

The HIPC initiative and its impact on health and education expenditures

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ABSTRACT: In 1996 the IMF and World Bank launched the Heavily Indebted Poor Countries (HIPC) initiative. The initiative provided debt relief to all those countries characterized by high levels of debt and poor economic outcomes. This study aims to establish whether the debt cut freed up resources for expenditures in health and education. The author runs a regression of health and education expenditures on debt and on some institutional variables, which are included to control for the quality of institutions. Results show that these countries do not suffer from debt overhang since there is little correlation between debt — either as outstanding debt or as debt service — and spending in health and education. On the other hand, improvements in institutional quality increases the amount of funding allocated to these sectors, proving that institutions play a major role for the development of these poor countries.

Keywords: Debt Relief, HIPC, IMF, Governance, Corruption, Development Spending.

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Introduction

In recent years a debate over public debt in Heavily Indebted Poor Countries (HIPCs)¹ and the right of creditors to collect it has divided public opinion. One side sees the external debt of Third World countries as odious since it imposes a burden on their potential development and economic growth, while the other believes that high levels of debt are just symptoms of bad policies and ineffective institutions ruling in the country. In economic terms we are witnessing a dispute between economists who support the debt overhang theory and believe debt is a major obstacle for the reduction of poverty and development in HIPCs,² and economists who attribute poor economic outcomes to the “absence of functional economic institutions that provide the foundation for profitable investments and growth.”³

According to Krugman if a debtor is at the stage where he will struggle to repay his debt then the creditor will have two choices: he can either finance the debt through more lending in hope that the country will repay it in the end, or he can forgive part of the debt

1 Note that “HIPCs” is hereby used to refer to the countries taking part in the initiative and “HIPC” to refer to the initiative itself.

2 Augustin Kwasi Fosu, “Implications of the External Debt-Servicing Constraint for Public Health Expenditure in Sub-Saharan Africa,” *Oxford Development Studies* 36, no. 4 (2008): 363–77.

3 Serkan Arslanalp and Peter Blair Henry, “Debt Relief,” *Journal of Economic Perspectives* 20, no. 1 (Winter, 2016): 207-220.

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so that it will be easier for the country to borrow money which can then be reinvested to generate profit to repay the debt.⁴ Both choices have a trade-off because of the moral hazard argument: there is no guarantee that the country will attempt to reduce existing levels of debt, or prevent new debt from reaching previous levels.⁵

When the IMF, World Bank, and African Development Fund launched both the HIPC initiative in 1996 and the complementary Multilateral Debt Relief Initiative (MDRI)⁶ in 2005 as debt relief initiatives for the cancellation of concessional debt owed by HIPCs (Figure 1), they did not consider the moral hazard involved. This debt relief program aimed to foster growth, generate debt sustainability in the long run and free up resources for spending in development (education and health).

While debt sustainability and the link between debt burden and growth have been thoroughly analyzed, relatively little empirical research has been conducted to address the correlation between debt, either as outstanding debt or as debt service, and expenditure in development.

I will use the latest data released by the IMF and the World Bank on the results achieved by the HIPC and MDRI initiatives to estimate any potential correlation between debt and development expenditure (Figure 2) in order to refute or validate the criticisms leveled at the initiatives on robust empirical grounds. It may be the case that the increase of spending in health and education is not correlated to the cut of debt but to an improvement in the institutional environment, which multilateral institutions demand in return for the debt cut. The contribution of my paper comes from including not only economic variables but also “institutional variables” when analysing the debt relief initiative. I will regress expenditure in health (or education) on both macroeconomic variables and variables such as corruption and democratic accountability. While the literature review will openly show that institutions play a major role when it comes to public expenditure, no study has empirically estimated the economic impact of these “institutional variables” in the context of debt relief. My study tries to fill this gap. I am also attempting to get the best fitting model (according to specific statistical techniques) in the context of the initiative, so that to put the basis, i.e. identify the variables, for future studies focused on the relation between debt and institutions.

The rest of the paper is organized as follows. The introduction provides an overview on the HIPC initiative. The following section is a literature review on the topic, covering the main studies carried out to analyse whether this debt relief programme has achieved its goals or not. It will also present the views of economists on the role of debt overhang

4 Paul Krugman, “Financing vs. Forgiving a Debt Overhang,” *Journal of Development Economics* 29, no. 3 (1988): 253–68.

5 Rebecca Nelson, “Moral Hazard, Sovereign Default, and Debt Relief,” 2008.

6 The HIPC Initiative entailed coordinated action by multilateral organizations and governments to reduce to sustainable levels the external debt burdens of the most heavily indebted poor countries. The MDRI went further by providing full debt relief to free up additional resources to help these countries reach the Millennium Development Goals.

and the role of institutions related to the problem of debt and budget decisions. The third section will provide a framework to understand how governments allocate resources to debt and education. In the fourth section I will describe the dataset, specify the empirical model and outline the estimation method used. In the fifth section I will provide the reader with results. Finally, in the concluding section I will depict the conclusions of my research, looking at possible drawbacks which future studies will need to deal with.

HIPC Initiative

For decades, concessional lending has been a fundamental element of international support for underdeveloped countries who were not sufficiently creditworthy to attract commercial lending. Many countries built up large amounts of external public debt because of both global and domestic factors. Although concessional lending is characterized by lower interest rates and longer repayment periods than typical market loans, these countries have struggled to make repayments on their debt and have increased their stock to extremely high levels. Their ratios of net present value of external debt to GDP or to exports (most informative measures on the capacity of a country to repay its foreign debt) have dramatically increased during the 1980s and 1990s (Figure 3).

This incredibly large debt burden, combined with the cuts imposed on HIPC government's budget by the Bretton Woods Institutions in exchange for further loans, resulted in a decrease of expenditure in education and health.⁷ Debt service payments accounted for a high percentage of the budget spending preventing the financing of poverty reduction efforts. For example, in countries such as Ethiopia debt service payments accounted for 11% of the national GDP, which is equivalent to the spending on poverty reduction policies (Data from the IMF report on HIPC).

Once it became clear that these countries would be unable to repay their huge debts the IMF and World Bank, in the context of meeting the Millennium Development Goals⁸ (MDG), launched the HIPC initiative in 1996. In 1999 they lowered the initial conditions in order to allow more countries to be eligible to get debt relief. Originally the initiative aimed to cover 41 countries (mainly African) and to cut around \$120 billion of outstanding debt. As previously stated, there were three main targets: ensuring long term fiscal sustainability, fostering growth and freeing up resources for development expenditure. A country is considered to be eligible for debt relief if it meets the following conditions:

- It received concessional lending from the International Development association
- Debt burden indicators were above the following thresholds:⁹

7 Eduardo Lora and Mauricio Olivera, "Public Debt and Social Expenditure: Friends or Foes?" *Emerging Markets Review* 8, no. 4 (2007): 299–310.

8 The United Nations Millennium Development Goals are eight goals that all 189 UN Member States have agreed to try to achieve by the year 2015. The United Nations Millennium Declaration, signed in September 2000 commits world leaders to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women.

9 These are the new thresholds established in 1999, after the previous ones were criticized for being not

- Export: 150% for the ratio of net present value (NPV) of outstanding debt over export
- Revenues: 250% for the ratio of NPV of outstanding debt over revenue
- It has a track record of reform and developed a Poverty Reduction Strategy Paper (PRSP) and the Poverty Reduction and Growth Facility (PRGF) program

Eligible countries can then reach the Decision Point (DP). At this point countries are asked to implement reforms included in both the PRSP and the PRGF, following the directives of the IMF. The peculiarity of these reforms is that they must have short term results. Bretton Woods institutions meet regularly in order to assess whether a country has met the requirements to step forward to the completion point (CP) at which stage the country receives debt relief. The required reforms include: introduction of demand restraints (controlling money supply and government deficit), exchange rate adjustments, liberalization of foreign trade and payments, development of private sector initiatives, and improvement of governance.

The success of the HIPC initiative, according to Scott and Rhodd¹⁰, relies on both the increased flexibility of the conditions and on the high opportunity cost (not having any cancellation of the outstanding debt) faced by HIPCs in case they refuse to take part in the initiative. Once a country has maintained macroeconomic stability, carried out structural reforms and met the economic targets, it can reach the last stage of the HIPC initiative and be entitled to complete debt forgiveness.

Literature review

This paper relates to the previous literature covering the relationship between sovereign debt, debt relief and government expenditure. I have expanded it to the wider literature about relations between public external debt and fiscal policy, from which we can infer some important conclusions on why the *debt overhang theory* and *liquidity constraints* may or may not affect spending in health and education. Since my paper goes beyond the simple relationship between debt and expenditure and also assesses the importance of institutions in the national budgetary decision, my literature review analyses the role they play in fiscal policy decisions.

Economic variables affecting expenditures in health and education

Debt overhang is defined by Krugman as “the presence of an existing, inherited debt sufficiently large that creditors do not expect with confidence to be fully repaid [...] because the expected present value of potential future resources transfer is less than its

applicable to most of the countries that would have benefitted from the initiative.

10 Gerald Scott and Rupert Rhodd, “Will Welfare in Sub-Saharan African Countries Increase After Debt Cancellation?” *Asian-African Journal of Economics and Econometrics* 11, no. 1 (2001): 43–54.

debt.”¹¹ Excessive debt may discourage governments to implement policy reforms since the perceived benefit from these improvements will go to debt service rather than to the poor through public service programmes. As Bird and Milne¹² argued, a quantitatively relevant stock of debt acts as a disincentive to economic reforms: the marginal benefit from an improvement in the economic situation would benefit creditors more than the country itself. Spending in education and health, where the outcomes are only visible in the medium to long term, are therefore highly discouraged.

At what level the outstanding stock of debt is going to generate a debt overhang problem is a disputed topic. Nguyen, Clements, and Bathacharya¹³ studied a database of 100 countries and found that the problem arises when the debt-GDP ratio is at 20%. Further research undertaken by Pattillo, Poirson and Ricci¹⁴ stated that the threshold changes across countries depending on their level of institutions and the quantity of aid received. Those countries that rely on bad policies and institutions have lower thresholds. It could be important to consider for our dataset, where countries score really low when it comes to institutional quality.

Chauvin and Kraay¹⁵ published the first real comprehensive evaluation of the effect of the HIPC initiative on expenditure in poverty reduction policies. Their paper is unique since in its regression it included an independent variable measuring the quantity of debt relieved, finding that there is no statistically significant correlation between debt relief and the share of education and health spending. The authors suggested that this may be due to the poor economic and institutional environment which prevented these countries from attaining all the benefits from the initiative. They do not exclude that the dataset available may affect their conclusions.

Most other studies on this topic have not used a variable for the amount of debt relief but simply correlated the amount of spending in education and health with the amount of debt, both as outstanding debt and debt service. Cassimon and Vaessen¹⁶ believe that debt service repayments are a more direct indicator of the resources soaked up by external obligations; if these countries spent so little in health and education it is only because of the interest paid on their debt. Fosu¹⁷ uses a database for African countries to study the

11 Krugman, “Financing vs. Forgiving a Debt Overhang.”

12 Graham Bird and Alistair Milne, “Debt Relief for Low Income Countries: Is It Effective and Efficient?” *The World Economy* 26, no. 1 (2003): 43–59.

13 Toan Quoc Nguyen, Benedict J. Clements, and Rina Bhattacharya, “External debt, public investment, and growth in low-income countries,” No. 3-249, International Monetary Fund, 2003.

14 Catherine Pattillo, Helene Poirson, and Luca Ricci, “External Debt and Growth,” Working paper. IMF, 2002, 69.

15 Nicolas Depetris Chauvin and Aart Kraay, “What Has 100 Billion Dollars Worth of Debt Relief Done for Low-Income Countries?” *SSRN Electronic Journal*, 2005.

16 Danny Cassimon and Bjorn Van Campenhout, “Aid Effectiveness, Debt Relief and Public Finance Response: Evidence from a Panel of HIPC Countries,” *Review of World Economics* 143, no. 4 (2007): 742-63.

17 Fosu, “Implications of the External Debt-servicing Constraint for Public Health Expenditure in Sub-Saharan Africa.”

correlation between debt service and public spending in the social sector between 1974-1995 (before the HIPC initiative took place). Their results show how the debt service burden affects the allocation of resources in health and education both more negatively and significantly than the size of public investment. In papers that mainly focused on the importance of international aid on spending decisions Cashel-Cordo and Craig¹⁸ and Outtara included the variable debt service in their regression and found that it is negatively correlated with spending in education and health even though the result is not statistically significant in Outtara.¹⁹

Beyond debt service repayment, the amount of outstanding debt can also influence the spending decision. Following Heller's idea of fiscal space: debt relief policy creates *fiscal space* since governments have more room to manoeuvre "for a desired purpose without any prejudice to the sustainability of a government's fiscal position." For this reason, other studies have included both debt service and amount of outstanding debt as explanatory variables to understand the composition of public expenditure.²⁰ Lora and Olivera looking at social expenditure in South America between 1985 and 2003, found that only the outstanding amount of debt influenced expenditures in poverty reduction policies. Supporting fiscal space theory, they asserted that outstanding debt reduces "the appetite for further indebtedness" and therefore, debt forgiveness or even more efficiently (for the debtor) debt default, increases social expenditures.²¹

Temah adopted a similar approach which looked at the impact of both outstanding debt relieved and debt service on the amount of spending in health, finding both variables to be statistically significant. The peculiarity of the paper is that the regression included the dummy variable "decision point". It captured the effect of being at the stage where the country is implementing the policies agreed with international institutions on public expenditures. The author interpreted its coefficient as the effect that being under the economic control of international institutions had on fiscal decisions.²² International institutions somehow generate responsibility and put "economic strings" on the government.²³

The HIPC initiative followed the success achieved by the Brady plan in solving the Latin American debt crisis of the 1980s. Direct evidence on Latin American countries shows that debt service payments, more than the outstanding debt itself, reduces the

18 Peter Cashel-Cordo and Steven G. Craig, "The Public Sector Impact of International Resource Transfers," *Journal of Development Economics* 32, no. 1 (1990): 17-42.

19 Bazoumana Ouattara, "Aid, Debt and Fiscal Policies in Senegal," *Journal of International Development* 18, no. 8 (2006).

20 Peter S. Heller, "Understanding Fiscal Space," Working paper. IMF, 2005.

21 Eduardo Lora and Mauricio Olivera, "Public Debt and Social Expenditure: Friends or Foes?"

22 Tsafack Temah, *Does Debt Relief Increase Public Health Expenditure? Evidence from Sub-Saharan African HIPCs*, UN Economic Commission for Africa, 2009

23 Jubilee Debt Campaign UK, "Jubilee Debt Campaign UK," Accessed March 03, 2016, <https://jubileedebt.org.uk/>.

amount of investment and spending by the government²⁴. Kaminsky and Pereyra were the first to explain the debt crisis not only by debt overhang theory due to harsher conditions of debt financing, but also by bad policies and political mistakes committed by national governments. For the first time — as far as I am aware- institutions were considered an important factor in the context of debt relief.²⁵

In order to solve the debt crisis in South America different measures were implemented but only the Brady Plan, a debt relief program implemented by the American government, managed to put an end to the debt problem. Its success, combined with both the pressure to achieve the MDGs and the commonly supported idea that “*No civilised country should try to collect the debts of people that are dying of hunger and disease and poverty,*” led to the implementation of the HIPC initiative.²⁶ International institutions hoped that by reducing the debt burden which according to Sachs led these countries into the poverty trap, resources would be freed up to increase spending in health and education.²⁷

The possibility of looking at the South American debt crisis as a benchmark for what happened in HIPCs depends on whether we accept that *debt overhang* existed in HIPCs. Henry and Arslanalp refute the presence of the *debt overhang* problem arguing that huge outstanding debt is a symptom of bad institutions rather than the cause of poor economic outcomes such as low expenditure in education and health. They are fully convinced that there are no economic conditions that would allow the debt relief to work for HIPCs: “*Debt relief worked for the Brady countries. If all else were equal, it might be reasonable to expect debt relief efforts to produce similar results. The problem is that all else is not equal.*”²⁸ First, there is evidence that *net resource transfer* (NRT)²⁹ for HIPCs has always been in excess, contrary to what happened for South American countries during the 1980s³⁰. Second, HIPCs lack potential domestic and foreign investors towards which a debt relief initiative would be more efficient and worthy by leading them to invest in the country. Third, HIPCs do not seem to be expected to repay their debt, since the international community will continue to provide them with fresh assistance.³¹

24 Daniel Cohen, “The Sustainability of African Debt,” *Policy Research Working Papers*, 1999.

25 Graciela L. Kaminsky and Alfredo Pereira, “The Debt Crisis: Lessons of the 1980s for the 1990s,” *Journal of Development Economics* 50, no. 1 (1996): 1-24.

26 Jeffrey Sachs, in an interview with the Financial Times in 2004; Ricci Cordella, and Ruiz-Arranz, “Debt Overhang or Debt Irrelevance?” *IMF Staff Papers* 57, no. 1 (2009): 1-24

27 Jeffrey Sachs, “Resolving the Debt Crisis of Low-Income Countries,” *Brookings Papers on Economic Activity* 2002, no. 1 (2002): 257-86.

28 Arslanalp and Henry, “Debt Relief.”

29 NRT is simply the annual new inflow of capital minus the gross capital outflows and we can consider it as a measure of the available liquidity. For further details, look at: Arslanalp and Henry, “Debt Relief.”

30 Cordella and Ruiz-Arranz, “Debt Overhang or Debt Irrelevance?”

31 Catherine A. Pattillo, Helene Poirson Ward, and Luca A. Ricci, *External Debt and Growth*. Working paper, IMF, 2002, 69.

Institutional variables affecting expenditures in health and education

My intention is to expand on the research of Chaving and Kraay,³² Loru and Olivera,³³ Fosu³⁴ and Temah³⁵ by taking into account the role of institutions in the budgetary decision in the context of debt relief. As I previously wrote, Henry and Arslanalp believe that the HIPC's fail to meet their goals because of inadequate institutions that are not able to grasp the benefits coming from the initiative:³⁶ "a minimum level of institutional quality is required to reap the benefits coming from debt relief."³⁷ This idea found strong support in the research carried out by Mauro which concluded that corruption reduces the share of education spending³⁸. The same result was achieved by De La Croix and Delavallade who found that countries characterized by high levels of corruption tend to invest more in physical capital investments and housing than in health and education.³⁹ On the other hand, scholars the idea that the presence of corruption up to a certain level is a "necessary grease to lubricate the stiff wheels of rigid government."⁴⁰

Snyder and Yackovlev showed how high levels of democracy facilitate the growth of development spending.⁴¹ Similarly, Kraay and Nehru stated that "improvements in the policy and institutional environment can lower the likelihood of debt distress for any given level of debt burden."⁴² The same reasons induced Easterly to state that debt relief is ineffective for countries where the government showed "high discount-rate behaviour"; once debt will be forgiven, the country reacquires the capacity to borrow and the government recreates the same debt.⁴³ Following debt relief, the debtor may take advantage of the new positive situation to finance excessive expenditures with external debt with the expectation that multilateral institutions will undertake future debt cancellations. Debt relief acts as an incentive for the continuation of the bad policies that have led the countries to accumulate such high levels of debt, in most of the cases to the

32 Chauvin and Kraay, "What Has 100 Billion Dollars Worth of Debt Relief Done for Low-Income Countries?"

33 Eduardo Lora and Mauricio Olivera, "Public Debt and Social Expenditure: Friends or Foes?"

34 Fosu, "Implications of the External Debt-servicing Constraint for Public Health Expenditure in Sub-Saharan Africa."

35 Temah, *Does Debt Relief Increase Public Health Expenditure?*

36 Arslanalp and Henry. "Debt Relief." 2006.

37 Elizabeth Asiedu, "Debt Relief and Institutional Reform: A Focus on Heavily Indebted Poor Countries," *The Quarterly Review of Economics and Finance* 43, no. 4 (2003): 614-26.

38 Paolo Mauro, "Corruption and the Composition of Government Expenditure," *Journal of Public Economics* 69, no. 2 (1998): 263-79.

39 David De la Croix and Clara Delavallade, "Growth, Public Investment and Corruption with failing Institutions," *Economics of Governance* 10, no. 3 (2008): 187-219.

40 Elisa Gamberoni, et al., "Is Corruption Efficiency-Enhancing? A Case Study of Nine Central and Eastern European Countries," *SSRN Electronic Journal*, 2016.

41 James Snyder and Irene Yackovlev, *Political and Economic Determinants of Changes in Government Spending on Social Protection Programs*, Master's thesis, Massachusetts Institute of Technology, 2000.

42 Aart Kraay and Vikram Nehru. "When Is External Debt Sustainable?" *The World Bank Economic Review* 20, no. 3 (2006): 341-65.

43 William Easterly, "How Did Heavily Indebted Poor Countries Become Heavily Indebted? Reviewing Two Decades of Debt Relief," *World Development* 30, no. 10 (2002): 1677-696.

benefit of the elites and detriment of the population.⁴⁴ Moreover, as previously explained, better debt ratios coming from debt forgiveness are likely to increase the amount of money available⁴⁵ which, in the presence of inefficient or corrupt institutions, is not going to benefit the population. For this reason, institutions play a pivotal role as without wise, forward looking and efficient institutions, it is likely that this money is not going to increase the amount of spending in health and education. Chauvin and Kraay found that debt relief generates a bigger impact in countries with good institutions, although their study did not include any variable controlling for the level of corruption or the quality of political institutions⁴⁶. This argument led Collier to support the idea of *governance conditionality* where the amount of debt forgiven is conditional upon an improvement in institutional quality⁴⁷. It is partially what happened in the HIPC initiative where, at least at the decision point, countries had to follow the guidelines given to them by multilateral institutions. This *governance conditionality* was not immune from criticism coming from NGOs, activists and economists such as Stiglitz, who claimed that these developing countries were “blackmailed” by multilateral institutions as they gave up their sovereignty in exchange for debt forgiveness.⁴⁸

Theoretical framework

In this section I am going to outline the theoretical model describing how debt relief affects social spending in health and education. This model will lay the ground for the specification of the empirical framework which I will use to analyze the specific HIPC case. I am taking the work done by previous researchers, and complementing it with further theory which is relevant to my study.

Government allocation of resources among sectors

I am using the theoretical model developed by Fosu which – as far as I know – is the most comprehensive analysis on spending decisions in African countries.⁴⁹ This model analyses the allocation of resources among sectors subject to the government’s budget constraints. I am also developing it by analysing how variables affect each other, as in the case of debt service on aid.

44 Easterly. “How Did Heavily Indebted Poor Countries Become Heavily Indebted? Reviewing Two Decades of Debt Relief.”

45 Moral hazard issues would rise also among creditors; private investors in one country’s debt would be more and more willing to lend if they know that in whichever situation, multilateral institutions would step in and guarantee that the country is not going to default.

46 Chauvin and Kraay. “What Has 100 Billion Dollars Worth of Debt Relief Done for Low-Income Countries?”

47 Paul Collier, “Assisting Africa to Achieve Decisive Change,” *Swedish Economic Policy Review* 13 (2006): 169-97.

48 Joseph Stiglitz, *Globalization and its Discontents*, (London: Penguin Books), 2002.

49 Fosu, “Implications of the External Debt-servicing Constraint for Public Health Expenditure in Sub-Saharan Africa.”

The government allocates its resources across J different sectors so that citizens can get services and maximize a social welfare utility function⁵⁰ $U(G_1, G_2, \dots, G_J)$. By maximizing the social utility function the government is also assumed to maximize the likelihood of remaining in power.

In this context we have a government maximizing the following social welfare quasi-concave utility function, by choosing how much to allocate among J different sectors.

$$(1) \quad U(G_1, G_2, \dots, G_j)$$

Subject to the government's budget constraints that explicitly states that government spending is equal to government revenues (R)

$$(2) \quad \sum_{i=1}^j G_i = R = T + A + N - D$$

Where T is tax revenue, A is aid, N is non-tax revenue and D is debt service repayments. All of these variables are assumed to be exogenously given. For HIPC's revenues must include Aid, since a vast literature show that a large part of aid is actually used for debt service repayments because of fungibility.⁵¹

We can write down the Lagrangian function as:

$$(3) \quad L = U(G_1, G_2, \dots, G_j) + \lambda[R - \sum_{i=1}^j G_i]$$

The first order conditions are:

$$(4) \quad \frac{\partial U}{\partial G_1} = \frac{\partial U}{\partial G_2} = \dots = \frac{\partial U}{\partial G_j}$$

$$(5) \quad \sum_{i=1}^j G_i = R = T + A + N + D$$

Equation (4) suggests that at the maximum, the marginal utility of increasing the expenditure on one sector is going to be equal to the marginal utility of increasing the expenditure in another sector. Assuming that both the strict quasi-concavity of the welfare utility function and the Karush-Kuhn-Tucker conditions are satisfied then the utility maximizing levels of G_j are going to be a function of R that is a function of all the other variables T, A, N, D (we cannot say more since we have not specified any utility function). Therefore, I can analyse how debt relief is going to affect the amount of G_j through changes in R.

50 Nobel-Prize winner Angus Deaton defines the social welfare utility as "a statistical aggregator that turns a distribution into a single number that provides an overall judgement on that distribution and that forces us to think coherently about welfare and its distribution." Angus Deaton, *The analysis of household surveys: a microeconomic approach to development policy*, (Washington: World Bank Publications, 1997).

51 Nancy Birdsall, Stijn Claessens, and Ishac Diwan, "Will HIPC Matter? The Debt Game and Donor Behaviour in Africa," WIDER Working Paper Series, World Institute for Development Economic Research (UNU-WIDER) 050 (2002).

$$(6) \quad G_j(R) = G_j(R(T, A, N, D))$$

Considering these as normal goods,⁵² then the partial effect of an increase in revenue on the expenditure decision sector j will be: $\frac{dG_j}{dR} > 0$. Since debt relief is going to affect D , by using the chain rule, we can also estimate the marginal effect of the debt service repayment D on G :

$$\text{As } R = T + A + N - D$$

$$(7) \quad \frac{dG_j}{dR} \frac{dR}{dD} < 0$$

For all sectors considered normal goods, an increase in debt servicing will decrease the amount of expenditure in each sector. This does not mean that the decrease would be linear and equal in all sectors. The share of expenditure in each sector will depend on the Government's Engel curve: how much a change in R will change the spending in health and education depends on the government's preferences. When a sector is seen as a luxury, a reduction in R will lead to a reduction in G that is bigger than the shrink in the budget.

The only inference we can make about a government's preferences comes from the literature which suggests that the quality of institutions and level of corruption in a state play a pivotal role. My paper in an empirical way will try to estimate how spending in health and education reacts to a debt relief.

I am further developing the previous model by adding the interaction between the variable D and the variable A , as it was suggested by the previous literature review. Powell supported the idea that given debt relief is guaranteed by the same institutions providing international aid, then debt forgiveness is going to crowd out resources from aid.⁵³ In contrast, Cordella et al. empirically found that there has been no crowding out. A becomes a function of D , even if we do not know whether it is a positive or negative function of D .⁵⁴

We can rewrite equation (6) as:

$$(8) \quad G_j [T, A(D), N, D]$$

And therefore recalculate the marginal effect of a change in D due to debt relief, on G :

$$(9) \quad \frac{dG_j}{dR} \frac{dR}{dD} + \frac{dG_j}{dR} \frac{dR}{dA} \frac{dA}{dD} \geq 0$$

Since we do not know what the sign of $\frac{dA}{dD}$ is, we cannot know the sign of the inequality. Considering this problem is going to be fundamental in case my research would not find

52 Property of demand is such that not all goods can be inferior, not all goods can be luxuries and not all goods can be necessities.

53 Robert Powell, "Debt Relief, Additionality, and Aid Allocation in Low Income Countries," *IMF Working Papers* 3, no. 175 (2003): 1.

54 Cordella and Ruiz-Arranz. "Debt Overhang or Debt Irrelevance?"

any correlation between expenditure and debt service and would not find any correlation between expenditure and aid. In that case, given inequality (9) I could hypothesize that debt forgiveness has crowded out resources from aid and therefore reduced total available revenues.

Empirical Model

In this section I describe and formulate the empirical model I am going to use in order to identify which variables have the strongest correlation with expenditure in health and education.

Significance of the study

The novelty of my research lies in its attempt to complement the usage of the independent variables commonly adopted in debt relief studies with independent variables measuring the quality of institutions. Most of the previous papers focusing on debt relief have just marginally mentioned the role of institutions, controlling for really basic variables. Other studies instead only look at institutions abstracting them from economic variables. My study will merge these two approaches and take advantage of the high specificity of variables included in the International Country Risk Guide (ICRG)⁵⁵ database. Due to problems in the dataset which has presented a major issue for other research too, my study cannot find definite results but can be seen as another guideline for future research focusing on the role of institutions in the debt dynamics. For this reason, I am going to show results from multiple regressions to provide the reader with information on which variables may be statistically significant in the context of debt relief.

Data

I am taking data ranging from 1996 to 2013, from a total of 26 countries (refer to figure 4) taking part in the HIPC initiative in order to run a pooled regression. Most of the data I am using comes from the World Bank database; the reasons for which stem from the natural advantage that the WB has in terms of data collection. The World Bank is one of the institutions forgiving the debt and it has to keep accurate records of the macroeconomic situation in order to evaluate whether a country should be processed through the DP and CP; therefore I am using their data. I decided to choose the following variables:

1. **Health expenditure** as a % of GDP
2. **Adjusted savings education expenditure** as a % of GNI:⁵⁶ Defined as the current operating expenditures in education, including wages and salaries and excluding

⁵⁵ The database come from the Political Risk Service group. From the 1980 it provides political risk analysis to international institutions, including the IMF.

⁵⁶ It is the best available variable for the total amount of resources spent on education.

capital investments in buildings and equipment

3. **Debt service** - sum of repayments and interests actually paid on long term public debt (as a % of exports).
4. **External debt stock** – public debt owed to non-residential (% of GNI).
5. **AID** – net ODA per capita.
6. **GNI** – gross national income converted to international dollars using purchasing power parity.

For what concerns the “institutional variables” I decided to use the ICRG database because of the high specificity of the variables that the database includes. Out of the 22 variables available I chose the following according to what the previously described literature review suggested:

7. **Government stability** – It is an assessment of both the government’s ability to carry out its declared programs, and its ability to stay in office (increasing from very unstable government scoring 0 to a maximum score of 12)
8. **Corruption**⁵⁷ – it is an assessment of the corruption level within the political system (level of corruption increases the higher the value taken by the variable corruption. It ranges from 0 to 6)
9. **Democratic accountability** – it is a measure of how responsive government is to its people (from 0 indicating no democracy to a maximum of 6)
10. **Bureaucracy quality** – institutional strength and quality of bureaucracy (the quality of bureaucracy increases from 0 to 4)

Empirical specification

To analyse the effect of debt relief on the government’s spending decisions, I am going to use a linear model to estimate the following pooled regression:

$$y_{i,t,j} = \alpha_{i,t} + \beta'_{i,t}x'_{i,t} + \gamma'_{i,t}z_{i,t} + \mu_{i,t}$$

Where the subscripts i and t stand for a country and a time t .

$y_{i,t,j}$ is the amount of spending in sector j

$x'_{i,t}$ is a vector of economic variables used when analysing debt relief

$\gamma'_{i,t}$ is a vector of variables controlling for institution quality, corruption

$\mu_{i,t}$ is the error term

Stepwise regression

Note that my economic conclusions on the initiative will exclusively be based on the

⁵⁷ For the sake of clarity, I modified the variable included in the dataset so that the higher the score of the variable corruption, the higher the level of corruption in the country. The original interpretation of the variable was the following: the lower the score of the variable corruption, the higher the corruption level in a country.

regression including all the “candidate” variables previously outlined. Nonetheless it is likely that this specification may be characterized by multicollinearity. This problem could arise because the dataset is characterized by independent variables expressed as a percentage of another independent variable and because some independent variables are strongly correlated between each other (such as debt service and amount of outstanding debt).

To deal with this problem and for the sake of completeness I will show results coming from multiple regressions. Therefore, my initial specification including all the “candidate” variables will undergo a stepwise regression process by backward elimination. I will remove variables one by one according to the Akaike Information Criterion (AIC).⁵⁸ Every time I will eliminate the variable causing the AIC to be the biggest till I formulate a specification characterized by the minimized AIC. Tables in the next chapter will show how the AIC decreases, starting from the initial model, through the intermediary regressions until I attain the best fitting model. These results must be considered by the reader as a further tool to understand which variables seem to matter the most in the context of the HIPC initiative, and should not be used to depict economic conclusions.

Once again, I want to highlight that the model has to reflect an economic hypothesis and not the other way round. For this reason, all my economic conclusions are drawn from the first column of the tables in the next chapter, since this column includes all the variables that both the economic theoretical model and the literature review suggest to consider.

Predictions

The impact of these covariates on the dependent variable has been widely acknowledged in the literature review and in the theoretical framework, but it is useful to give some additional remarks on their role in the context of my specification.

Debt service is the main variable of interest since debt relief is going to free up those resources initially used for debt repayments. As previously argued I expect a negative sign for its coefficient even if the magnitude depends on the Engel properties of the dependent variable. Some studies in the literature review tell us that spending in health and education is negatively affected by increases in debt servicing, which suggests that these sectors are seen as “luxuries” by the government. Controlling for the **external debt** stock is necessary in an attempt to grasp whether the previously described fiscal space problem exists in HIPCs. In this case, as I previously argued, high outstanding debt reduces the appetite for further indebtedness and I would witness a negative coefficient for this variable. At the same time, I could witness positive correlation between spending and external debt if the debt level is not high enough to induce governments to stop spending. It means that the government has, or at least believes is has, room to maneuver

58 Look at the Appendix for an explanation of the AIC

to finance further spending through external debt.

Both the existing literature and theoretical framework included **aid** as a major component of the available budget. Any change in the influx of aid definitely has an impact on the amount of spending in each sector. Literature suggests that the higher the level of aid, the higher the spending in health and education. Therefore, we expect a positive sign for the coefficient of this variable. **GNI** is included as a control variable since previous studies found a correlation between GDP (GNI per capita in our data) and spending in health and education in developing countries. At the same time, I manage to control for those policies and reforms included in the PRSP that have a longer term impact, such as improving the economic and political environment, by using the variables included in .

In terms of the “institutional variables” I expect that a **stable government** will be forward looking, have a low discount rate and aim to maximise the utility of its citizens. I expect to see a positive correlation between a stable government and higher spending in health and education since a government that is likely to be in power for a longer period would invest more on these sectors whose positive outcomes are only visible in the medium to long term.

In the literature review I quoted studies that identified **corruption** as a major impediment to increases in health and education spending. Corruption alters the spending structure in favour of public services, defence and energy at the expense of education and health.⁵⁹ Overall, we would expect a negative correlation between expenditure in health or expenditure in education and corruption. We also know that, if present at low values, corruption may have a positive effect on specific dependent variables. Moreover, Méon and Weill found that corruption has a positive impact on economic efficiency in countries where institutions do not function properly (as the majority of HIPCs).⁶⁰ For this reason, I am going to include in my regression both a linear and a quadratic term of corruption. I expect the linear variable to capture the positive effect of corruption while the quadratic one is supposed to measure the negative effects. In this way I manage to identify the turning point of the correlation between corruption and spending on health and education.

The variable measuring **democratic accountability** measures the degree of constraint on the executive by the people. Bad governance, as defined as neglecting health and education expenditure, is less likely in the context of a democracy where these behaviours are “punished” through the vote. Therefore, in the context of the theoretical framework previously outlined, a government maximizing its probability of remaining in power would definitely pay more attention to the needs of its population. Among these needs, the literature review suggested that health and education are priorities. I would expect

59 Clara Delavallade, “Corruption and Distribution of Public Spending in Developing Countries,” *Journal of Economics and Finance* 30, no. 2 (2006): 222-39

60 Pierre-Guillaume Méon and Laurent Weill, “Is Corruption an Efficient Grease?” *World Development* 38, no. 3 (2010): 244-59.

a positive correlation between this variable and spending in health and education. The **quality of the bureaucracy** is also extremely important in the context of HIPC's where governments constantly change. A good level of bureaucracy would guarantee both a continuity in services and stability in the allocation of resources given the fact that these resources are financing projects such as the ones in health and education whose effects are seen in the long run. I expect a positive sign for the coefficient of this variable.

Results

For completeness and the benefit of future studies, the following tables show results from multiple regressions. I want to highlight again that the choice of the AIC is arbitrary, and is one of the many methods used to carry out model selection. Among the intentions of my study there is providing the best model fitting the HIPC initiative, given the introduction of these highly specific "institutional variables." Nonetheless my economic analysis of the estimates is focused on the first column only.

Regression of health on independent variables

	Health expenditures			
	(1)	(2)	(3)	(4)
Gov. Stability	-0.136***	-0.139***	-0.143***	-0.134***
	(0.035)	(0.034)	(0.034)	(0.031)
Dem.Accountability	0.203***	0.222***	0.221***	0.218***
	(0.047)	(0.044)	(0.044)	(0.040)
ODA	0.005***	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Corruption2	-0.205***	-0.202***	-0.207***	-0.195***
	(0.064)	(0.063)	(0.062)	(0.059)
Corruption	1.389***	1.358***	1.395***	1.359***
	(0.472)	(0.462)	(0.458)	(0.435)
Bureaucracy quality	0.311***	0.317***	0.318***	0.331***
	(0.064)	(0.062)	(0.062)	(0.057)
External Debt	-0.0005	-0.0004	-0.0005	
	(0.0004)	(0.0004)	(0.0003)	
GNI	0.000	0.000		
	(0.000)	(0.000)		
Debt Service	-0.002			
	(0.007)			
Constant	0.184	0.148	0.169	0.009
	(0.973)	(0.953)	(0.951)	(0.898)
Observations	331	344	344	400
R2	0.365	0.395	0.394	0.376
Adjusted R2	0.347	0.380	0.381	0.366
Residual Std. Error	0.921 (df = 321)	0.912 (df = 335)	0.911 (df = 336)	0.914 (df = 393)
F Statistic	20.480*** (df = 9; 321)	27.290*** (df = 8; 335)	31.180*** (df = 7; 336)	39.470*** (df = 6; 393)
AIC	-44.9	-54.7	-56.3	-56.3

Note: *=5% significance level, **=1%significance level, ***=0.1%significance level

Standard deviation in parenthesis just below the coefficient.

In the context of spending in health, I find that neither external debt nor debt service have any correlation with the dependent variable. This result is consistent with the one estimated by Chauvin and Kraay.⁶¹ It also confirms the hypothesis suggested by Henry and Arslanalp that this huge amount of debt is another poor economic outcome of these economies and not a cause of their low spending in health and education.⁶²

In addition GNI does not seem to be a relevant variable. The remaining variables are all statistically significant. The coefficient on ODA is in line with those obtained by previous studies indicating that the choice of including aid in the budget constraint was well motivated. ODA is probably one of the fundamental factors in determining expenditure in health and more generally in the fiscal decision. As predicted corruption has a positive effect at low levels and then I witness a negative effect at higher levels. The other “institutional variables” align with the predicted outcomes. The only striking result is the negative sign in front of the government stability coefficient. Except for issues in the dataset, a possible explanation for this is due to the description of the variable itself. The index I used, which measures the ability of the government to remain in power, probably fails to capture the fact that some African countries (Benin and Congo) are “stable” only because a military elite is ruling. This elite does not need to implement sound and long-term policies (such as investing in healthcare) in order to remain in power as they can use military force and violence to uphold their authority. The correlation between stability and health expenditure fails since the “stable” military elite lacks the incentive or need to attain citizens’ support through the implementation of wise and long-term policies.

Regression of education on independent variables

	Education expenditure	
	(1)	(2)
Dem.Accountability	0.105*	0.104*
	(0.059)	(0.059)
ODA	0.002*	0.002*
	(0.001)	(0.001)
External Debt	0.002***	0.002***
	(0.0005)	(0.0005)
Debt Service	0.013	0.014*
	(0.008)	(0.008)
Corruption2	-0.209**	-0.207**
	(0.081)	(0.080)
Corruption	1.535***	1.515**
	(0.591)	(0.587)
Bureaucracy quality	0.456***	0.455***

61 Chauvin and Kraay. “What Has 100 Billion Dollars Worth of Debt Relief Done for Low-Income Countries?”

62 Arslanalp and Henry. “Debt Relief.”

	(0.080)	(0.080)
GNI	0.000***	0.000***
	(0.000)	(0.000)
Gov. Stability	0.015	
	(0.044)	
Constant	-1.380	-1.195
	(1.219)	(1.087)
Observations	331	331
R2	0.250	0.250
Adjusted R2	0.229	0.231
Residual Std. Error	1.154 (df = 321)	1.152 (df = 322)
F Statistic	11.910*** (df = 9; 321)	13.420*** (df = 8; 322)
AIC	104	102

Note: *=5% significance level, **=1%significance level, ***=0.1%significance level

The results for the second specification show that external debt affects expenditure in education: the correlation is positive but the magnitude of the impact is really small. The positive sign may lead us to believe that these countries were not suffering from lack of fiscal space since part of the increase in spending is due to an increase in debt. As suggested by Pattillo et al., it may be the case that these HIPCs continue to spend as they are confident that nobody will stop financing their debt.⁶³ The coefficients for the “institutional variables” are significant and perfectly match with the predictions outlined in the fourth section. All the signs are coherent with what the theory suggested. Again, GNI and debt service are not relevant variables in the context of the HIPC initiative. The latter’s lack of significance (in both specifications) confirms the conclusion that Lora and Olivera found in the context of debt relief in South America: debt service does not prevent HIPCs from spending in poverty reducing policies.⁶⁴

Future development of the research and conclusions

My research presents possible caveats which are mainly related to the lack of precise data and the heterogeneity of the HIPCs’ respective economies. These drawbacks are both in the theoretical framework and estimation that I used.

A possible drawback of my research is the estimation and interpretation of the coefficient on “institutional” independent variables. In the context of a linear model, having variables that are continuous but taking values in a finite range may lead to a difficult interpretation of the estimated coefficient. A possible way of overcoming this problem is by using a dummy variable approach. Taking the example of corruption, we could use a dummy called “really high level of corruption” taking the value 1 for those countries whose corruption index is in the range 3-6 and taking the value 0 otherwise.

The HIPC initiative seems to be designed to be exploited by a regression discontinuity

63 Pattillo, Poirson and Ricci. *External Debt and Growth*. Working paper. IMF, 2002. 2002-069.

64 Lora and Olivera. “Public Debt and Social Expenditure: Friends or Foes?”

design (RDD). This quasi-experimental approach, in the presence of better data on African economics, could estimate the causal effect of debt on poverty-reduction expenditures by setting a cut-off when the country reaches the CP. Given countries reach the CP in different years, one could standardize the design by defining t as the time at which the CP is reached by each country, and $t-x$ and $t+x$ would be the previous and following years.

Data permitting, future development of this paper may study the direct impact of the debt relief on education and health. Realizing higher social expenditures is not a goal in itself since what really matters is that citizens are provided good services, and it may not be the case in the presence of inefficiencies. Therefore, future studies could regress mortality or literacy rates on the same independent variables I utilized in my research to understand how much citizens' lives improve after debt relief.

Through my research I tried to further analyse the relationship between debt and public expenditure. I analyzed the case of HIPC's since it stirs a fierce controversy among economists and because the design of the initiative seems perfect to be exploited for empirical purposes. My intention was to discern the effects of economic and "institutional variables" in order to understand whether the huge amount of debt is a cause of poverty or if it is merely another poor outcome characterizing these countries. I focused my analysis on both health and education spending separately, even though for the latter very little research has been carried out and data sources are a major problem.

The results achieved for both specifications are extremely interesting and confirm what other studies found. The correlation between debt and spending is either not relevant at all, or is not relevant enough to justify the perception that debt is preventing these countries from investing in health and education, as suggested by Chauvin and Kraay⁶⁵ and Henry and Arslanalp⁶⁶. Results show how "institutional variables" seem to play a pivotal role. Corruption is positive if present at low levels and negative if present at higher levels. A perfectly working democracy is another major factor increasing spending in health and education. My study also shows how international aid plays a major role in the budget allocated to these sectors; the suspected crowding out of international aid due to debt relief does not seem to happen since the variable aid (in the regression it is ODA) is always statistically significant. Debt relief is complementary to international aid, and not a substitute for it.

As we witnessed a rise in health and education spending over the last 20 years and since it does not seem to be correlated with the amount of public debt or with the debt service, one may believe that the HIPC initiative was unsuccessful. This conclusion would, however, be ungenerous since the programme was much more than a simple debt forgiveness programme; debt relief was guaranteed in exchange for economic and

65 Chauvin and Kraay. "What Has 100 Billion Dollars Worth of Debt Relief Done for Low-Income Countries?"

66 Arslanalp and Henry. "Debt Relief."

political reforms. The governance conditionality, happening through the implementation of reforms guaranteeing a better economic environment and more efficient institutions, is probably the main explanation for higher spending in health and education. My research suggests that if international institutions want these countries to get out of poverty (through the allocation of a higher share of their government budget to health and education), they should encourage political and economic reforms in these countries. Therefore, if debt relief was the price paid in order to push HIPC's to improve their economic environment and their institutions, then the initiative cannot be considered as a failure, rather as a success.

APPENDIX

Figure 1

Table 1. List of Heavily Indebted Poor Countries (As of end-September 2014)				
35 Post-Completion-Point HIPCs ^{1/}				
Alghanistan	Comoros	Guinea	Malawi	São Tomé and Príncipe
Benin	Congo, Dem. Rep. of	Guinea-Bissau	Mali	Senegal
Bolivia	Congo, Rep. of	Guyana	Mauritania	Sierra Leone
Burkina Faso	Côte d'Ivoire	Haiti	Mozambique	Tanzania
Burundi	Ethiopia	Honduras	Nicaragua	Togo
Cameroon	Gambia, The	Liberia	Niger	Uganda
Central African Republic	Ghana	Madagascar	Rwanda	Zambia
1 Interim HIPC ^{2/}				
Chad				
3 Pre-Decision-Point HIPCs ^{3/}				
Eritrea Somalia Sudan				

1/ Countries that have qualified for irrevocable debt relief under the HIPC Initiative.
 2/ Countries that have reached decision point under the HIPC Initiative, but have not yet reached completion point.
 3/ Countries that are eligible or potentially eligible and may wish to avail themselves of the HIPC Initiative and MDRI.

Figure 2

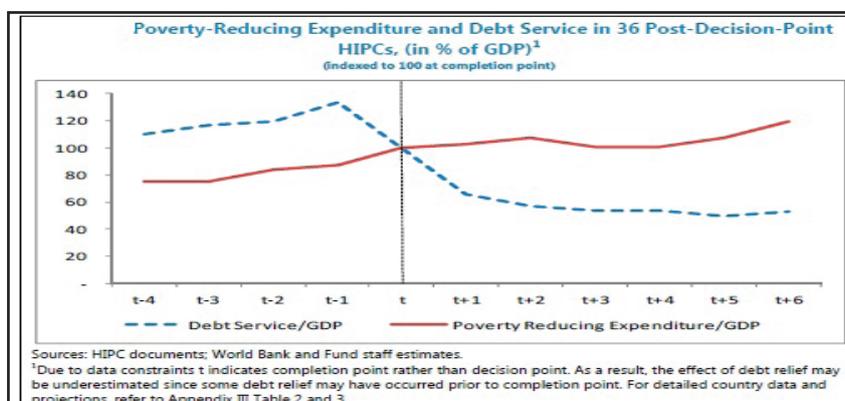


Figure 3

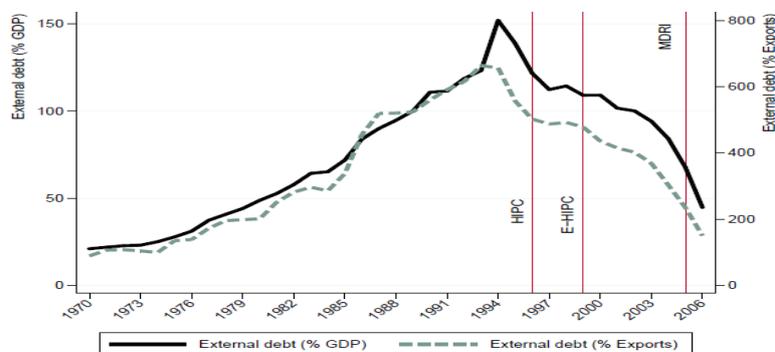


Figure 4

Countries			
Bolivia	Burkina Faso	Cameroon	Congo
Congo, DR	Cote d'Ivoire	Ethiopia	Gabon
Gambia	Ghana	Guinea	Guinea-Bissau
Guyana	Haiti	Honduras	Liberia
Madagascar	Malawi	Mali	Mozambique
Nicaragua	Niger	Sierra Leone	Togo
Uganda	Zambia		

Figure 5

	Descriptive statistics				
	N	Mean	S.d.	Min	Max
Health expenditure %GDP	400	2.5	1.1	0.04	5.9
Education expenditure (GNI)	361	3.3	1.2	1.3	8.2
Debt Service (%export)	331	9.2	8.8	0	72.9
External debt (%GNI)	344	109.5	150.0	0	1380.7
Net ODA per capita	450	64.0	53.0	0	406.9
Corruption	468	3.8	0.7	1.1	6
Bureaucracy quality	467	1.1	0.8	0	3
Democratic accountability	467	3.2	1.2	0	6
Government stability	461	8.4	1.6	2.9	11.5

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