) – including purchases less repurchases 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 8. *Resource allocation: HIPCs versus nonHIPCs – 1982–2008*

	Difference GMM, dynamic panels											
	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants
H × Total debt	−0.002* (−1.675)	−0.005** (−2.212)	0.007 (1.001)	0.007 (1.277)	0.010 (1.482)	0.011*** (2.695)						
NH × Total debt	−0.005 (−1.161)	−0.007* (−1.882)	−0.003 (−0.537)	−0.009 (−1.249)	0.001 (0.328)	0.002 (0.284)						
H × Multilateral debt							−0.006* (−1.903)	0.002 (0.520)	0.026 (1.491)	0.022** (2.366)	0.034** (2.185)	0.019** (1.962)
NH × Multilateral debt							−0.046*** (−3.348)	−0.001 (−0.102)	−0.048*** (−2.577)	0.001 (0.038)	0.001 (0.141)	−0.006 (−0.424)
H × Bilateral debt							−0.002 (−0.417)	−0.012*** (−3.569)	−0.002 (−0.300)	0.000 (0.011)	−0.002 (−0.670)	0.012 (1.561)
NH × Bilateral debt							−0.001 (−0.155)	−0.014* (−1.814)	0.002 (0.303)	−0.022*** (−2.881)	0.000 (0.149)	−0.004 (−0.819)
H × Private debt							0.001 (0.125)	0.012** (2.120)	0.006 (0.615)	−0.014 (−0.749)	0.004 (0.482)	−0.018 (−0.983)
NH × Private debt							0.014*** (3.920)	0.003 (0.560)	0.017*** (3.261)	0.011 (1.156)	0.004 (1.460)	0.014*** (3.679)
Growth	−0.006 (−0.727)	−0.020 (−1.438)	−0.050** (−2.421)	−0.043** (−2.496)	−0.047* (−1.799)	−0.025** (−2.528)	−0.004 (−0.580)	−0.017 (−1.280)	−0.047** (−2.525)	−0.043*** (−2.645)	−0.045** (−2.023)	−0.025*** (−2.641)
GDP per capita	−0.001 (−0.966)	0.000 (0.265)	−0.006** (−2.356)	−0.002 (−1.160)	−0.004** (−2.310)	−0.003* (−1.743)	−0.002** (−2.146)	0.001 (0.756)	−0.004** (−2.475)	−0.002 (−0.981)	−0.002** (−2.199)	−0.002 (−1.162)
CPIA	0.004** (2.135)	−0.008 (−1.619)	0.004 (1.197)	−0.010* (−1.696)	−0.002 (−1.132)	−0.003* (−1.804)	0.005*** (3.237)	−0.005 (−1.273)	0.004 (1.550)	−0.007 (−1.151)	−0.001 (−1.070)	−0.002 (−0.968)
Population	0.080*** (2.805)	0.033 (0.871)	0.103 (1.559)	0.139 (1.210)	−0.003 (−0.081)	0.113 (1.232)	0.067** (2.469)	0.033 (0.926)	0.091 (1.209)	0.150 (1.271)	0.015 (0.360)	0.118 (1.234)
Dependent var. (t − 1)	0.366*** (6.308)	0.491*** (14.736)	0.304*** (2.818)	0.538*** (18.930)	0.314*** (2.820)	0.541*** (19.871)	0.385*** (6.923)	0.517*** (13.276)	0.278** (2.134)	0.536*** (15.635)	0.303** (2.048)	0.546*** (15.932)
Observations	1672	1672	1670	1672	1671	1673	1672	1672	1670	1672	1671	1673
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.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

Table 9. *Net loans, net transfers and grants – 1982–2008*

	GLS, dynamic panels with output gap											
	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral 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)
Population	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)
Dependent 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	1749	1749	1747	1749	1748	1750	1749	1749	1747	1749	1748	1750
No. of countries	75	75	75	75	75	75	75	75	75	75	75	75

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

Table 10. *Voting variables and resource allocation – 1982–2008*

	GLS, dynamic panels					
	Multilateral net loans	Bilateral net loans	Multilateral net transfers	Bilateral net transfers	Multilateral grants	Bilateral grants
H × 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 × 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)
Population	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	1701	1701	1699	1701	1700	1702
No. of countries	73	73	73	73	73	73

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

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