DYNAMIC FISCAL IMPACT OF THE DEBT RELIEF INITIATIVES ON AFRICAN HIGHLY INDEBTED POOR COUNTRIES (HIPCS)

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Abstract

After two debt relief initiatives launched in 1996 (the Heavily Indebted Poor Countries, HIPC Initiative) and in 1999 (The enhanced HIPC initiative), the G7 decided to go further by cancelling the remaining multilateral debt for these HIPC countries through the Multilateral Debt Relief Initiative (MDRI, 2005). A few papers tried to assess the desired fiscal response effects of those initiatives. This paper uses an extended dataset and alternative econometric techniques in order to tackle methodological issues as endogeneity and fixed effects. We found that debt relief and especially the enhanced HIPC initiative have had a positive impact on the total domestic revenue and the public investment (as percentages of the GDP). Thanks to our large observation span, we also observed that the MDRI led to a significant additional improvement of the level of public investment and domestic revenues ratio, although these effects are smaller than the HIPCs ones**.**

Key words: HIPC, MDRI, Debt relief, Fiscal revenue, Public investment, Fiscal response

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[2] Marin Ferry was a Master Student at Paris School of Economics (PSE) when he made his first contribution to this paper.

Résumé

Après deux initiatives de réduction de dette (PPTE I fin 1996 et PPTE II en 1999), le G7 décida d'annuler la totalité de la dette multilatérale (Initiative d'Annulation de la Dette Multilatérale, IADM en 2005). Quelques travaux ont essayé d'évaluer l'impact de ces mesures sur les finances publiques des pays bénéficiaires. Ce travail utilise une base de données plus étendue et des méthodes économétriques alternatives pour tenir compte de l'endogénéité et des effets fixes. Nous trouvons que les réductions de dette (en particulier l'initiative PPTE II) ont eu un impact positif sur la pression fiscale et sur les investissements publics (en pourcentage du PIB). Grâce à l'extension de la période d'étude, nous observons également que l'IADM a un effet similaire, quoique moins persistent.

Mots clés: PPTE, IADM, Réductions de dette, recettes publiques, investissement public

JEL: H20 H54 H63 O55 F34

1. INTRODUCTION

Since the introduction of the 'Heavily Indebted Poor Countries' (HIPC) Initiative for debt reduction in 1996, and especially with its enhancement from 1999 and the further introduction, in 2005 of its complementary successor, the Multilateral Debt Relief initiative (MDRI), debt relief has gained prominence as a potentially important 'alternative' modality of aid provided to these targeted countries, the HIPCs, next to more traditional aid modalities (such as project aid or budget support).

Clearly, the HIPC initiative's first goal was to cancel debt down to the level necessary to restore debt sustainability and thereby eliminating so-called 'debt overhang', where a high debt burden depresses investment, reform willingness and, hence, future economic growth, Additionally, and only to the extent that debt relief would increase resource availability in the recipient country (budget), the aim was to make sure that these resource savings (so-called 'fiscal space') were used to increase poverty reduction targeted spending. Moreover, appropriate donor conditionalities attached to receiving the debt relief should in principle strengthen the probability of reaching the desired goals.

While these *fiscal space* effects were of secondary importance in the HIPC Initiative, they became central when donors decided to provide debt relief that went beyond their HIPC requirements. Most notably, in the MDRI, where some major multilateral creditors[3] agreed to cancel their remaining claims to countries already engaged in the HIPC initiative (only)[4], the prime objective was to provide recipient countries with additional resources to increase spending targeted at realizing internationally-agreed development and poverty reduction targets such as the MDGs.

These initiatives definitely resulted in a dramatic decrease of the debt ratios of the benefitting countries, at least in the short term[5]. To what extent this combination of debt overhang elimination, fiscal space and conditionality effects also led to positive effects on the fiscal situation of the recipient countries, in terms of higher revenues, higher public investment or other public spending, is more questionable. The extent to which these a priori theoretical assumptions are valid empirically is what this paper seeks to investigate. As such, it draws on existing earlier analysis focusing on these so-called 'fiscal response' effects of (HIPC) debt relief, and more notably on Cassimon & Van Campenhout [2007,2008], and tries to complement preliminary findings of these studies by extending the time frame and provide additional robustness tests,

[3] The MDRI amounts to a cancellation by 100 % of the remaining eligible debt due to the International Monetary Fund, The World Bank and the African Development Bank.

[4] End-June 2012, 37 countries have benefited from HIPC and also from the MDRI, as they reached the HIPC completion point, which is necessary to receive the additional multilateral debt relief under MDRI. For equity reasons, IMF also provided debt relief under MDRI for Cambodia and Tajikistan, which did not previously benefit from HIPC debt relief.

[5] Cf. Figure 1 in Appendix

drawing on alternative estimation techniques. Moreover, and more importantly, the extended time frame also provides the opportunity to complement the earlier studies by explicitly focusing on the relative fiscal response effects of the additional debt relief provided through the MDRI, which might be relevant a.o. because of it perceived different 'fiscal space' effects.

The reminder of this paper is structured as follows. In the next section, we will describe in more detail the different presumed channels through which debt relief will affect outcome variables including its fiscal response effects, both in theory as well as in practice, referring to the existing literature that links debt relief, economic growth and fiscal variables. The third part will deal with the data and the empirical specification we used for this study. Finally, part four will present our empirical results. Section 5 concludes.

2. WHAT SHOULD WE EXPECT FROM THE HIPC AND MDRI INITIATIVES?

The main goal of debt relief granted by donor community through the HIPC initiative was to enable highly-burdened, poor debtor countries to 'clean their external debt slate'. Different interpretations of what is a clean slate can be used; the most conventional one refers to cancelling the debt down to a '*sustainable*' level, as defined by specific threshold indicators of capacity-to-pay: debt sustainability, by cancelling the debt of eligible low-income countries to a sustainable level, defined in balance of payments terms (a PV of debt to exports threshold) or in fiscal terms (a PV of debt to fiscal revenue threshold). Harmonization of efforts between all creditors was assured by fair burden-sharing principles, based on relative exposure. In order to be eligible (i.e. becoming HIPC), the country had to be IDA-eligible, and hold an unsustainable external debt as defined according to the sustainability levels mentioned above. In 1999, the initiative was enhanced by deepening debt relief - the balance of payments and fiscal thresholds were lowered to 150% and 250% respectively.

The idea to cancel debt down to the sustainability level was not only in order to formally acknowledge what was partly a fact in most countries, i.e. that these countries were not capable of (fully) servicing their debt as contractually agreed, and merely accumulated payments arrears, or engaged in repeated debt rescheduling that transferred most of the payments to the future, further stockpiling debt. It was also inspired by the so-called 'debt overhang theory developed by Myers [Myers (1977)].[6] This theory states that a high debt burden has a strong negative effect on the debtor country's creditworthiness, on foreign as well as domestic investment behavior, and on the capacity and willingness of these debtor governments to undertake necessary but painful economic and institutional reforms (with most of the benefits accruing to external creditors). As such, cancelling debt could materialize into large indirect effects on investment and economic growth. Also, it might also make new aid decisions turn into defensive lending, i.e. aid granted to countries in order to allow them to fulfill their debt service requirements [Birdsall et al (2003)]. The consequences of the debt overhang theory for debt relief programs and their expected fiscal implications become then quite obvious: eliminating debt overhang will have a positive effect on

[6] Myers developed this theory for corporate debt; the extension for sovereign debt was done first by Krugman [1988] and Sachs [1986].

public investment, and also lead to higher fiscal revenues through higher private investment and growth.

From an empirical side, many studies [e.g. Elbawadi, Ndulu and Ndung'u (1997), Clements, Bhattacharya and Nguyen (2003), Presbitero, (2010)] tried to test this debt overhang hypothesis and its implied non-linear relationship between debt, investments and growth[7]. However results widely differ according to the samples, the data (measures of debt – stocks versus flows -) and the methodology used. Most papers dealing with this issue and finding significant non linear relationships, agree to conclude that the negative impact of debt on national investment level (private and public) remains negligible.

Next to curing debt overhang, debt relief, also through the HIPC and MDRI initiatives, was supposed to provide debtor governments with additional direct (fiscal) cash flows (arising from debt servicing savings), so typical for traditional aid modalities. This theory is the one developed by P.S Heller [Heller, 2005] as the fiscal space theory. Following Heller's [2005] definition, there is fiscal space when government experiences budgetary room which enables it to allocate extra resources to specific purposes without threatening the sustainability of public finances.

That debt relief allows for direct fiscal space effects is however not straightforward, and not easy to measure. First of all, a decision to cancel a given nominal amount of debt does not lead to immediate equivalent cash flow gains: they arise over a period of time, depending on the original debt service schedule of the debt relieved[8]. Second, and more important, to the extent that the debt service due would not have been paid in the absence of debt relief, no cash flow savings materialize. As in practice debt forgiven often would have been serviced only in part, debt relief is more correctly measured as the debt service *that would have been serviced* in the absence of debt relief[9]. In some cases, the direct cash flow effect on recipient government resources may be close to zero, in others it may be substantial [Idlemouden and Raffinot (2005]. Third, when granting debt relief, donors may decide to cut back on their other aid interventions, which may lead to no net fiscal space effects for the recipient countries.
Moreover, as is well known from the aid fungibility theory, donors will try to optimally allocate the resources saved, e.g. by cutting down domestic revenues (tax burden), or reducing the fiscal deficit (and hence reducing domestic debt)[10].All in all, this means that it is not guaranteed that (HIPC) debt relief leads to more resources available, and that they are being spent according to the donor's objectives of increasing investment, or recurrent spending, and targeted towards poverty reduction. Ultimately again, this is an empirical issue. Here it is important to note the difference,

[7] Following the 'debt overhang' theory, debt could play positively on economic growth until a certain ratio. Then if this debt over GDP ratio becomes too high and unsustainable, debt would impacts negatively the economic growth as described above. This indebtedness threshold would represent the turning point that forms a Laffer curve between debt and growth (Krugman, 1998).
[8] As such, to take into account both the volume of debt relief and the time dimension, the Present Value (PV) of future debt service payments relieved is used as the appropriate summary indicator of the cash flow gains
[9] This is sometimes called the 'economic value' of debt relief. It measures both the direct cost to the creditor/donor, as well as the direct (cash flow) impact to the creditor. [see e.g. Cohen, 2000]
[10] This relates to a large literature that tries to assess fungibility of aid in determining the ultimate fiscal effects of donor interventions, through aid (the so-called fiscal response of aid). See e.g. [Cassimon and Van Campenhout 2006] for a detailed overview of this literature..

at least in principle, between HIPC and MDRI debt relief. Where HIPC debt relief might be considered partly fictitious, leading to little fiscal space effects, MDRI debt relief should in principle be considered real resource savings that would otherwise have been fully spent as actual debt service. This is one specific feature that we want to test in this paper, and complements existing research on this issue.

Finally, a conditionality effect may be at play. As with other aid modalities, debt relief comes with some strings attached by donors. One way is by trying to steer the use of these debt relief cash flow savings. One other way is by adding more broad conditions that may refer to macro-economic stability and economic reform (similar to the SAP approach), strengthening the overall development-orientation of government actions, and improvements in economic or institutional governance and public sector service delivery, again further reinforcing the indirect effects on economic growth and development in recipient countries. Both are used simultaneously by donors in the case of HIPC (and MDRI) debt relief. Enhanced HIPC debt relief was granted after the successful completion of donor-imposed conditionalities, some comparable to an IMF program, others related to the elaboration and implementation of a broadly-owned recipient country development and poverty reduction strategy (the PRSP). On top of this, some country-specific 'triggers' were included on, say, the quality of public management and public service delivery. And donors, mainly through the IMF, also tried to monitor the relation between actual cash flow savings from debt relief and increases in poverty reduction-targeted spending.

In this study, we test the realized impact of debt relief, through the identified channels, on a small set of fiscal variables, i.e. whether it leads to higher investment, higher taxes, (and higher recurrent spending). This is what Danny Cassimon and Bjorn Van Campenhout tried to test in their papers [Cassimon and Van Campenhout, 2007-2008]. However, in our study, we are going to assess this phenomenon using a more recent time span and with aggregated and disaggregated measures of debt relief. More specifically, we will distinguish between HIPC debt relief and MDRI debt relief, so as to see which debt relief program (HIPC or MDRI) played the biggest role, even if we are aware that both programs are strictly complementary. A priori, we would assume that the debt overhang (and conditionality) effects, leading to more investment and domestic revenues, would be bigger for HIPC debt relief, while fiscal space effects of HIPC might be limited, leading to an undetermined outcome, while debt overhang and conditionality effects may be smaller for MDRI, but fiscal space effects relatively bigger.

3. EMPIRICAL FRAMEWORK AND DATA

3.1. DATA

This empirical study is conducted using macroeconomic data coming from several sources listed in Table 1 in appendix. The data have been gathered over 16 years (from 1996 to 2011) and for 24 Sub-Saharan African Countries[11]. The principal sources used are Articles IV and Staff Reports from the International Monetary Fund which provide data on public sector within their government financial operations tables.

Our principal variables of interest are total domestic revenue and government investment. As regards aid variables, we decided to use two disaggregated measures of aid which are the total grants and the total loans, as well as an aggregated measure which is the net ODA received[12]. This second measure of aid allows us to test the robustness of the results previously find with the total loans and grants. Moreover, we decided to express the net ODA received as a spread from the mean value of the sample in order to avoid any trend effect in the evolution of this variable[13].

Accordingly, we built this "spread of the net ODA received" using the following formula:

$$SpreadODA_{i,t} = \ netODA_{i,t} - \frac{1}{N}[\sum_{i=1}^{N} netODA_{i,t}]$$

Then our variables of interest which represents the impact of debt relief are, as describe in Table 1, the debt service savings from debt relief. These measures are computed from the Status of Implementation also delivered by the IMF. We indeed used the discrepancy between the debt service due without the Enhanced HIPC and the debt service due after the Enhanced HIPC to compute the debt service savings from the Enhanced HIPC. In the same idea, we compute the debt service savings from the MDRI by subtracting the debt service due after the MDRI to the debt service due after the Enhanced HIPC. This variable computation is illustrated by the Figure 2 in appendix[14]. The aggregated measure of debt relief is simply the addition of debt service savings from the Enhanced HIPC and from the MDRI. Thanks to this measure we will use alternatively the two disaggregated measure and the aggregated one in order to see which program impacts the most our fiscal variables.

[11] Benin, Burkina Faso, Burundi, Cameroon, Chad, Democratic Republic of Congo, Ethiopia, The Gambia, Ghana, Guinea, Guinea Bissau, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Sao-Tome-and-Principe, Senegal, Sierra Leone, Tanzania, Uganda, Zambia.

[12] This measure has been taken from the World Bank Global Development database and is net of debt relief assistance.

[13] As an example, Burnside and Dollar's papers on the aid effectiveness have actively fueled the debate around the utility of aid in poor and politically unstable countries. It follows a period where aid strongly reduced toward this kind of country. This spell is known as the « aid fatigue » period.

[14] Considering the debt relief variable, critics could say that our variable is misleading because we do not take into account the debt service savings from the first HIPC initiative (1996). However, as our period of study begins in 1996, we prefer to focus only on the enhanced HIPC from 1999 in order to have a period with debt relief - from 1999 to 2011 - and another one without it - from 1996 to 1999 - . Furthermore, we believe it does not represent a limit to our analysis according to the low level of debt forgiveness granted in HIPC I and the limited number of countries concerned by the 1996's process.

Finally, all these variables are expressed in percentage of GDP to avoid comparison issues like exchange rates and inflation problems between countries.

Our panel data is balanced, covers 24 countries over 16 years (from 1996 to 2011) and contains 10 variables: four fiscal variables (total domestic revenue, current primary expenditures, government investments and domestic financing), three aid variables (the net ODA received, total grants and total loans) and three debt relief measures (debt service savings from enhanced HIPC, from MDRI and these two aggregated into the debt relief variable).

3.2. THE EMPIRICAL APPROACH: DEALING WITH ENDOGENEITY AND FIXED EFFECTS.

Considering previous studies on debt relief (see. Cassimon and Van Campenhout [2007]; 2008], Tsafack Temah [2009]) and the econometrical issues they raised, we decide to use a specification that takes account for the current troubles in macroeconometrics which basically are: fixed effects, variables endogeneity and potential autocorrelation. Our specification is based on the same fiscal behavior model that the one introduced in Cassimon & Van Campenhout [2008]. In their study Cassimon and Van Campenhout estimate the fiscal response of debt relief using a pooled VAR approach. We thereby decided to follow the same methodology but removing the "pooled" approach. We indeed specify the relation between debt relief and fiscal variable using a pseudo VAR[15]. The "pseudo VAR" is like a VAR except that the equations forming the system are estimated one by one contrary to the "real VAR" where they are estimated simultaneously. We therefore decided to use this specification as regards the problem that presents the pooled VAR in panel. Indeed, when we use the pooled VAR approach with lags it means that we regress observation of a given country in the first period over an observation of another country in the last period. This specification becomes therefore quite shaky in spite it remains widely used.

For our pseudo VAR specification we used the same set of variables to alternatively estimate the debt relief's impacts on government investments and on total domestic revenues. We are thereby going to focus on the two following equations coming from our pseudo VAR:

$$(1)\ ttrev_{i;t} = \alpha_{ttr} + \delta_i^{ttr} + \sum_{j=1}^{2} \beta_{ttrevj}^{ttr} ttrev_{i;t-j} + \sum_{j=1}^{2} \beta_{Zj}^{ttr} Z_{i;t-j} + \sum_{j=1}^{2} \beta_{drj}^{ttr} dr_{i;t-j} + \varepsilon_{ttrit}$$

$$(2)\ ginv_{i;t} = \alpha_{ginv} + \delta_i^{ginv} + \sum_{j=1}^{2} \beta_{ginvj}^{ginv} ginv_{i;t-j} + \sum_{j=1}^{2} \beta_{Zj}^{ginv} Z_{i;t-j} + \sum_{j=1}^{2} \beta_{drj}^{ginv} dr_{i;t-j} + \varepsilon_{ginvit}$$

Where i = 1... N; t = 1...T, δ_i represents the country fixed effect, $ttrev$ the total domestic revenues, $ginv$ the government investments, dr our debt relief variable and Z our common set of variables for the two equations composed by domestic financing, aid variables and government primary current expenditures.

As we do not stand in A VAR model anymore, we have to consider the endogeneity issue which is induced by our specification as well as by the nature of our variables. As a matter of fact, we may think that some fiscal variables might positively influence the debt relief's setting up. As an

[15] Pooled VAR will be run as robustness checks. The results from pooled VAR are expressed in the summary table in Appendix.

example, weak taxation mobilization threats the debt sustainability by forcing government to borrow in order to finance its lack of domestic resources – and by extension its deficit - . Then we could rationally think that low level of tax ratios would lead to unsustainable levels of debt and hence to debt relief programs' implementation. It would therefore mean that causality may run in both directions. In order to attest about this possible bidirectional causal relationship between debt relief and fiscal variable, we ran Granger causality test in panel[16] (Dumitrescu and Hurlin [2012]). The results show that there effectively could be reverse causality between debt relief and total domestic revenues[17].

By consequence, our empirical model has to take into account country fixed effect as well as potential endogeneity. Moreover, we decide to consider a lag of one and two periods for explanatory variables which gives rise for autocorrelation in the dependent variable. The use of lag allows us to attest about potential lagged effect of debt relief on fiscal variable which is quite interesting as regards the fiscal space theory described in the previous section. Considering all those potential issues, we suggest to use the range of GMM estimators introduced by Arellano and Bond [1991]. The Arellano and Bond GMM estimators indeed wash up potential endogeneity by using as instruments the lagged values of endogenous variables which therefore make them predetermined. This methodology allows thereby taking into account the autocorrelation in the dependent variable. Finally, the GMM estimators also treat country fixed effects through the first difference transform. As regard the type of GMM estimators used, some studies have shown that the two-step procedure in GMM estimators (both System and Difference GMM) was more efficient than the one-step procedure [Roodman, 2009]. From a technical view, the System GMM uses more information by defining as instruments the lagged values of endogenous variables both in level and in first difference[18]. However the System GMM estimators multiply the number of instruments which can artificially boost the significance of our results. To overcome this instrument proliferation issue we decide to use alternatively System and Difference GMM estimators by setting the number of lagged instruments to 4 in Difference GMM and to 3 in System GMM. This lag restriction allows us to validate the rule of thumb on GMM instruments which suggests keeping the number of instruments close to the number of entities within the panel.

[16] See Table 2 and 3 in Appendix
[17] At the 5 % level.
[18] The system GMM estimates simultaneously two equations, one in level and one in first difference, which use respectively the lagged first differences and the lagged levels as instruments

4. PRINCIPAL FINDINGS AND DISCUSSION

4.1. ESTIMATES RESULTS

Table 4 shows the results of the total domestic revenues equation coming from the "pseudo VAR" specification (see Table 6[19]) and using the GMM estimators. We observe that debt relief significantly and positively impacts the tax mobilization with one or two periods lagged. According to the Difference and System GMM estimates, this positive impact varies between 0.3 and 0.5. It therefore means that a 10 % increase in debt service savings from debt relief as a share of GDP increases the tax ratio as a share of GDP by 3 (lower bond) or 5 % (upper bound). If we now try to differentiate the role play by each program (HIPC and MDRI) in this global positive impact, we observe in columns III, IV, VII and VIII that the HIPC initiative seems to bear the entire effect of the aggregated measure. Indeed its regression coefficients are between 0.28 and 0.62. The MDRI's impact is less obvious and appears only in the specification with System GMM estimators and the spread of net ODA measure. Moreover its impacts are quite annoying in the sense we observe a strong negative impact after one period followed by a strong positive impact another period after. Considering the non recurrence of these finding across other equations, we consider that this result cannot be considered as robust.

Table 5 presents the results about the impacts of debt relief on government investments. As in the total domestic revenues specification, we find that debt relief positively and significantly impact the level of government investments. Indeed, a 10 % increase in debt service savings from debt relief as a share of GDP leads to an increase between 3.1 and 7.1 % in government investments as a share of GDP. Here again those results seem to be largely carried by the HIPC initiative which possesses regression coefficients between 0.46 and 1.37. Therefore we might rationally think that the impact of debt relief on government investments is larger than the one on taxation mobilization even if they remain similar in statistical significance. Moreover as explain below, those two effects from debt relief might also be complementary.

4.2. DISCUSSION

As regards our empirical results, we notice that as predicted by the fiscal space theory, debt relief might have dynamic impacts on fiscal variables. Moreover, in extending our period of study, we also found different results about the real contribution of the two debt relief program considered. Basically the principal fiscal impacts of debt relief that we found here are twofold.

4.2.1. Impacts on Government Investment

Out of the eight estimates[20] we ran, we found six times that debt relief – all types combined (aggregated and disaggregated measures) - had a significant and positive impact on government investments. It is a result we do not observe in previous studies about debt relief. This difference

[19] Table 6 exposes an example of « pseudo VAR » in which we estimated each equation that composed the VAR one by one and individually.
[20] Without considering all the estimates that form the robustness checks Table (see Table 7 in Appendix).

probably arises from the extended period that we used. As regards our two variables of debt relief we also found interesting results. In overall, dynamic impacts on public investments seem to be generated by the debt service savings from HIPC - although MDRI may also impact them after some periods - . It is understandable since the HIPC and the enhanced HIPC initiatives were accompanied by macro stabilization programs that aimed to promote public investments. Indeed, HIPCs' terms imposed to the beneficiary countries to allocate the bulk of their savings from debt relief to public capital expenditures. Therefore, we can argue that macro stabilization programs attached to the enhanced HIPC initiative might also have played a role.

Furthermore, we demonstrated that debt service savings from debt relief positively and directly affected the level of public investments. It thereby means that debt relief enables governments to improve investments in short and medium terms - i.e. directly and one or two years later - . Those outcomes are very close to what the fiscal space theory predicts. As explained above, fiscal space necessarily contains a temporal dimension. Indeed, following Heller's argument [Heller, 2005] fiscal space has to be sustainable in order to be efficient.

4.2.2. Impacts on Domestic Revenue

Out of the eight estimates we ran, we found seven times that debt relief impacted significantly and positively the tax mobilization. Those results thereby provide empirical evidences that in a way, debt relief increases the tax ratio. Basically we think that it might happen through two mechanisms. First of all and as the fiscal space theory predicts; efficient and sustained public investments might allow government to raise future revenues – i.e. additional taxes on marginal profit – without threatening the well functioning of these capital expenditures. This might lead to increase levels of tax ratio. In a second time, investments financed by debt service savings might be directly focused on the enhancement of the taxation system. Indeed, in allocating more means to the tax collection management – building tax offices, hiring additional tax collectors - , governments might see their tax ratios rapidly increase. It is an encouraging result in the sense it immediately improves the fiscal situation and enables governments to avoid potential re-indebtedness processes.

However, we might suggest going further in this analysis and reviewing the debt relief's impacts on effective fiscal efforts. Following Chambas's methodology [Chambas, Brun and Guerineau, 2005] which differentiates tax effort between the real effort in tax collection – discretionary effects - and the taxation potential - structural effects -, we could obtain the real effect of debt relief on taxation policies. Nevertheless, our outcomes show that there might really be such potential effects.

4.2.3. Impacts on Recurrent Expenditures, Domestic Financing and Aid

As we include several fiscal variables into our empirical specification it also seems interesting to see whether debt relief might have additional impacts on the state-room of manoeuvre. We do not find significant and recurrent effects of debt relief on current primary expenditures even considering results from our robustness checks. As regards domestic financing, we could first think that debt relief might generate possibilities to undertake less external financing and support

financial needs through domestic resources. On the contrary, we could also imagine that debt relief by establishing a 'bright new external position' might restore the creditworthiness of HIPCs and therefore allow for new loans and increase in external financing. Nevertheless, according to our results, debt relief both from HIPC and MDRI do not impact domestic financing.

Then we find shaky results on the level of aid received both using disaggregated and aggregated measures. We both observe that debt service savings from debt relief impact positively and negatively the level of aid received (as compare to the average aid received within our panel). Those effects indeed vary a lot according to the lag level we consider and the methodology we use (System GMM versus Difference GMM), which therefore make them quite unreliable.

5. CONCLUSION

Finally, our study discloses results that did not appear in previous empirical studies about debt relief's impacts. Indeed, few papers attest that debt relief and especially the enhanced HIPC initiative improves government investment after some periods. According to our robustness checks we also find that MDRI directly boosts the level of government investments[21] which does not appear in other studies on debt relief because of their too short period of analysis. Our study also confirms the positive dynamic impacts from debt relief and the E-HIPC on total domestic revenues that Cassimon and Van Campenhout expose in their studies, but this time accounting for econometrical issues as endogeneity and polled observations. In addition, the several robustness checks[22] prove that those results are statistically significant across different specifications.

Furthermore, the methodology we used in this study allows us to deal with heterogeneity and endogeneity issues in a proper way. Indeed, using dynamic panel econometrics (both System and Difference GMM) through a 'pseudo VAR' model treats endogeneity issue, heterogeneity of the sample as well as other potential econometrical impediments that might bias results from previous studies.

As a result, our findings suggest that debt relief's programs in poor and highly indebted Africa countries are not useless. We effectively show that debt relief programs and especially the enhanced HIPC initiative might offer opportunities for governments to improve investments and domestic resources. The remaining challenge is now to know whether governments will effectively take advantages of these opportunities by promoting pro-poor growth and poverty reducing expenditures. We therefore believe that our findings remain quite important in terms of development financing and might have strong implications in development policies.

[21] See Table 7 (Summary Table – Non Lagged Effects) in appendix
[22] See Table 7 (Summary Table) in appendix

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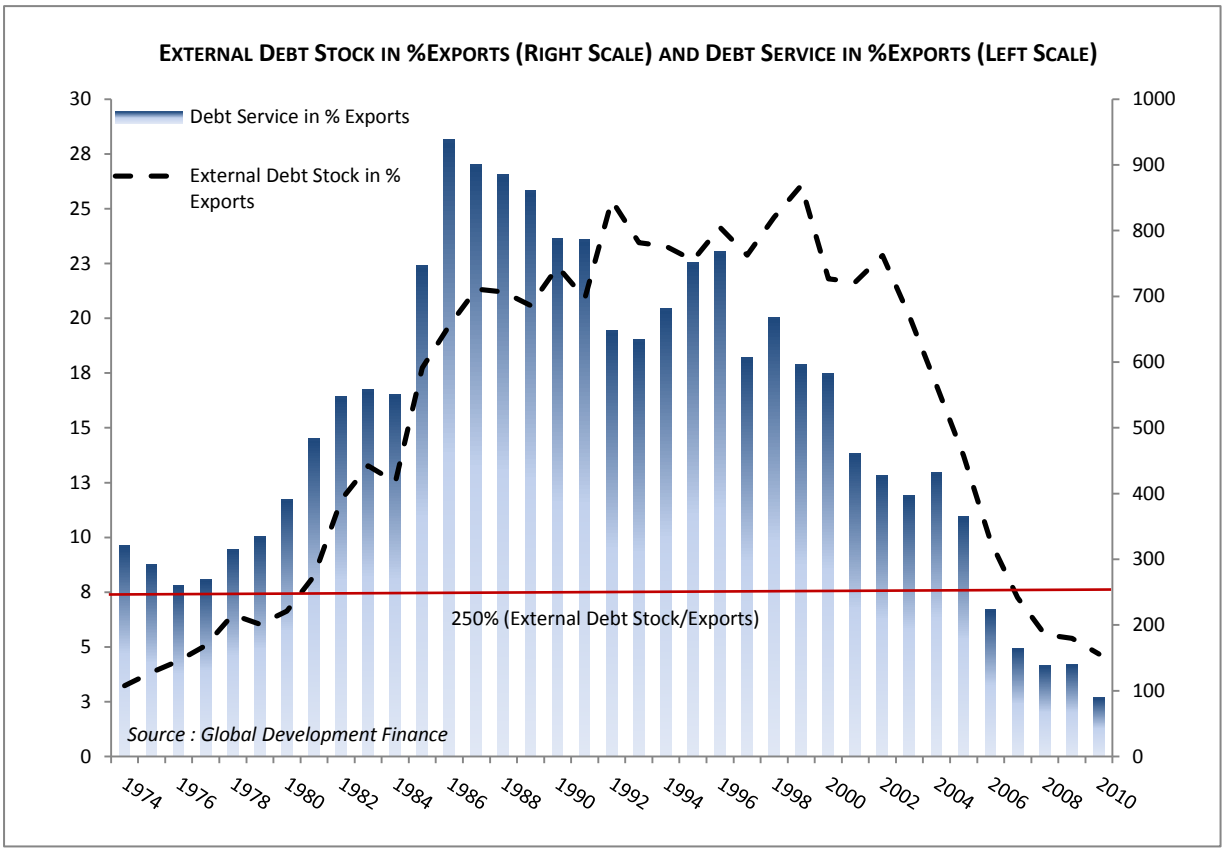
APPENDIX

TABLE 1. VARIABLES, DESCRIPTION, OBSERVATION AND DESCRIPTIVE STATISTICS

VARIABLE	DESCRIPTION	OBSERVATION	MEANS	STANDARD DEVIATION
TOT DOM REV	Total domestic revenues (tax and non-tax revenues) in percentage of GDP *Source: Article IV and Staff Report (IMF documents)*	378	15.585	4.848
CURR PRIM EXP	Current primary government expenditures (without interest payments) in percentage of GDP. *Source: Article IV and Staff Report (IMF documents)*	378	13.681	5.177
GOV INVT	Government investments. Can be viewed as capital expenditures in percentage of GDP. *Source: Article IV and Staff Report (IMF documents)*	378	9.508	6.389
DOM FINA	Domestic financing, represents the financing need of the country in percentage of GDP. *Source: Article IV and Staff Report (IMF documents)*	378	0.789	4.326
TOT GRANTS	Total grants effectively received by the country excluding debt relief assistance in percentage of GDP. *Source: Article IV and Staff Report (IMF documents)*	378	6.114	8.950
TOT LOANS	Total loans effectively received by the country in percentage of GDP *Source: Article IV and Staff Report (IMF documents)*	374	3.846	2.922
SPREAD ODA	The spread between the average level of net ODA received within the sample and the net ODA received level for a given country (expressed in percentage GDP point deviation from the mean value). Computation realized by authors. *Source: GDF database*	344	0.000	12.512
DEBT RELIEF	Debt service savings in aggregate: debt service savings from HIPC + debt service savings from MDRI. In percentage of GDP. *Source: Status of Implementation (IMF Documents)*	384	1.752	2.507
HIPC RELIEF	Debt service savings from HIPC; authors' computation. In percentage of GDP. *Source: Status of Implementation (IMF Documents)*	384	1.356	2.088
MDRI RELIEF	Debt service savings from MDRI; authors' computation. In percentage of GDP. *Source: Status of Implementation (IMF Documents)*	384	0.395	0.805

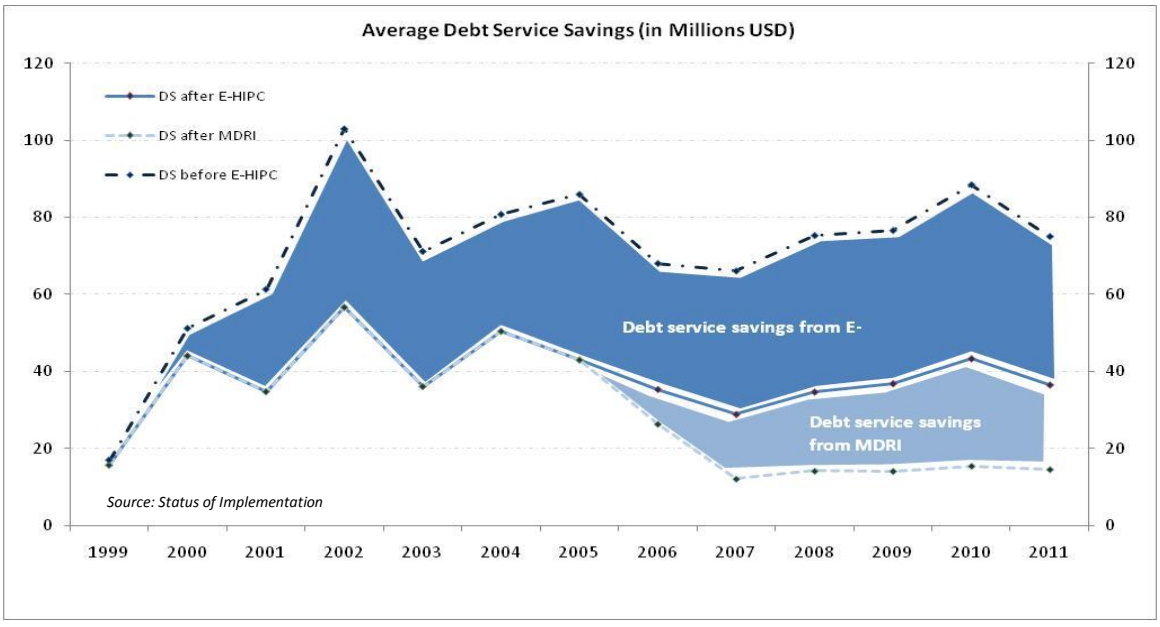
Notes: All these variables have been gathered from 1996 to 2011 and for 24 countries except for the Spread ODA measure which has been collected only for 23 countries (there were too many missing values for Sao Tome and Principe)

FIGURE 1. EVOLUTION OF THE AVERAGE DEBT SERVICE AND EXTERNAL DEBT IN A SAMPLE OF 24 AFRICAN HIPC'S.



Note: These are average figures (unweighed). Those levels might therefore be viewed as extremely high but this is mainly due to some outliers within our sample that experienced impressive levels of indebtedness (ex: Guinea-Bissau, Mozambique, and Tanzania). Moreover, we put forward these figures in order to analyze the trend and not the levels.

FIGURE 2. EVOLUTION OF AVERAGE DEBT SERVICE SAVINGS FROM DEBT RELIEF PROGRAMS.



Authors' computation

TABLE 2: GRANGER CAUSALITY TEST IN HETEROGENEOUS PANEL.

CAUSALITY	**From**	DEBT RELIEF (Aggregated measure)	
To	Lag order	K = 1	K = 2
TOTAL DOMESTIC REVENUE		[4.978]	[4.6853]
p-value		*(0.0000)*	*(0.0000)*
GOVERNMENT INVESTMENT		[5.1936]	[5.1098]
p-value		*(0.0000)*	*(0.0000)*

Z~(HNC) in brackets

H0: There is Homogeneous Non Causal Relationship from X to Y

H1: There is at least one Causal Relationship from X to Y within the Sample

TABLE 3: GRANGER CAUSALITY TEST IN HETEROGENEOUS PANEL (REVERSE CAUSALITY).

CAUSALITY	**To**	DEBT RELIEF (Aggregated measure)	
From	Lag order	K = 1	K = 2
TOTAL DOMESTIC REVENUE		[2.0118]	[1.4676]
p-value		*(0.0442)*	*(0.1422)*
GOVERNMENT INVESTMENT		[-0.3154]	[0.8927]
p-value		*(0.7525)*	*(0.3720)*

Z~(HNC) in brackets

H0: There is Homogeneous Non Causal Relationship from X to Y

H1: There is at least one Causal Relationship from X to Y within the Sample

Source: Dumitrescu, E. and Hurlin, C. (2012), "**Testing for Granger Non-Causality in Heterogeneous Panels**", Economic Modeling

TABLE 4: DEBT RELIEF'S IMPACTS ON TOTAL DOMESTIC REVENUES

	DIFFERENCE GMM				SYSTEM GMM			
Dep. Var.: TOT DOM REV	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
TOT DOM REV $_{t-1}$	0.197**	-0.147	0.0699	-0.110	0.720***	0.475**	0.744***	0.695***
	(0.0753)	(0.107)	(0.134)	(0.116)	(0.0604)	(0.174)	(0.0797)	(0.171)
TOT DOM REV $_{t-2}$	0.220*	-0.0150	0.178*	-0.0704	0.0809	0.282*	0.0366	0.189
	(0.109)	(0.0616)	(0.0963)	(0.0820)	(0.0744)	(0.129)	(0.0733)	(0.117)
CURR PRIM EXP $_{t-1}$	0.232	-0.116*	0.293	-0.192	-0.166**	0.401***	-0.135	0.333**
	(0.160)	(0.0580)	(0.188)	(0.161)	(0.0721)	(0.124)	(0.0840)	(0.151)
CURR PRIM EXP $_{t-2}$	-0.102	-0.0555	-0.120	-0.0459	0.253***	-0.108	0.252***	-0.0662
	(0.105)	(0.0479)	(0.122)	(0.0580)	(0.0861)	(0.0722)	(0.0865)	(0.0610)
GOV INVT $_{t-1}$	0.0107	0.105	0.0923	0.243	0.106	-0.211***	0.0737	-0.216**
	(0.113)	(0.191)	(0.116)	(0.247)	(0.0699)	(0.0626)	(0.0894)	(0.0946)
GOV INVT $_{t-2}$	-0.0757	-0.173**	-0.153	-0.201*	-0.0744*	0.181***	-0.0856*	0.199***
	(0.0685)	(0.0715)	(0.0913)	(0.102)	(0.0415)	(0.0551)	(0.0492)	(0.0483)
DOM FINA $_{t-1}$	-0.0940	-0.0515	-0.109	0.0193	-0.0196	-0.0456	0.0441	0.172
	(0.0800)	(0.0377)	(0.0761)	(0.0627)	(0.0712)	(0.186)	(0.0881)	(0.126)
DOM FINA $_{t-2}$	0.100	-0.0542	0.0668	-0.0759	0.0344	-0.00681	0.0486	-0.0715
	(0.0596)	(0.0364)	(0.0540)	(0.0648)	(0.0366)	(0.0609)	(0.0444)	(0.0763)
TOT GRANTS $_{t-1}$	-0.131***		-0.0819**		-0.0134		-0.00452	
	(0.0431)		(0.0318)		(0.0237)		(0.0278)	
TOT GRANTS $_{t-2}$	-0.0215		-0.00519		0.0139		0.00902	
	(0.0313)		(0.0255)		(0.0112)		(0.0137)	
TOT LOANS $_{t-1}$	-0.0803		-0.160		0.144		0.147	
	(0.182)		(0.193)		(0.157)		(0.144)	
TOT LOANS $_{t-2}$	0.168		0.297		0.162**		0.199*	
	(0.101)		(0.179)		(0.0604)		(0.103)	
SPREAD ODA $_{t-1}$		-0.00493		0.0169		-0.0709***		-0.0680***
		(0.0232)		(0.0374)		(0.0221)		(0.0174)
SPREAD ODA $_{t-2}$		-0.0290***		-0.0367**		-0.000641		0.00454
		(0.00964)		(0.0134)		(0.0120)		(0.0120)
DEBT RELIEF $_{t-1}$	0.367***	0.586***			-0.128	-0.128		
	(0.104)	(0.173)			(0.0860)	(0.441)		
DEBT RELIEF $_{t-2}$	0.186	0.310***			0.403***	0.292		
	(0.128)	(0.0598)			(0.0967)	(0.441)		
HIPC RELIEF $_{t-1}$			0.384*	0.352			-0.448*	-0.510
			(0.198)	(0.227)			(0.237)	(0.322)
HIPC RELIEF $_{t-2}$			0.292	0.528*			0.625***	0.285**
			(0.294)	(0.287)			(0.171)	(0.124)
MDRI RELIEF $_{t-1}$			2.410	1.042			2.813	-3.530*
			(2.816)	(1.081)			(3.392)	(1.900)
MDRI RELIEF $_{t-2}$			-2.149	0.167			-2.971	4.406*
			(3.350)	(1.358)			(3.874)	(2.252)
OBSERVATIONS	302	292	302	292	326	315	326	315
NUMBER OF COUNTRY	24	23	24	23	24	23	24	23
AR(1) TEST (P-VALUE)	0.142	0.298	0.130	0.163	0.057	0.146	0.026	0.091
AR(2) TEST (P-VALUE)	0.949	0.030	0.979	0.118	0.475	0.431	0.693	0.000
HANSEN OIR (P-VALUE)	0.829	0.935	0.978	0.777	0.986	0.792	0.999	0.997

Notes: The table reports regression coefficients and, in brackets, their associated robust standard errors. * significant at 10 %; ** significant at 5 %; ***significant at 1 %. The table reports only the estimates for total domestic revenues coming from our "pseudo VAR". This model is estimated by Two-Step Difference and System GMM, using Stata 11 with XTABOND2 command. As instruments we use (t-1), (t-2) (t-3) and (t-4) lagged value of endogenous variables for the Difference GMM specification. As regard the System

GMM specification, we use (t-1), (t-2) and (t-3) lagged value as instruments. As diagnostic, the table reports the p-values of the Hansen test for overidentifying restrictions (OIR, the null hypothesis is the validity of the instrument set) and the Arellano and Bond autocorrelation tests of first and second order (AR(1) and AR(2), the null hypothesis is no autocorrelation).

TABLE 5: DEBT RELIEF'S IMPACTS ON GOVERNMENT INVESTMENTS

	DIFFERENCE GMM				SYSTEM GMM			
Dep. Var.: GOV INVESTMENTS	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
GOV INVT $_{t-1}$	-0.0369	-0.0797	0.0129	-0.0806	0.266**	0.0616	0.180	0.0161
	(0.164)	(0.0837)	(0.176)	(0.0983)	(0.116)	(0.127)	(0.221)	(0.133)
GOV INVT $_{t-2}$	0.183**	0.106**	0.171**	0.169**	-0.162	0.155***	0.0975	0.190***
	(0.0692)	(0.0430)	(0.0696)	(0.0795)	(0.197)	(0.0440)	(0.175)	(0.0652)
TOT DOM REV $_{t-1}$	0.722***	0.248	0.720***	0.273	0.370***	0.267**	0.569***	0.330***
	(0.177)	(0.206)	(0.187)	(0.194)	(0.0894)	(0.106)	(0.148)	(0.0977)
TOT DOM REV $_{t-2}$	0.185	-0.168*	0.195	-0.231	-0.130	-0.0963	-0.255**	-0.142
	(0.120)	(0.0885)	(0.126)	(0.201)	(0.109)	(0.120)	(0.109)	(0.125)
CURR PRIM EXP $_{t-1}$	-0.234*	-0.102	-0.224	-0.0311	-0.0950	0.369***	-0.290***	0.339***
	(0.136)	(0.166)	(0.135)	(0.182)	(0.114)	(0.0795)	(0.0852)	(0.112)
CURR PRIM EXP $_{t-2}$	-0.388***	-0.257***	-0.370***	-0.210**	0.0398	-0.155***	0.133	-0.136**
	(0.0677)	(0.0633)	(0.0763)	(0.0900)	(0.108)	(0.0497)	(0.102)	(0.0597)
DOM FINA $_{t-1}$	0.0471	-0.00154	0.0244	-0.0771	0.517***	0.0481	0.483**	0.0249
	(0.0714)	(0.147)	(0.0704)	(0.209)	(0.162)	(0.140)	(0.194)	(0.192)
DOM FINA $_{t-2}$	0.213***	0.0294	0.212***	-0.00898	-0.0367	-0.0705	-0.0488	-0.110*
	(0.0509)	(0.0485)	(0.0585)	(0.0950)	(0.0629)	(0.0491)	(0.0672)	(0.0599)
TOT GRANTS $_{t-1}$	-0.229***		-0.238***		0.107		0.0985	
	(0.0442)		(0.0461)		(0.0834)		(0.0853)	
TOT GRANTS $_{t-2}$	0.0300**		0.0288*		0.0760**		0.0843**	
	(0.0142)		(0.0142)		(0.0287)		(0.0327)	
TOT LOANS $_{t-1}$	0.245		0.168		0.0345		0.243	
	(0.262)		(0.272)		(0.158)		(0.318)	
TOT LOANS $_{t-2}$	0.165		0.171		0.706*		0.325	
	(0.156)		(0.158)		(0.362)		(0.340)	
SPREAD ODA $_{t-1}$		0.0592**		0.0528**		0.0514***		0.0549**
		(0.0234)		(0.0231)		(0.0158)		(0.0214)
SPREAD ODA $_{t-2}$		-0.00395		-0.00354		0.00471		0.00816
		(0.00941)		(0.00892)		(0.00355)		(0.00733)
DEBT RELIEF $_{t-1}$	0.716***	0.315**			0.332	0.105		
	(0.253)	(0.121)			(0.366)	(0.274)		
DEBT RELIEF $_{t-2}$	0.238	0.550***			0.331	0.315		
	(0.252)	(0.150)			(0.282)	(0.279)		
HIPC RELIEF $_{t-1}$			1.374***	0.220			-0.249	0.0512
			(0.482)	(0.339)			(0.507)	(0.216)
HIPC RELIEF $_{t-2}$			-0.352	0.466***			0.638*	0.555*
			(0.455)	(0.139)			(0.333)	(0.304)
MDRI RELIEF $_{t-1}$			-2.293	-1.835			0.744	-2.841
			(3.666)	(3.703)			(2.506)	(2.833)
MDRI RELIEF $_{t-2}$			3.926	3.415			0.147	3.664
			(4.071)	(4.672)			(2.845)	(3.269)
OBSERVATIONS	302	292	302	292	326	315	326	315
NUMBER OF COUNTRY	24	23	24	23	24	23	24	23
AR(1) TEST (P-VALUE)	0.031	0.044	0.000	0.053	0.028	0.089	0.052	0.100
AR(2) TEST (P-VALUE)	0.397	0.549	0.066	0.737	0.155	0.862	0.001	0.661
HANSEN OIR (P-VALUE)	0.489	0.665	0.901	0.796	1.000	0.978	0.998	0.998

Notes: The table reports only the estimates for government investments coming from our "pseudo VAR". All information concerning the significance of regression coefficients, standard errors, instruments used and test of overidentification or of autocorrelation are the same as in the previous table.

TABLE 6: EXAMPLE OF "PSEUDO VAR" WITH DIFFERENCE GMM ESTIMATORS AND AGGREGATED MEASURE OF DEBT RELIEF

Dep. Var. :	(1) TOT DOM REV	(2) CURR PRIM EXP	(3) GOV INVT	(4) DOM FINA	(5) TOT GRANTS	(6) TOT LOANS	(7) DEBT RELIEF
TOT DOM REV $_{t-1}$	0.197**	0.409**	0.722***	-0.221	0.420*	0.239	-0.0526
	(0.0753)	(0.155)	(0.177)	(0.509)	(0.210)	(0.264)	(0.142)
TOT DOM REV $_{t-2}$	0.220*	-0.0605	0.185	-1.101**	-0.835**	-0.362***	-0.0313
	(0.109)	(0.128)	(0.120)	(0.432)	(0.301)	(0.0803)	(0.0362)
CURR PRIM EXP $_{t-1}$	0.232	0.352***	-0.234*	-1.313***	0.153	-0.114	0.0578
	(0.160)	(0.0713)	(0.136)	(0.164)	(0.206)	(0.125)	(0.0621)
CURR PRIM EXP $_{t-2}$	-0.102	0.280***	-0.388***	0.865***	0.494***	0.0568	-0.0726*
	(0.105)	(0.0645)	(0.0677)	(0.139)	(0.177)	(0.0911)	(0.0371)
GOV INVT $_{t-1}$	0.0107	-0.0615	-0.0369	0.460	-1.288***	-0.281***	0.0285
	(0.113)	(0.115)	(0.164)	(0.396)	(0.258)	(0.0844)	(0.0631)
GOV INVT $_{t-2}$	-0.0757	-0.0502	0.183**	0.150	0.497***	0.199***	-0.0174
	(0.0685)	(0.0831)	(0.0692)	(0.183)	(0.0780)	(0.0418)	(0.0288)
DOM FINA $_{t-1}$	-0.0940	0.0119	0.0471	-0.151	0.498***	0.124*	-0.0710**
	(0.0800)	(0.0669)	(0.0714)	(0.147)	(0.104)	(0.0619)	(0.0282)
DOM FINA $_{t-2}$	0.100	0.124***	0.213***	-0.229	-0.785***	-0.0104	-0.0345
	(0.0596)	(0.0381)	(0.0509)	(0.150)	(0.0973)	(0.0585)	(0.0274)
TOT GRANTS $_{t-1}$	-0.131***	-0.130***	-0.229***	0.105	0.163***	-0.0678**	0.0219***
	(0.0431)	(0.0202)	(0.0442)	(0.0795)	(0.0230)	(0.0321)	(0.00758)
TOT GRANTS $_{t-2}$	-0.0215	-0.0337*	0.0300**	0.0240	-0.244***	-0.0181	-0.00764
	(0.0313)	(0.0190)	(0.0142)	(0.0165)	(0.0226)	(0.0109)	(0.00837)
TOT LOANS $_{t-1}$	-0.0803	-0.140	0.245	-0.846	1.155***	0.334**	-0.114
	(0.182)	(0.140)	(0.262)	(0.704)	(0.381)	(0.135)	(0.117)
TOT LOANS $_{t-2}$	0.168	0.124	0.165	-0.602**	-0.755***	-0.00580	-0.0156
	(0.101)	(0.160)	(0.156)	(0.278)	(0.120)	(0.103)	(0.0634)
DEBT RELIEF $_{t-1}$	0.367***	0.293*	0.716***	-0.996*	0.875**	0.256	0.482***
	(0.104)	(0.168)	(0.253)	(0.559)	(0.385)	(0.209)	(0.0846)
DEBT RELIEF $_{t-2}$	0.186	-0.100	0.238	0.464	-0.604	-0.508*	0.276***
	(0.128)	(0.0634)	(0.252)	(0.520)	(0.419)	(0.255)	(0.0257)
OBSERVATIONS	302	302	302	302	302	302	306
NUMBER OF COUNTRY	24	24	24	24	24	24	24
AR(1) TEST (P-VALUE)	0.142	0.102	0.031	0.096	0.052	0.004	0.133
	0.949	0.650	0.397	0.960	0.686	0.006	0.098
AR(2) TEST (P-VALUE)	0.829	0.513	0.489	0.704	0.955	0.986	0.652
HANSEN OIR (P-VALUE)							

Notes: The table reports only the estimates for our "pseudo VAR" with Difference GMM estimators, aggregated debt relief variable and disaggregated aid measures. All information concerning the significance of regression coefficients, standard errors, instruments used and test of overidentification or of autocorrelation are the same as in the previous table. The equation (1) is the equation (I) in the Table 3 and the equation (2) is the equation (I) in the Table 4. By consequent all the remaining equations in Table 3 and Table 4 come from this "pseudo VAR" specification which has been ran several times using alternatively Difference and System GMM estimators with different aid and debt relief variables.

TABLE 7: SUMMARY TABLE – ROBUSTNESS CHECKS

SUMMARY TABLE TYPES OF ESTIMATES	Instruments	EFFECTS ON TOTAL DOMESTIC REVENUES FROM			EFFECTS ON PUBLIC INVESTMENTS FROM		
		Debt relief	HIPC	MDRI	Debt relief	HIPC	MDRI
LAGGED EFFECTS ESTIMATES[1]							
POOLED VAR WITH FIXED EFFECTS AND DISAGGREGATED AID	-	L1 - (+) **	L2 - (+) **	L1 - (+)** L2 - (-)**	L1 - (+) **	L2 - (+) **	L1 - (+) **
POOLED VAR WITH FIXED EFFECTS AND ODA	-	-	L2 - (+) **	-	L2 - (+) **	L2 - (+) **	-
BASIC PANEL FIXED EFFECTS (LSDV ONLY)	-	-	L2 - (+) *	-	L2 - (+) **	L2 - (+) *	-
BASIC PANEL FIXED EFFECTS (TIME, COUNTRY, RANDOM EFFECTS)	-	-	-	-	-	L2 - (+) *	-
DIFF GMM (TWO-STEP_2-4) WITH DISAGGREGATED AID	29	L1 - (+)***	l1 - (+)*	-	L1 - (+)***	L1 - (+)***	-
DIFF GMM (TWO-STEP_2-4) WITH NET ODA	25	L1 - (+)** L2 - (+)**	L2 - (+)*	-	L1 - (+)** L2 - (+)***	L2 - (+)***	-
SYSTEM GMM (TWO-STEP_2-3) WITH DISAGGREGATED AID	42	L2 - (+)***	L1 - (-)* L2 - (+)***	-	-	L2 - (+)*	-
SYSTEM GMM (TWO-STEP_2-3) WITH NET ODA	37	-	L2 - (+)**	L2 - (-)*	-	L2 - (+)*	-
INESSA LOVE'S PANEL VAR WITH NET ODA	-	L2 - (+) *	L2 - (+) **	-	-	L2 - (+) *	L2 - (+) **
NON- LAGGED EFFECTS ESTIMATES[1]							
BASIC PANEL FIXED EFFECTS (TIME, COUNTRY, RANDOM EFFECTS)	-	(+)**	-	-	(+)***	(+)***	-
DIFF GMM (TWO-STEP_2-4) WITH DISAGGREGATED AID	24	-	-	-	(+)***	(+)***	(+)***
DIFF GMM (TWO-STEP_2-4) WITH NET ODA	21	(+)***	(+)***	(+)**	(+)***	(+)***	(+)*
SYSTEM GMM (TWO-STEP_2-3) WITH DISAGGREGATED AID	32	(+)***	-	(+)***	(+)***	-	(+)*
SYSTEM GMM (TWO-STEP_2-3) WITH NET ODA	28	(+)***	-	-	(+)***	-	-

Notes: This table represents the summary of all the estimates we ran as robustness checks. The Difference and System GMM estimates are the ones reported above in Table 4 and 5. The Pooled VAR estimates have been ran following the Cassimon and Van Campenhout [2008] methodology. We also ran "pseudo VARs" using basic panel econometrics nut without accounting for endogeneity. However within our basic panel estimates we test for Random versus Fixed effects (Hausman & Taylor [1981]) and for temporal fixed effects. Finally we ran a VAR using the Inessa Love's methodology which is specifically adapted for panel econometrics. In the second part of the table we test for non-lagged effects of debt relief on our variables of interest. Here again we used the same range of econometrical specifications as the ones for lagged effects. L1 means one-period lagged effect whereas L2 means two-periods lagged effect. (+) indicates a positive impact and (-) indicates a negative impact. * significant at 10 %, ** significant at 5 %, *** significant at 1 %. [1] All dynamic and static estimates have been run twice: one with the aggregated measure of debt relief (dr), one with the disaggregated measure (Enhanced HIPC and MDRI).