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International Debt Forgiveness: Who GetsPicked and Its Effect On The Tax Effort OfDeveloping Countries

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Abstract

We explore whether the expectation of debt forgiveness discourages developing countries from attaining sustainable fiscal independence through improving their tax effort. While the international financial community advises poor countries to improve revenue mobilization, the same international community routinely bail-out poor countries that fail to meet their loan repayment obligations. The act of bailing-out creates an expectation about receiving debt forgiveness time and again in the future. The key prediction of our theoretical framework is that in the presence of debt forgiveness, countries' tax efforts will decline and more so the higher the intensity of the bailouts. We test this using data for 66 countries from 1989 to 2008. We find that debt forgiveness is significant in lowering tax effort. In addressing potential endogeneity issues we also find that the international financial community has been more forgiving to countries that exert lower tax effort. The results are robust to various specifications.

Keywords: soft budget constraint, debt forgiveness, tax effort, moral hazard

JEL classification: F34, H30, H87, O23.

Introduction

One of the most important development issues facing the international community for several decades has been the low levels of public expenditures in infrastructure and social services in developing countries.[1] Low levels of public spending in those areas may have been responsible for placing many of these countries in a poverty trap. Breaking out of this trap requires, among others, a combination of international aid in the form of technical assistance with low cost loans and increased sustained tax effort by the developing countries themselves.[2] However, international aid, especially when it is accompanied with debt forgiveness, can interact with domestic tax effort in some perverse ways, which can compromise the sustainability of these fundamental development goals. And even though, there has been considerable interest in the economic literature on the separate topics of tax effort in developing countries,[3] and international assistance and debt forgiveness,[4] the interaction between these two issues has not yet been thoroughly explored in the literature.

The issue of debt forgiveness has generated much debate in both the academic and policy literatures, and rightly so. Under the Heavily Indebted Poor Country (HIPC) Initiative started in 1996 and the Multilateral Debt Relief Initiative (MDRI) started in late 2005, financial assistance to some developing countries amounted to $117 billion in nominal terms over the last decade.[5] In 2007, this level of assistance represented about one half of the GDP of the heavily indebted countries put together. In particular, at the June 1999 Cologne summit, the G-7 decided to write off approximately $100 billion of developing countries sovereign debt. The decision to write-off these debts as opposed to providing a temporary solution through debt rescheduling was seen as necessary to improve the supply of resources in these countries and to enhance investments, economic growth and development.[6] The Jubilee 2000 Campaign[7] is another initiative that called

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[1] See World Development Reports [1998/1999; 2000/2001; 2004]

[2] Tax effort is typically defined as the ratio of actual tax collection to potential tax collections, the latter defined econometrically by taking into account other countries' experiences raising tax revenues and controlling for tax bases and other determinants of overall tax collections. Countries with low tax to GDP ratios typically suffer from low tax effort but the two terms clearly are not always perfectly interchangeable. See, for example, Cyan et al. 2013. In this paper we will refer loosely to low tax effort as a low, or lower than expected, tax to GDP ratio.

[3] See Teera and Hudson (2004); Alm, Martinez-Vazquez and Schneider (2004); Bird, Martinez-Vazquez and Torgler (2004; 2008)

[4] See Neumayer (2002); Ndikumana (2004); Freytag and Pehnelt (2009)

[5] See www.worldbank/org/

[6] Initiatives such as the Classic initiatives, Toronto terms Initiative and the Paris Club Initiative were implemented to assist with debt burden of these countries

for the cancellation of "third world" debt. This initiative was more extensive than the HIPC initiative in that the amount earmarked for debt forgiveness ranged between $200 and $300 billion and it covered 52 countries (compared with 41 under HIPC). However, with the realization that countries still had huge debt stocks, a 100 percent forgiveness of loans to HIPC graduates was granted at the June 2005 *G-8* summit. These more generous forgiveness terms sought, as before, to ease the debt burden of developing countries and encourage physical capital accumulation which was expected would eventually lead to higher incomes and a greater share of national income in government coffers.

However, the chain of events linking debt forgiveness to higher incomes and finally to higher tax revenues is not as straightforward as one may think because there is at least one inherent moral hazard problem associated with the provision of debt forgiveness. The primary issue is that debt forgiveness has the potential to lower financial discipline because recipient governments may act in future years on the expectation that new bailouts will be received. Therefore, the act of providing debt forgiveness today can cause countries to come to expect more debt forgiveness in the future ultimately leading to a 'softening' of their overall budget constraint. One possible outcome of a *soft* budget constraint is that developing countries may not have an incentive to bolster their own tax effort and therefore fail to make development a sustainable goal.

In this paper we ask the question of whether the expectation of debt forgiveness actually acts to soften developing countries' budget constraints by investigating in particular how debt forgiveness, after controlling for other economic and institutional variables, does actually affect tax effort in those countries.

Tax effort reveals a government preference for taxing its existing tax base.[8] In general, tax effort in developing countries is considerably lower than in developed countries.[9] Low tax effort in turn leads developing countries to face difficulties, sometimes extreme, to keep up with their debt service payments and all other budgetary demands.

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[7] Jubilee 2000 campaign was started in the early 1990s in over 40 countries, with the main objective being the cancellation of third world debt by the year 2000.

[8] See Bahl, R. (1971); Teera et al. (2004); Gupta et al (2003; 2013); Alm et al. (2004); Bird et al (2004; 2008), Mkandawire (2010); and Cyan et al.(2013).

[9] The average tax revenues found in many developing countries is around 10-15 percent which is relatively low when compared to say OECD countries with tax collections around 40 percent (see, e.g., Kaldor (1963) and Tanzi and Zee (2000:303)). Countries such as Niger and Guatemala all have below average tax revenues and are struggling to increase this above 11 percent.

Beyond investigating the impact of debt forgiveness on tax effort, one must ask whether a reverse causation is actually in place; that is, whether countries with lower tax ratios are actually more likely to be provided with more debt forgiveness.[10] Dealing with this potential endogeneity problem is important from an empirical estimation viewpoint, but also important from a policy viewpoint. Clarifying this issue allows to us to discern whether, on the one hand, the international financing community is saying one thing –advising developing countries to become more self-reliant on their own domestic tax revenues-- but in reality practicing something very different—by de facto discouraging them from doing so. For example, the Paris club creditors have been urging developing countries (HIPC) to raise their revenue collections above 15 percent of GDP to qualify for assistance under the HIPC initiative; however, those countries that have lower tax to GDP ratios have been treated preferentially in terms of debt forgiveness and differently in general from non-HIPCs in that they have received larger debt reductions than any other country group.[11]

One of the underlying reasons given in the literature for the low tax effort observed is the lack of political will to tap into existing 'taxable capacity" with current tax structures and, in general, to increase tax collections. Other factors that have been identified include weak administrative capacity, high levels of income inequality, high levels of corruption, lower levels of trade openness, a less developed manufacturing sector—traditionally easier to tax—and predominance of the agricultural sector—traditionally harder to tax.[12] However, as was put by Kaldor (1963) many decades ago, even the poorest of countries have sufficient 'capacity' both in economic and administrative terms to tax more than they do.[13] Therefore, it is important to ask what may actually be behind the overall reluctance among those countries to tax themselves.

In this paper we focus on one potentially important factor that so far has not been adequately researched in the literature; whether the otherwise well-intentioned actions of the international financial community involving debt forgiveness has been a cause of the low tax effort observed among many developing countries. Empirically we use panel data for 66 countries over the period 1989-2008 and control for fixed country effects and year effects. Our

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[10] The criteria used by the international financial community to include a country in the list of those deserving debt forgiveness include low levels of revenue generation. Low taxes are also likely to be present in other criteria used such as large budget deficits or low levels of spending on infrastructure and social services.
[11] See www.clubdeparis.org/
[12] See, for example Gupta (2003); Alm, Martinez-Vazquez and Schneider (2004); and Bird et al. (2008).
[13] See Kaldor (1963)

main finding is that debt forgiveness does actually seem to trigger a significant decline in the actual tax to GDP ratios, implying that debt forgiveness acts for developing country governments as a convenient substitute for otherwise politically costly efforts to increase their own tax revenues.

The rest of the paper is organized as follows. Section two briefly reviews the related literatures on tax effort and debt forgiveness. Section three discusses a simplified conceptual framework. The empirical model and a discussion of the data follow in sections four. The estimation results are discussed in section five. The conclusions and policy implications are presented in section six.

Literature Review

Tax revenues are essential for providing public goods and services in a sustainable manner. For Kaldor (1963) the key indicator of whether a country can transition from a position of aid-dependency to one of economic self-sufficiency depends on whether a state learns how to tax, thereby halting the vicious cycle of aid reliance. Aid dependency has long been recognized for its potential deleterious effects on domestic tax revenue collections (Bauer, 1972; Azam et al.,1999).

For the most part, the potential effects of aid dependency were not studied in the traditional tax effort literature (Lotz and Morrs, 1967; Bahl 1971; Chelliah 1971; Chelliah et al. al. 1975). More recently a number of studies have investigated the impact of foreign aid on tax effort, although none has investigated the impact of debt forgiveness. The evidence obtained thus far on the impact of foreign aid is inconclusive. First, there is a group of papers that have found evidence of a negative impact of foreign aid on tax collections as a share of GDP. Ghura (1998) examined the effect of the conventional tax effort variables and foreign aid in a panel of 39 sub-Saharan African countries for the period 1985-1996 and found foreign aid to be significant and negatively correlated with the share of taxes to GDP. Feyzioglu, Swaroop and Zhu (1998), using a panel of 38 developing countries to study the relationship between foreign aid and public spending in recipient countries, found that an increase of $1.00 in foreign aid leads to an increase of $0.33 in total government spending with the remainder being used for tax relief. Brautigam (2008) categorized African countries according to their aid dependency ratio – the share of aid in GDP – and found that 71 percent of these countries had tax effort lower than 10 percent. Also,

Remmer (2004) using a panel of middle and lower-income countries for the period 1970-1999 provides evidence of depressing effects of aid on domestic revenue mobilization.

There are some studies that find zero-effect of foreign aid. Leuthold (1991) used a panel of 8 African countries for the period 1973-1981 and found a negative although statistically insignificant effect of aid on tax revenues. Teera and Hudson (2004) used data for 116 developed and developing countries for 1975-1998, and also found a zero effect of aid on tax effort. There are also a few studies that found a positive significant effect of foreign aid on tax collections, including Franco-Rodriguez (2000), and for the case of Kenya, Mavrotas (2002).

While all the above studies have looked at the impact of overall foreign aid, a few more studies have taken the composition of aid into account. Some evidence emerges in this group of studies that foreign aid in the form of grants, which do not have to be repaid, tend to have larger negative effects on domestic tax revenue mobilization than foreign aid in the form of loans, which, of course, are supposed to be repaid.[14] The distinction between grants and loans is closer to our interest on the impact of debt forgiveness since this latter could be also considered as a desperate ex-post type of grant. However, the evidence for effects of grant vis-à-vis loans is still mixed. In an earlier study, Heller (1975) found for a panel of 11 African countries that both grants and loans lead to a reduction in domestic taxes. On the other hand, Otim (2004) and Brun et al. (2007) found an overall positive effect of both loans and grants on tax revenue mobilization. Other researchers have found differentiated results for loans and grants. Khan and Hoshino (1992) found for a sample of five South and Southeast Asian countries over the period 1955-1976 that grants reduce tax revenue mobilization effort while loans increase it. Gupta et al.

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[14] For this general argument see Brautigam, Fjeldstad, and Moore (2008). Note that some studies have focused exclusively on the role of grants. For example, Odedokun (2003) found that grants reduce tax collection efforts in 72 developing countries. Other papers have looked at the related question of whether aid "strings" are successful at restricting the behavior of government. For example, Cashel-Cordo and Craig (1990) found that the type of conditionality in foreign assistance to be important in determining the impact on the public sector budget. In the case of low conditionality loans used by the IMF for mainly budget support in developing countries those authors found large negative effects on current revenues. In another related literature, Khilji and Zampelli (1994) examined the tax revenue effect of U.S military and non-military assistance in the cases of 8 major recipients over the period 1972-1987. They found U.S. military assistance and non-military assistance result in domestic tax reductions of the recipient countries.

(2003) using a panel of 107 developing countries over the period 1970-2002 also found the possible substitutability of tax revenues for grant monies but not so for loans.

There are finally in the literature several country case studies, which have also found mixed results. For example, Gang and Khan (1990) in a time series study on India found that both grants and loans generally go into development projects leaving tax revenue mobilization unchanged. Pack and Pack (1990) also found that in Indonesia foreign aid stimulated a more than approximate change in expenditures and did not lead to a reduction in domestic revenue-raising.

In summary, even though the impact of foreign aid on tax effort was not considered in the earlier conventional literature on tax effort, a large number of more recent studies have analyzed those effects. Overall, the evidence is mixed. Some studies have found foreign aid to affect negatively tax mobilization effort, while other studies have found no significant effects and yet others have found a positive stimulating effect on tax effort. Some of the differences in empirical findings can be attributed to the different country samples and time periods used and also to the different methodologies. But clearly, the impact of foreign aid on tax effort realized by developing countries is far from settled. From the perspective of this paper, it is important that none of the previous studies have examined the potential impact of debt forgiveness on the tax mobilization effort of developing countries, which is the main theme of this paper. If different forms of foreign aid may have a negative impact on the tax revenue effort of recipient countries we would expect this to be more strongly evident in the case of debt forgiveness given that there are less strings attached ex-post, that it is bulky and more noticeable to policymakers, and that it is likely to generate expectations of further debt forgiveness down the road.

In an attempt to answer our second question of whether a reverse causation is actually in place, that is, whether countries with lower tax ratios are actually more likely to be provided with more debt forgiveness, we begin by looking at who gets selected for debt forgiveness. A striking feature of debt relief is that it is highly persistent over time, with many countries benefiting from repeated rounds of debt forgiveness whereas other countries never receive it. Freytag and Pehnelt (2009), for example, found that countries that received debt forgiveness in the past were more likely to receive it again. This is suggestive of path dependence for debt forgiveness. In our sample of 66 developing countries, 25 never received debt forgiveness over the period 1989-2008, whereas another 41 countries have receive six or more rounds of debt forgiveness during the same 20-year period.

The existing literature of debt relief/forgiveness shows that the impact of governance on debt relief is mixed. Alesina and Weder (2002) document that less corrupt countries are not more likely to get either aid or debt relief. Chauvin and Kraay (2007) on the other hand, found that countries with better policies are more likely to receive aid and also that large debtors vis-a vis multilateral creditors are more likely to receive debt relief in a sample of low-income countries only. Also, Neumayer (2002) found that some measures of governance are associated with debt relief but others are not.

The evidence that debt relief goes to smaller, or poorer, countries is mixed. Neumayer (2002) found that a country's per capita GDP and its external debt share of GDP are crucial determinants of debt relief. These indicators of need suggest that the greater the need the more debt forgiveness will be provided. However, Freytag and Pehnelt (2009) found that the actual debt burden of many of these poorer countries was not crucial in determining whether or not they receive debt forgiveness.

Conceptual Framework

Creating a soft budget constraint

The origins and consequences of the international practice of debt forgiveness may be best understood within the model of the Soft Budget Constraint (SBC) (Kornai 1980; 2003), which develops the expectation of a bailout by an entity (in this context, an aid-receiving country government), in the event of financial distress.[15] In the context of this paper, the SBC is caused by a lack of commitment on the part of the international financial community to not bailout "profligate" poor country governments *ex post,* creating the expectation that additional bailouts will come in the future. The debt forgiveness or bailout itself –which can be interpreted as an ad hoc 'additional funding' provided to poor country governments when they would otherwise be unable to service their obligations – does not constitute the SBC, but rather it is the expectation of bailouts in the future that do (Rodden,2003).

Bailouts as a sequential game

The formation of bailout expectations can be analyzed as a sequential game played between the international financial community and an aid receiving government. In this

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[15] Several other authors have further investigated the potential causes of the SBC, for example, Wildasin (1999) and Li et al. (1998); and Qian et al. (1998).

framework, it is assumed that the aid receiving government does not have complete information about the payoffs accruing to the international financial community or donor country. The international financing community may be one of two types – committed or not - to *never* allow bailouts and the aid receiving governments must make an assessment about the probability that the lender/donor is the committed type.

In the first stage of the game the international financial community must decide whether or not to provide loans. In addition, at this stage of the game it is assumed that the international financial community will also make an announcement that it is its policy to *never* allow bailouts. Officials in the aid receiving government will try to assess the credibility of this commitment, making its move at the second stage of the game in light of these assessments. At this stage, those government officials can either spend and borrow within their means, or over-borrow and attempt to shift the costs onto others. If officials in the aid receiving government borrow within reasonable limits to finance its necessities, then the game ends. However, if the officials engage in over-borrowing they may expect that the international financing community will eventually take over its obligation through providing bailouts. The donor country then makes the third move, and it must decide either to provide a bailout or refuse it. If the costs to the international financing community of not providing additional funds/bailouts exceed those of providing them, the donor reveals itself to be non-committed. If the government officials in the borrowing country have strong beliefs that the international financing community is not committed at the first stage of the game to a no-bailout policy, it has incentives to raise too little tax revenue. One consequence of raising too little taxes is that debt servicing costs will eventually become burdensome as the recipient country will find it increasingly difficult to keep up with servicing charges. The eventual built up of unpaid debt servicing charges will mean that the recipient country will require a bailout to keep afloat. Once a bailout is provided, government officials of the recipient country will form the expectation that additional bailouts will be provided again in the future. In contrast, if the government officials of the recipient country believe that the donor will be committed to a no-bailout policy when making its fiscal decisions at the first stage, the recipient country will spend within its means by raising domestic taxes.[16]

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[16] The lack of credible commitment may have different causes such as, donors being viewed as having implicitly guaranteed the liabilities of the borrowing country (Bai and Wang, 1999) or recipients being seen as "too large to fail" (Wildasin, 1999). But whatever its causes, current bailouts can lead recipient countries to form expectations about future bailouts possibilities.

Theoretical predictions

The existence of expectations for a future bailout can be signaled by the accumulated share of debt forgiveness relative to GDP in the past. The simple conceptual framework of "bailouts as a sequential game" above is sufficient to yield *a priori* expectation for the sign of this variable signaling the presence of a soft budget constraint in an empirical model trying to explain the level of tax collection effort of a recipient country. The accumulated stock of past debt forgiveness is likely to create a memory in the minds of recipient country officials to the extent that they come to expect that their debts will be forgiven today and in the future. Hence, the higher the accumulated share of debt forgiveness relative to GDP can negatively affect tax revenue collections.

Empirical Strategy

Our ultimate goal is to test the role of debt forgiveness on the tax mobilization effort of developing countries. Because actual performance in mobilizing revenues can be one of the criteria used by donors to select what countries enter a particular round of debt forgiveness, we need to allow for this potential endogeneity in our estimation approach. In order to do so, a two-equation model is used, with debt forgiveness and tax revenue share being the endogenous variables. To consistently estimate these equations, we will apply two-stage least squares (2SLS) technique. The specification of the system will make clear what variables are available as instruments. We turn now to a discussion of the explanatory variables in our tax effort model, our first equation in the system of equations:

$$TE_{i_t} = \beta_1 DEBTFOR_{it} + \beta_2 INF_{it} + \beta_3 POP_{i_t} + \beta_4 XM_{i_t} + \beta_5 NONAGRIC_{it} + \beta_6 LOANS_{it} + \beta_7 (ODA\_LOANS)^2{}_{it}$$
$$+ \beta_8 GRANTS + \beta_9 (ODA\_GRANTS)^2{}_{it} + \beta_{10} GOV_{it} + \gamma_i + \lambda_t + \mu_{i_t}$$

This equation explaining tax mobilization effort is a standard linear specification, with the addition of the debt forgiveness variable. In order to properly estimate this model, we need to account for the role of other determinants of the tax collections to GDP ratio. This will ensure that any inferences about the relationship between debt forgiveness and tax effort are robust. The more recent empirical literature on the determinants of the tax to GDP ratio (Bird et al. 2008; Cyan et al. 2013; Mkandawire, 2010; Clist et al. 2011; Gupta et al. 2014) provides guidance concerning those factors, and we follow this literature. Our strategy is to augment the baseline specification to include the variable signaling the presence of a soft budget constraint, namely, accumulated debt forgiveness as a share of GDP.

In this model, i indexes the countries in the sample and t the time period; *TE* denotes the country's level of tax revenue mobilization effort measured as tax revenues as a share of gross domestic product (GDP); *DEBTFOR* is the accumulated debt forgiveness share of GDP; *POP* is the rate of population growth, *XM* is the degree of openness of the economy measured as the share of exports plus imports in gross domestic product (GDP); *NONAGRIC* represents the non-agricultural sector value added as a share of GDP; *LOANS* and *GRANTS* are the two components of official development assistance (ODA) received by the country in year t; *INF* is the inflation rate ; and GOV is a measure of governance. γ_i and λ_t represents country fixed effects and time fixed effects respectively. μ_{it} denotes the idiosyncratic error term.

Now, besides our key explanatory variables, the other explanatory variables employed in the basic model follow the best practice in the conventional tax effort literature. Demographic characteristics may play a role. In particular, the rate of population growth may impact tax effort negatively if the population grows at a rate faster than the tax system is able to accommodate this change, failing to capture new taxpayers. A frequently used control variable is the availability of 'tax handles' in a country typically measured by the ratio of exports plus imports to GDP or the degree of openness of an economy. It is expected to positively influence the level of tax effort because trade-related taxes are easier to collect, relative to say income taxes or other domestic taxes since the goods involved enter or leave the country at specified locations. In a related manner, the sectoral composition of national income may also affect the ability to collect taxes. In particular, the larger the relative importance of the agriculture sector in GDP, the lower the need to spend on governmental activities and services, since many public sector activities and services are city-based (Tanzi, 1992). Also it is often the case that governments decide for political reasons to exempt from taxes a large share of agricultural activities (Bird et al. 2008). Agriculture is also well-known to be a hard-to-tax sector. Therefore, a higher share of agriculture in GDP is expected to lead to lower tax ratios. The rate of inflation may also play a role in determining tax revenues collections. It is hypothesize that higher inflation rates, possibly associated with the generation of seigniorage and unindexed tax systems will likely produce increases in tax revenues (Gupta, 2014).

Foreign aid - consisting of loans and grants – can also impact the level of tax effort in an economy. It has been argued in the international aid literature that grants are free resources that substitute for domestic revenues, while the burden of future loan repayments induces

policymakers to mobilize taxes or, at least, to protect current levels of revenue protection (Brautigam, 2008). Therefore, we would expect grants relative to GDP to have a negative effect on the tax ratio while loans should have a positive or no effect. Further, we include the squared terms for both loans and grants to try to account for any non-linearity that may exist in the relationship between them and tax revenues. Finally, the types and quality of institutions in a country can also impact the amount of tax revenues collected. It is argued that institutional quality can either magnify or mitigate tax revenues. Countries with weak institutions for example, may undermine the ability of the authorities to collect taxes (Bird et al. (2008), and Cyan et al. 2013).

We will now turn our attention to our second question of whether or not a reverse causation is actually in place. The variables included in the debt forgiveness model will be informed by that literature, with the tax revenues variable being an addition to this model. The debt forgiveness equation is estimated in the form:

$$DEBTFOR_{it} = \gamma_1 TE_{i,t-1} + \gamma_2 EXTDEBT_{i,t-1} + \gamma_3 \log(Y_{i,t-1}) + \gamma_4 ARMS_{i,t-1} + \gamma_5 POP_{i,t-1} + \gamma_6 AID_{i,t-1} + \gamma_7 GOV_{i,t-1}$$
$$+ \gamma_8 DEBTSER_{i,t-1} + \alpha_i + \upsilon_{it}$$

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In this model, i indexes the countries in the sample and t the time period. *DEBTFOR* is our debt forgiveness construct measured as the accumulated debt forgiveness share of GDP; *TE* is as defined above. In addition to the share of external debt to GDP, *EXTDEBT* which captures the need of a country for debt forgiveness, the debt service to export ratio, *DEBTSER* is also included in this specification to help capture the needs of a country for debt forgiveness. One other variable that is suggestive of the needs of a country is the log of per capita GDP denoted by *Y* (measured in logs of constant US dollars). The political-strategic variable used is arms import to total imports denoted by *ARMS*. The rationale behind this variable is that donor countries may be more accommodative to provide debt relief to developing countries if there are some military strategic issues involved, and this may be captured by the relative importance of arms imports. *AID* is measured as Official Development Assistance and the argument for its inclusion is that higher levels of aid will be associated with higher debts. This higher level of debt sometimes become unsustainable and therefore requires debt forgiveness if these countries are to have any reasonable chance at growth and development. *GOV* is our measure of governance. It is argued that the better the quality of governance in a country the more likely it would be for that country to receive at least one round of debt forgiveness (Neumayer, 2002; Chauvin and Kraay, 2007;

and Freytag and Pehnelt, 2009). α_i is country-specific fixed effects and υ_{it} denotes the idiosyncratic error term.

Equations (1) and (2) together comprise the model linking tax effort and debt forgiveness. Tax effort is a function of debt forgiveness, among other things, and debt forgiveness is a function of several variables, including tax revenues. Thus tax revenues share and debt forgiveness are treated as endogenous variables whose values are determined jointly in a two-equation system comprising equations (1) and (2). The order conditions for identifiability indicate that both equations are over-identified. Neither of these equations could be consistently estimated via OLS, since the debt forgiveness variable in each equation is correlated with the respective error term.

Data

A panel dataset covering 66 developing countries for the period 1989-2008 is used in the estimation. The starting year for our sample is determined by the availability of data for our variable of interest, debt forgiveness. Table 1 presents the summary statistics of all the variables used in the regressions. Our main explanatory variable of interest is the accumulated stock of debt forgiven as a percentage of constant prices GDP, which we consider as most relevant toward the formation of bailout expectations. Debt forgiveness, as defined in the Global Development Finance (GDF) Manual of 2008 is the amount of the debt stock, principal, and/or interest that was not paid or forgiven from the beginning of the observation period to the particular year being observed.[17] This figure does not include the amounts for either debt buybacks or debt swaps since those operations do not reflect a reduction/change in the debt stock.

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[17] It is quite likely that bailout expectations will be also affected by the amount of forgiven debt prior to the beginning of the observation period in our sample. However, we do not have reliable data on debt forgiveness prior to 1989.

Table 1: Summary of the Variables

Variables	Obs.	Mean	Std. Dev.	Min	Max
Tax Revenue/GDP	431	0.1523	0.0669	0.0122	0.4279
Accumulated Debt Forgiven /GDP	431	0.0497	0.1029	0	0.6216
Per Capita GDP	431	2191.6370	1775.9240	81.0090	8212.9010
Population Growth	431	1.6718	0.9836	-3.9306	3.8396
Loans/ GDP	431	0.0247	0.0382	0.0003	0.2733
Grants/ GDP	431	0.0099	0.0245	0.0000	0.1623
Non-agricultural/ GDP	431	0.8465	0.0964	0.4026	0.9920
(Imports + Exports)/GDP	431	0.3903	0.2635	0.0334	1.3577
Governance	431	3.3643	6.4864	1	14
Arms Imports/Total Imports)	413	0.0101	0.0235	0	0.1982
External Debt/Exports	415	19.2568	12.0415	0.7947	79.4491
Debt Service/Total Exports	431	2.6517	2.7310	0.3442	24.7372

We measure the dependent variable – Tax Effort – as the share of tax revenues in Gross Domestic Product (GDP). Data for this variable come from the World Development Indicators (WDI) for 2009. The data on loans and grants are taken from the Organization for Economic Co-operation and Development's database (OECD.Stat). The data for the other control variables including GDP per capita, population growth, exports, imports, the share of agriculture in GDP, the share of manufacture in GDP and the share of services in GDP come from the WDI database. The data for the governance variables are taken from the Freedom House (2008) and the Polity IV (2009) databases. The Freedom House database reports scores on both political rights and civil liberties. These scores range on a scale from one-to-seven, with one representing the highest degree of freedom and seven the lowest. However, to facilitate easy interpretation of the coefficients on these variables we added the reported scores for both political rights and civil liberties and then subtract the sum from 14. This means that higher values represent improved freedom.[18] The Polity IV database reports a composite measure of governance based on if a country is democratic or autocratic. This score ranges from -10 to +10 with +10 representing a strong democracy.

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[18] See Bird, Martinez-Vazquez and Torgler (2004; 2008) and Ndikumana (2004).

Results

Table 2 contains the Ordinary Least Squares (OLS) results from the conventional tax effort model. Our variable of interest, accumulated debt forgiveness is in line with predictions that the higher the accumulated debt forgiven, as a share of GDP, the lower will be a country's tax effort. As accumulated debt forgiven by one percentage point, tax revenues decline by 0.05 percentage point. This result is indicative of the level of substitutability between aid monies, or more precisely forgiven debts and tax effort in our group of developing countries. Further, this result may also suggest that government officials are using aid monies to relieve the taxable population of some of its burden to possibly lengthen their own political careers. The coefficient for openness, as measured by the share of imports to GDP has the predicted sign and this result is in line with previous studies.

However, there is an obvious problem with using OLS, since our variable of interest could be endogenous. For example, an expectation of a bailout could potentially induce policymakers to not improve their tax machinery to increase tax collections, but also, the poor tax performance observed among these countries could be the motivating factor behind the bailout opportunities they received. Our empirical models therefore allows for the endogeneity of both tax revenues and debt forgiveness. The 2SLS results for our first question are reported in Table 3. The coefficient of accumulated debt forgiveness remains statistically significant. The choice of a unique instrument is not addressed anywhere in the literature. However, studies by Neumayer (2002); Ndikumana (2004); Freytag and Pehnelt (2009); and Presbitero (2009) suggest factors such as arms imports, total population, governance/institutions, per capita GDP, ODA aid and external debt share of GDP among others, as some of the determinants of debt forgiveness. The first stage results, in table 3, show that the instruments perform well. The F-statistics for first stage regression model is statistically significant at the 1% level, indicating that the instruments are sufficiently identified. This conclusion is reinforced by a Kleibergen and Paap Lagrange multiplier test also suggesting that the instruments are identified (Kleibergen and Paap, 2006). Additionally, the Hansen *J-* tests of over-identifying restrictions do not reject the null of a well-identified model. We conclude that the instruments seem reasonably well suited for this purpose.

The results from Table 3 show that the coefficient for accumulated debt forgiveness is negative, economically meaningful, and statistically significant. Controlling for the endogeneity

of this variable also produced an estimate that is larger in magnitude than the OLS coefficient estimate. Most of the control variables in Table 3 are of the expected sign, though not all are statistically significant. One exception is that we find a reduction in inflation rates to be associated with increases in tax revenues. We hypothesize that higher inflation rates, possibly associated with the generation of seigniorage – a likely problem in developing countries--, and would increase tax revenues collection. While this effect is counter to our expectation, it is only weakly statistically significant and economically meaningless. Given our findings, the results show that prolonged debt forgiveness is likely to create a disincentive to poor countries seeking to improve their tax effort.

In summary, our proxy for the soft budget constraint do seem to have a robust impact on the tax ratios for the countries in our sample once we take into account other factors such as openness, governance, inflation, loans, grants and population growth. This result gives credence to the hypothesis that the amount of tax collected depends on the intensity of bailouts.

Table 4 presents the results for our second question – whether or not there is a reverse causality in place. That is, is the international financing community unintentionally creating the problem of low tax revenues by providing more debt forgiveness to these countries? Again, the F-statistics for the first stage regression model is statistically significant at the 1% level, indicating that the instruments are sufficiently identified. This conclusion is again reinforced by the Kleibergen and Paap Lagrange multiplier test which suggests that the instruments are identified (Kleibergen and Paap, 2006). Additionally, the Hansen *J-* tests of over-identifying restrictions do not reject the null of a well-identified model. We conclude that the instruments seem reasonably well suited for this purpose.

The results from Table 4 show that the coefficient for tax revenues is negative, economically meaningful, and statistically significant. The tax revenues for our sample of developing countries fall by approximately 1.4 percentage points for every one percentage point increase in debt forgiveness received. This finding provides support to the hypothesis that the international financing community, with its well-intentioned action to lessen the debt burden of these countries could actually be perpetuating a cycle of poverty. Overall, the other controls perform well. The results indicate that the greater the level of development of a country, as measured by its per capita GDP, the less will be its need for debt forgiveness. This hypothesis is supported by the negative and strongly significant coefficient on per capita GDP in our results.

Theoretically, good governance or improvement in governance quality can positively influence the amount of debt forgiveness a country receives (Freytag and Penhelt, 2009). Our result supports this proposition.

Table 2: Determinants of Tax Effort (OLS Estimation)

	OLS
Accumulated Debt Forgiveness (as a share of GDP)	-0.0464**
	(0.0206)
Per Capita GDP	0.0141
	(0.0113)
Population Growth	0.0024
	(0.0028)
Loans (as a share of GDP)	0.0054
	(0.0881)
Grants (as a share of GDP)	-0.1590
	(0.1520)
Non-agricultural (as a share of GDP)	0.0474
	(0.0535)
Openness	0.0496**
	(0.0198)
Governance	-0.0001
	(0.0004)
Constant	-0.0865
	(0.0879)
Observations	431
R-squared	0.916

Notes: *** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in parentheses. Country-specific fixed effects are included in this specification.

Table 3: Determinants of Tax Effort (as a share of GDP)

	2SLS	*First Stage Regression*
Accumulated Debt forgiveness$_t$	-0.105**	
	(0.0412)	
Inflation$_t$	-0.000005*	
	(0.000003)	
Population growth$_t$	-0.000777	
	(0.00293)	
ODA_Loans$_t$	0.587*	
	(0.324)	
(ODA_Loans$_t$)^2	-3.245*	
	(1.695)	
ODA_Grants$_t$	-0.534	
	(0.392)	
(ODA_Grants$_t$)^2	2.380	
	(2.738)	
Non-agricultural$_t$	0.0381	
	(0.0711)	
Openness$_t$	0.0678***	
	(0.0196)	
Freedom$_t$	0.000004	
	(0.00113)	
Arms Imports$_{t-1}$		0.1662**
		(0.0717)
GDP Per Capita$_{t-1}$ (log)		-0.1421***
		(0.0457)
Governance$_{t-1}$		0.0039**
		(0.0017)
External Debt to Exports$_{t-1}$		0.0003
		(0.0003)
Population Total$_{t-1}$(log)		0.3372*
		(0.1776)
External Debt to GDP$_{t-1}$		-0.1192
		(0.0389)
First Stage Diagnostics		
F-Stat		4.71***
Under ID, P-value		0.0042
Hansen J, P-value		0.4812
Observations	387	
R-squared	0.109	

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses. Under ID refers to the   null hypothesis that the model is under identified (Kleibergen and Paap, 2006). Country fixed effects are included in both stages. Time fixed effects are included in the 2SLS regression.

Table 4: Determinants of Accumulated Debt Forgiveness (as a share of GDP)

	2SLS	First Stage Regression
Tax Revenue$_{t-1}$	-1.391***	
	(0.447)	
Per Capita GDP$_{t-1}$	-0.131***	
	(0.0384)	
Arms Import$_{t-1}$	0.112	
	(0.0979)	
Debt Service$_{t-1}$	-0.0046	
	(0.0073)	
External Debt$_{t-1}$	-0.0001	
	(0.0003)	
Governance$_{t-1}$	0.0026*	
	(0.0014)	
Total Population$_{t-1}$(log)	0.362***	
	(0.0902)	
ODA_Aid$_{t-1}$	0.299	
	(0.252)	
Openness		0.0641***
		(0.0203)
Non-Agricultural$_t$		-0.0122
		(0.0724)
GDP Per Capita$_t$(log)		0.0470*
		(0.0284)
Inflation$_t$		-0.00001***
		(0.000003)
Population Growth$_t$		-0.0009
		(0.0038)
ODA_Loans$_t$		0.0093
		(0.0839)
ODA_Grants$_t$		-0.2698**
		(0.1339)
Governance$_t$		-0.0002
		(0.0013)
External Debt$_t$		0.0513***
		(0.0115)
First Stage Diagnostics		
F-Stat		2.69***
Under ID, P-value		0.0194
Hansen J, P-value		0.4581
Observations	391	
R-squared	0.070	

Notes: *** $p<0.01$, ** $p<0.05$, * $p<0.1$ Robust standard errors in parentheses. Under ID refers to the null hypothesis that the model is under identified (Kleibergen and Paap, 2006). Country fixed effects are included in both stages.

Conclusion

The main conclusion of this paper is that the international financial community may be doing some serious harm by relieving developing countries of their loan repayment obligations. The results show that debt forgiveness is likely to create a disincentive to poor countries seeking to improve their tax effort. Our results also show that as countries reduce their tax intake they are given more and more debt forgiveness to make up for the shortfall in tax revenues. Therefore one can safely conclude that while the international financing community is encouraging these countries to increase their tax intake, they simultaneously create the problem of low tax revenues by providing more debt forgiveness to these countries. These results may be comforting to the detractors of this mode of assistance—debt forgiveness-- provided to developing countries who often argue that it might lead them to engage in over-borrowing with the expectation that their creditors will forgive them time and again. Thus perpetuating a cycle of aid dependence, which in and of itself can lead to chronic macroeconomic imbalances due to the volatility of this mode of financing. Also, some would argue that debt forgiveness initiatives are an insufficient remedy to the economic problems facing poor countries and these results in some ways confirm their conjecture. The evidence shows a consistently lower level of tax revenue collection across the different specification which will ultimately mean lowered or sub-standard public service provision and lower growth possibilities.

These results have particular strong policy implications for both developed countries and developing countries. In the case of developed donor countries, they could include restrictive covenants in debt forgiveness contracts that compel developing countries to sustain or even to increase their current tax collections effort. In addition, the international financial community could tie access to debt forgiveness monies to the creditworthiness of developing countries. If developing countries continue to use debt forgiveness monies as a substitute for raising their own tax revenues, then the pool of funds available for debt forgiveness will eventually dry-up. So if it is tied to some measure of creditworthiness then that could induce developing countries to raise their tax efforts. Failure on the part of developing countries to increase tax efforts could result in them losing access to future loans.

The most important contribution of this paper has been to extend the conventional model of tax effort, showing that debt forgiveness can significantly impede the development of sustainable fiscal systems in the developing world, and that the damage is increased with the

extent of debt forgiveness. Of course, in order to fully understand the tax performance of any one country one needs to pay close attention to the fact that debt forgiveness decisions are made on a case-by-case basis and are tailored to each debtor country's individual situation. However, the estimated average effects found in this paper should bring significant caution with the implementation of this type of policy by the international community.

References

Alesina, A., and Weder, B. (2002). Do Corrupt Governments Receive Less Foreign Aid? *American Economic Review, 92*(4), 1126-1137.

Alm, J., Martinez-Vazquez, J., and Friedrich Schneider (2004). 'Sizing' the Problem of the Hard-to-Tax. *Contributions to Economic Analysis,* (268), 11-75

Azam, J.P., Devarajan, S. and Stephen A. O'Connell (1999). *Aid Dependence Reconsidered*. World Bank Policy Research Working Paper. World Bank. Washington DC.

Bahl, R. W. (1971). A Regression Approach to Tax Effort and Tax Ratio Analysis. *Staff Papers - International Monetary Fund, 18*(3), 570-612.

Bai, C. and Wang, Y. (1999). The Myth of the East Asian Miracle: The Macroeconomic Implications of Soft Budgets. *American Economic Review, 89*(2), 432-437.

Bauer, P. T. (1972). *Dissent on Development: Studies and Debates in Development Economics*, Harvard University Press

Bird, R. M., Martinez-Vazquez, Jorge and B. Torgler (2004). Societal Institutions and Tax Effort in Developing Countries (pp. 53). International Studies Program, Andrew Young School of Policy Studies, Georgia State University, International Studies Program Working Paper Series, at AYSPS, GSU.

Bird, R. M., Martinez-Vazquez, Jorge and B. Torgler (2008). Tax Effort in Developing Countries and High Income Countries: The Impact of Corruption, Voice and Accountability. *Economic Analysis and Policy, 38*(1), 55-71.

Brautigam, D. A., Fjeldstad, O.H., and Moore, M. (2008). *Taxation and State-Building in Developing Countries: Capacity and Consent*: Cambridge and New York: Cambridge University Press.

Brun, J. F., Chambas, G., and S. Guerineau. (2007). Aide et Mobilisation Fiscale Dans les Pays en Développement, from http://ideas.repec.org/p/hal/wpaper/halshs-00556804.html

Cashel-Cordo, P., and Craig, S. G. (1990). The Public Sector Impact of International Resource Transfers. *Journal of Development Economics, 32*(1), 17-42.

Chelliah, R. J. (1971). Trends in Taxation in Developing Countries. *Staff Papers - International Monetary Fund, 18*(2), 254-331.

Chelliah, R. J., Baas, H. J., and Kelly, M. R. (1975). Tax Ratios and Tax Effort in Developing Countries, 1969-71. *Staff Papers - International Monetary Fund, 22*(1), 187-205.

Clist, P. and Morrissery, O. (2011). Aid and Tax Revenue: Signs of a Positive Effect since the 1980s. *Journal of International Development,* 23(2), 165-180.

Cyan, M., Martinez-Vazquez, J., and Vulovic, V. (2013). Measuring Tax Effort: Does the Estimation Approach Matter and should Effort be linked to Expenditure Goals. International Studies Program, Andrew Young School of Policy Studies, Georgia State University, International Studies Program Working Paper Series, at AYSPS, GSU

Feyzioglu, T., Swaroop, Vinaya and Min Zhu (1998). A Panel Data Analysis of the Fungibility of Foreign Aid. *The World Bank Economic Review, 12*(1), 29-58.

Franco-Rodriguez, S. (2000). Recent Developments in Fiscal Response with an Application to Costa Rica. *Journal of International Development, 12*(3), 429-441.

Freytag, A., & Pehnelt, G. (2009). Debt Relief and Governance Quality in Developing Countries. *World Development, 37*(1), 62-80.

Gang, I. N. and A.H. Khan (1990). Some Determinants of Foreign Aid to India, 1960-85. *World Development, 18*(3), 431-442.

Ghura, D. (1998). *Tax Revenue in Sub-Saharan Africa--Effects of Economic Policies and Corruption*. International Monetary Fund, IMF Working Papers: 98/135.

Gupta, S., Benedek, D., Crivelli, Ernesto and Priscilla Muthoora(2013). Foreign Aid and Revenue? Still a Crowding Out Effect? International Monetary Fund, IMF Working Papers: 12/186.

Gupta, S., Clements, Benedict J., Pivovarsky, Alexander and Erwin R. Tiongson (2003). Foreign Aid and Revenue Response: Does the Composition of Aid Matter? International Monetary Fund, IMF Working Papers: 03/176.

Heller, P. S. (1975). A Model of Public Fiscal Behavior in Developing Countries: Aid, Investment, and Taxation. *American Economic Review, 65*(3), 429.

Kaldor, N. (1963). Taxation for Economic Development. *The Journal of Modern African Studies, 1*(1), 7-23.

Khan, H. A., and E. Hoshino. (1992). Impact of Foreign Aid on the Fiscal Behavior of LDC Governments. *World Development, 20*(10), 1481-1488.

Khilji, N. M., & E.M. Zampelli (1994). The Fungibility of U.S. Military and Non-Military Assistance and the Impacts on Expenditures of Major Aid Recipients. *Journal of Development Economics, 43*(2), 345-362.

Kleibergen, F. and Paap, R.(2006). Generalized Reduced Rank Test using the Singular Value Decomposition. *Journal of Econometrics,* 133(1), 97-126.

Kornai, J. (1980). 'Hard' and 'Soft' Budget Constraint. *Acta Oeconomica, 25*(3-4), 231-245.

Kornai, J., Maskin, E., and G. Roland. (2003). Understanding the Soft Budget Constraint. *Journal of Economic Literature, 41*(4), 1095.

Leuthold, J. H. (1991). Tax Shares in Developing Economies: A Panel Study. *Journal of Development Economics, 35*(1), 173-185.

Li, D. D., and Liang, M. (1998). Causes of the Soft Budget Constraint: Evidence on Three Explanations. *Journal of Comparative Economics, 26*(1), 104-116.

Lotz, J.R., and E.R. Morss (1967). Measuring "Tax Effort" in Developing Countries. *Staff Papers - International Monetary Fund, 14*(3), 478-499.

Mavrotas, G. (2002). Foreign Aid and Fiscal Response: Does Aid Disaggregation Matter? *Review of World Economics, 138*(3), 534-559.

Mkandawire, T. (2010). On Tax Efforts and Colonial Heritage in Africa. *Journal of Development Studies.* 46(10), 1647-1669.

Ndikumana, L. (2004). Additionality of Debt Relief and Debt Forgiveness, and Implications for Future Volumes of Official Assistance. *International Review of Economics and Finance, 13*(3), 325-340.

Neumayer, E. (2002). Is Good Governance Rewarded? A Cross-National Analysis of Debt Forgiveness. *World Development, 30*(6), 913-930.

Odedokun, M. (2004). Multilateral and Bilateral Loans versus Grants: Issues and Evidence. *World Economy, 27*(2), 239-263.

Otim, S. (1996). Foreign Aid and Government Fiscal Behaviour in Low-Income South Asian countries. *Applied Economics, 28*(8), 927-933.

Pack, H., & Pack, J. R. (1990). Is Foreign Aid Fungible? The Case of Indonesia. *Economic Journal, 100*(399), 188-194.

Presbitero, A. (2009). Debt-relief Effectiveness and Institution-Building. *Development Policy Review*, 27(5), 529-559.

Qian, Y. and Roland, G. (1998). Federalism and the Soft Budget Constraint. *American Economic* Review, 88(5), 1143-1162

Remmer, K. L. (2004). Does Foreign Aid Promote the Expansion of Government? *American Journal of Political Science, 48*(1), 77-92.

Rodden, J. (2003). Federalism and Bailouts in Brazil. In J. Rodden, G. S. Eskeland & J. Litvack (Eds.), *Fiscal Decentralization and the Challenge of Hard Budget Constraints* (pp. 213-248): Cambridge and London: MIT Press.

Tanzi, V. (1992). Fiscal Policy and Economic Reconstruction in Latin America. *World Development, 20*(5), 641-657.

Tanzi, V., and Zee, H. H. (2000). Tax Policy for Emerging Markets: Developing Countries. *National Tax Journal, 53*(2), 299-322.

Teera, J. M., and Hudson, J. (2004). Tax Performance: A Comparative Study. *Journal of International Development, 16*(6), 785-802.

Wildasin, D. E. (1999). Externalities and Bailouts *Hard and Soft Budget Constraints in Intergovernmental Fiscal Relations*. The World Bank, Policy Research Working Paper Series: 1843.