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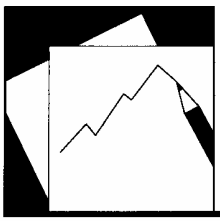

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Does Foreign Aid Reduce Poverty? Empirical Evidence from Nongovernmental and Bilateral Aid

Nadia Masud and Boriana Yontcheva

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Abstract

This paper assesses the effectiveness of foreign aid in reducing poverty through its impact on human development indicators. We use a dataset of both bilateral aid and NGO aid flows. Our results show that NGO aid reduces infant mortality and does so more effectively than official bilateral aid. The impact on illiteracy is less significant. We also test whether foreign aid reduces government efforts in achieving developmental goals and find mixed evidence of a substitution effect.

JEL Classification Numbers: C25, F35

Keywords: Official Development Aid, NGOs, Panel Data Econometrics

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I. INTRODUCTION

Fifty years since the first official development assistance (ODA) programs were instituted, the question of the effectiveness of foreign aid remains an unresolved issue. Many papers have been written on the macroeconomic impact of aid, but mixed results have been reported and those papers that have identified significantly positive effects face heavy methodological criticism.

In trying to assess the effectiveness of foreign assistance, most studies focus on the impact of aid flows on GDP growth and other macroeconomic variables, such as investment or public consumption, implicitly referring to the notion that aid is meant to bridge the savings-investment gap that poor countries face. There has been much less research conducted on the impact of foreign aid on the evolution of human development indicators (HDIs). This is surprising, because the objectives announced by the donor community have evolved from intensive industrialization programs advocated in the 1950s to more recent poverty-reducing objectives such as the Millennium Developments Goals (MDGs) (see Appendix D for a detailed description of these goals). If the donors' objective is to reach the MDGs, then assessing their assistance's effectiveness should examine whether aid flows have a positive impact on selected HDIs.

This paper investigates the hypothesis that aid is meant to improve HDIs and assesses whether foreign aid can help recipient countries to reach some of the MDGs. We follow Boone (1996) and conduct an empirical study of the effects of aid on two human development indicators, infant mortality and education. We will use two measures of foreign aid, official bilateral aid flowing from a donor government to a recipient one, which is the standard measure in the literature, and aid projects led by international non-governmental organizations (NGOs) in developing countries. We choose the latter measure of aid for two reasons: first, as NGOs play an increasingly prominent role in the development scene and channel a growing share of development assistance, it becomes necessary to verify whether NGOs are effective in reducing poverty. So far, evaluations of NGO aid have been conducted solely at the project level. Second, as NGOs have been shown to allocate aid according to the "right" incentives and distribute aid directly at the grassroots level, this type of aid flow should avoid the two pitfalls of misallocation and misuse commonly attributed to official bilateral aid.

Our results show that NGO aid reduces infant mortality and does so more effectively than official bilateral aid. The impact on illiteracy is less significant. We also test whether foreign aid reduces government efforts in achieving developmental goals and find some evidence of a substitution effect between bilateral aid and public social sector expenditures while NGO aid does not affect social spending in the recipient country.

The remainder of the paper is organized as follows. Section II presents the literature on aid effectiveness. Section III introduces the MDGs, some selected HDIs, and some other variables of interest. Section IV describes our data set and the econometric methods we use. Section V presents the effectiveness of NGO aid on infant motality and on adult illiteracy.

Section VI assesses the impact of foreign aid on the recipient's government effort. Section VII concludes.

II. AID EFFECTIVENESS: A LITERATURE REVIEW

The literature on the effectiveness of aid focuses almost exclusively on the *macroeconomic* impacts of aid, measuring the effects of aid on economic growth, savings, and investment. It lacks a strong analytical framework and therefore relies heavily on empirical work. However, empirical evidence is ambiguous at best. Even though methodological issues have been refined, this literature presents rather inconclusive results.

The focus on whether aid improves GDP growth can be traced back to the two-gap model (Chenery and Strout, 1966), which remains the most influential theoretical underpinning of the aid effectiveness literature. In this model, developing countries face constraints on savings and export earnings that hamper investment and economic growth. Aid flows are meant to fill the gap between investment needs and domestic savings. Even though this model has been the target of severe criticism almost since its inception, it has provided the underlying principles both for early aid policies (Easterly 1999) and for regression specifications of most empirical papers, which focused on the aid-growth and aid-savings relationships. Most early authors concluded that aid had no significant impact on growth, savings or investment. Aid was shown to increase unproductive public consumption (Mosley and others, 1992) and to fail to promote investment. The latter point is confirmed by Boone (1996) and Reichel (1995) who find a negative relationship between savings and aid, and point to a substitution effect. This result is amended by Hadjimichael (1995), who notes that the relationship between aid and domestic savings is negative in most countries, but positive for good adjusters. The latter point is confirmed by Burnside and Dollar (2000) (henceforth BD), who showed that aid can be effective when policies are good. The BD paper has elicited abundant comment from researchers (to cite only a few, see Guillaumont and Chauvet (2001), Collier and Dehn (2001) and Easterly, Levine, and Roodman (2003)), but their results have been challenged as being "extremely data dependent" (Dalgaard and Hansen, 2001, Clemens, Radelet and Bhavnani, 2004).

Three main arguments have been advanced to explain the disappointing results of most aid effectiveness studies; aid is misallocated (donors give aid for strategic reasons to the wrong recipients), aid is misused (recipient governments pursue non-developmental agendas) and GDP growth is not the right measure of aid effectiveness. First, while all aid effectiveness papers implicitly define the donors' objective as solely the promotion of economic growth or the reduction of poverty in the recipient countries, a parallel strand of literature on aid allocation[2] has shown that most donors often pursue a different underlying agenda and allocate aid also according to their own strategic interest. If a significant part of aid is allocated for strategic purposes, no positive impact in terms of growth or poverty alleviation should be expected. Second, most studies on aid effectiveness assume that the recipient

[2] See Alesina and Dollar (2000), Collier and Dollar (2002).

government shares the donor's officially altruistic objective. This need not be so. As argued by Svensson (2000) and Murshed and Sen (1995), a recipient government and a perfectly altruistic donor can have conflicting objectives, as the former represents a variety of stakeholders, including wealthy individuals who might influence the aid distribution. If foreign aid is misallocated and misused, then it cannot be expected to have a significant impact on growth. Third, as suggested by Boone (1996), aid effectiveness should not be measured by its impact on GDP growth. Aid could be increasing consumption rather than investment, which would explain the disappointing results of studies on growth, but still reduce poverty through either "higher consumption of the poor or greater provision of services to the poor." Boone tested for this by examining the impact of aid on changes in basic indicators of human development such as infant mortality, primary schooling ratios, and life expectancy. Given the evolution in the avowed objectives of the donor community from industrialization programs to poverty reduction as reflected in the adoption of MDGs, we will follow Boone and *measure the impact of aid on social indicators instead of macroeconomic variables*.

Moreover, all of the above-mentioned empirical analyses of aid effectiveness are concerned exclusively with official development aid. However, the last 20 years have seen the emergence of a new category of actors on the foreign aid stage. As noted by Meyer (1995), participation by NGOs in foreign aid has intensified significantly during the last two decades. Their number has grown exponentially; the size of some of them makes them significant players in social welfare and employment markets at the national level; the funding they attract has increased enormously; and their visibility to the general public has never been higher. NGOs are perceived as having two distinctive features that differentiate them from other donors. First, they are advocates of the most vulnerable populations and their motivation is widely perceived as mainly altruistic. Second, their actions at the grassroots level are seen as conducted at private-sector levels of cost control and efficiency, while they achieve development objectives and serve the needs of many people (Rose-Ackermann, 1996).

While NGO activities are expanding, commentators are increasingly expressing reservations about the actual contribution that NGOs make to development. Edwards and Hulme (1997) analyze in detail how the donor-state and NGO relationships could compromise the work of civil organizations or modify their approaches. Robinson (1997) suggests that NGOs will become mere implementers of donors' policies. Gauri and Fruttero (2003) analyze and test NGO motivation and show that these organizations are influenced in allocating aid by a concern for donor funding.
Despite these concerns about NGO activities, no empirical study has been undertaken on the effectiveness of NGO aid at the macro level. The debate has so far focused on the nature of the NGOs and their relationship with donors, relying only on project evaluations to assess the effectiveness of NGO aid (see Cox and Koning, 1997, for a useful evaluation of European NGOs).

The contribution of this paper is twofold. First, we complement the literature on the effectiveness of foreign aid by assessing the impact of foreign aid flows on social indicators instead of on GDP growth. Second, we contribute to the debate on the merits of NGOs by

conducting an empirical evaluation of their actions. Our aim is to verify empirically whether foreign aid has had a positive impact on two human development indicators whose improvement is part of the MDGs. We will test the impact of aid on infant mortality and adult illiteracy. Because they differ in both motivation and implementation, we distinguish between bilateral aid and nongovernmental aid. We also test whether foreign aid reduces the efforts a recipient country government makes in fighting illiteracy and infant mortality. We therefore assess the impact of aid on the share of social spending of recipient countries.

III. Millennium Development Goals, Human Development Indicators, and Other Variables

Many of the targets of the MDGs were first discussed at international conferences and summits held during the 1990s. They were later compiled and became known as the International Development Goals.[3] In September 2000, the member states of the United Nations unanimously adopted the Millennium Declaration, and the General Assembly recognized the Millennium Development Goals as part of the road map for implementing the Millennium Declaration. Appendix D lists all MDGs. We choose to focus on two selected human development indicators whose improvement is part of the MDGs, infant mortality and adult illiteracy. We chose these indicators for the following reasons: (i) health and education indicators are more concrete measures than poverty; (ii) as indicated by Boone (1996), infant mortality indicators respond quickly to improved health services and can therefore be considered as "flash indicators of improvement in the conditions of the poor".

Our objective is to test the impact of aid on those two indicators. To identify other variables that could be determinants of infant mortality and illiteracy, we will follow Caldwell (1986) and Dreze and Sen (1989), as well as Gupta and others (2003), for evidence on improvement of human development indicators and on the success of health and education programs. For infant mortality, besides testing for bilateral and nongovernmental aid, we control for the level of development represented by per capita GDP, the poverty headcount, the level of rural development, as indicated by per worker agricultural value added, and female illiteracy. We assess the impact of government efforts in reducing infant mortality represented by the per capita health expenditure. We also verify the impact of institutional variables, such as a governance index represented by the Freedom House policy indicator (ICRG) and the degree of urbanization.

[3] For a review of progress on the International Development Goals, see *www.paris21.org/betterworld.*

Table 1 below presents average levels of the above-mentioned indicators[4] and aid flows for countries with the highest levels of infant mortality and countries with the lowest levels of infant mortality in a sample of 87 countries.[5] For a more detailed description of our sample, see section IV.

Table 1. Infant Mortality

	Infant mortality	Female illiteracy	ICRG	Agricultural value added per worker	Real GDP per capita	Poverty headcount	Urbanization	Population growth rate	Real NGO aid per capita	Real bilateral aid per capita	Health expenditures per capita
Mean for 10 countries with highest infant mortality	135.12	74.95	49.89	265.39	222.27	58.98	28.69	2.61	0.21	30.87	4.70
Overall mean	66.13	38.00	61.50	1693.37	1822.96	39.82	42.81	2.22	0.19	36.63	56.34
Mean for 10 countries with lowest infant mortality	13.02	8.70	71.37	5329.10	7074.57	21.41	66.85	1.47	0.15	55.33	247.05

Comparing the average female illiteracy rate in the ten countries that have the highest infant mortality rate with the average female illiteracy rate in the entire sample suggests that higher rates of female illiteracy are associated with higher levels of infant mortality. For the ten countries with the lowest levels of infant mortality, the average rate of female illiteracy is far below the average for the 87 countries, suggesting that low levels of infant mortality are associated with low levels of female illiteracy. As expected, countries with high infant mortality rates also seem to be less urbanized on average, whereas those with low infant mortality rates have a higher than average level of urbanization. Infant mortality rates appear to be negatively associated with rural development as measured by agricultural value added. The poverty headcount is higher than average in countries with a higher mortality rate and lower in countries with a lower mortality rate.

One might expect that aid flows to countries with higher rates of infant mortality would be higher than average. Although this seems to hold true for NGO aid, it does not appear to be true in the case of total bilateral aid flows. NGO aid per capita is, on average, higher in countries with higher rates of infant mortality and lower in countries with lower rates of infant mortality. Bilateral aid per capita, on the other hand, is lower than average in countries with high infant mortality rates and higher on average for countries with low infant mortality rates. Government effort in the area of health, as measured by public health expenditure per capita, is far lower than average in countries with low levels of infant mortality and much higher than average in countries with low levels of infant mortality.

[4] Refer to Appendix A for a definition of these variables.

[5] Appendix C lists the countries included in this sample.

Table 2 below presents some interesting findings for adult illiteracy based on a sample of 76 countries.[6]

Table 2. Illiteracy

	Illiteracy	ICRG	Agricultural value added per worker	Real GDP per capita	Poverty headcount	Urbanization	Population growth rate	NGO aid per capita	Bilateral aid per capita	Education expenditure per capita
Mean for 10 countries with highest illiteracy rates	70.03	56.16	295.86	318.01	48.57	28.76	2.66	0.29	30.45	10.65
Overall mean	31.06	61.66	2124.01	1733.10	39.46	44.34	2.16	0.20	35.73	81.96
Mean for 10 countries with lowest illiteracy rates	4.14	69.27	5063.09	5182.00	25.33	65.68	1.47	0.16	51.32	258.77

As is the case with infant mortality, higher illiteracy rates appear to be associated positively with higher poverty levels and negatively with the level of urbanization and rural development. NGO aid per capita is higher than average in countries with high levels of illiteracy and lower than average in countries with lower levels of illiteracy. Bilateral aid, on the other hand, is lower than average in countries with high illiteracy rates and higher in countries with high levels of illiteracy. Government effort (measured by education expenditure per capita) appears to be far lower than average in countries with the highest levels of illiteracy and much higher than average in countries with high levels of illiteracy.

Figure 1a below shows average per capita NGO aid and average per capita bilateral aid as deviations from their sample means for a sub-sample of 20 countries sorted by their infant mortality levels. For expositional purposes, figure 1a covers only 20 countries from our sample; it includes the 10 countries with the highest infant mortality rates and the 10 countries with the lowest infant mortality rates. The countries are sorted in descending order from left to right going from Niger (country with the highest infant mortality) to Hong Kong SAR (lowest rate). As can be seen from the trend lines, countries with lower infant mortality rates receive relatively less NGO aid, but relatively more bilateral aid. Conversely, countries with the highest mortality ratios (left side of the figure) receive relatively more NGO aid, but less-than-the-mean bilateral aid.

[6] Refer to Appendix C for a list of these countries.

Figure 1a. Per capita NGO and bilateral aid expressed as deviations from sample mean

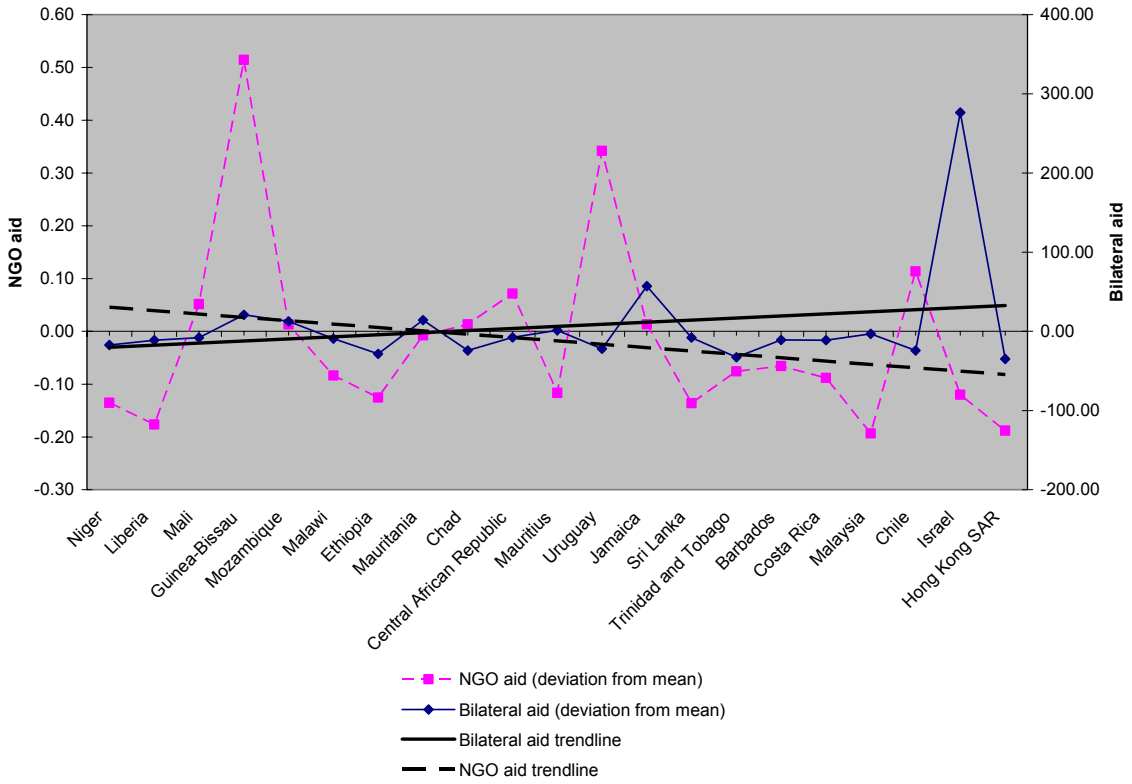
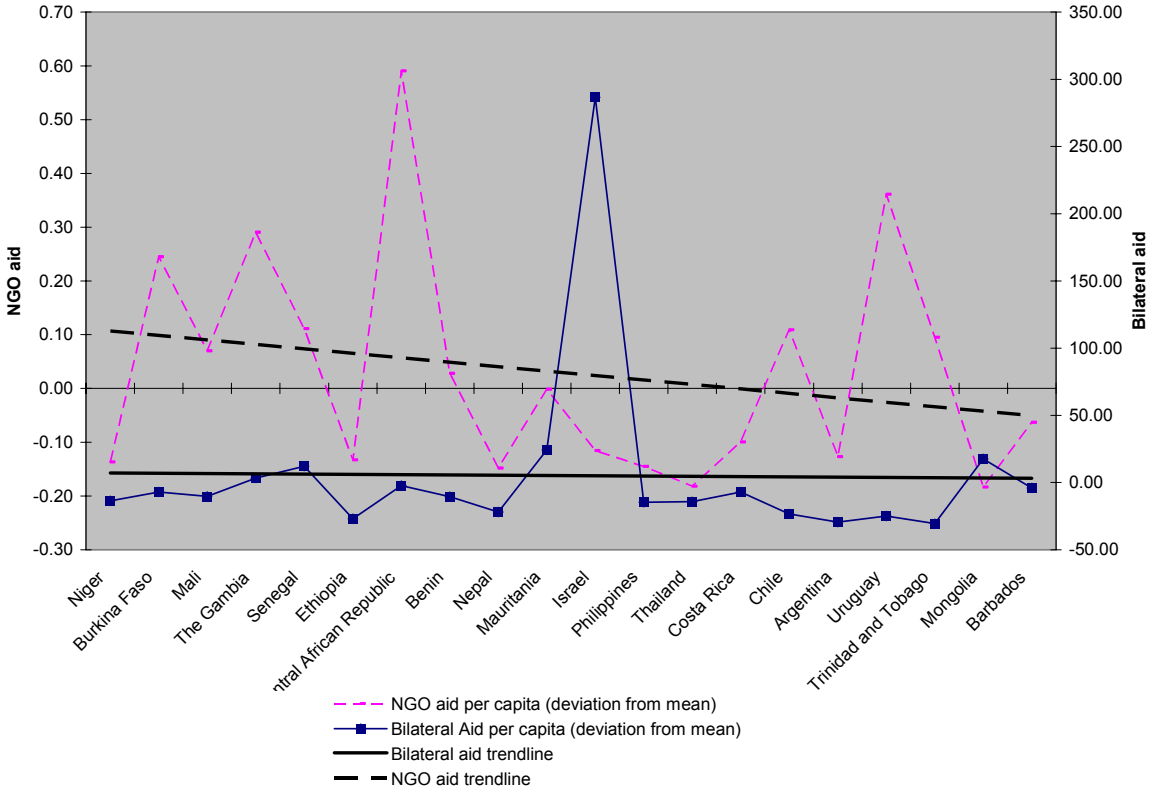


Figure 1b below presents a similar table with a sub-sample of 20 countries sorted by their illiteracy levels. From left to right, we first have countries with very high illiteracy rates (Niger), and then toward the right, countries with the lowest illiteracy rates. Again, it can be seen that NGO aid is allocated relatively more to countries with high illiteracy and relatively less to countries with better HDIs. No such pattern emerges from bilateral aid allocation. A rather interesting result, to which we will come back later, is that aid allocation seems quite different between bilateral donors and NGOs. This observation is in line with the results identified by the literature on aid allocation.[7] Many authors have indeed indicated that bilateral donors allocate aid mostly according to their strategic interests and do not respond to humanitarian concerns. The figure reveals that although most donors have adopted the MDGs as their official policy, their aid allocation pattern may not reflect it. The way NGOs allocate aid seems in line with their image as advocates of the poor and vulnerable.

[7] See Alesina and Dollar (2000).

Figure 1b. Per capita NGO and bilateral aid expressed as deviations from sample mean



IV. DATA SOURCES AND METHODOLOGY ISSUES

Data sources

Given the private and extremely diversified nature of these organizations, there are no datasets reporting on all aid flows stemming from all international NGOs. Therefore, we chose to limit our study to European NGOs and utilize data from the European Commission representing projects proposed by European NGOs and cofinanced by the European Union (EU)[8]. We are aware that these projects are only a partial view of all projects implemented by European NGOs but we assume (i) that NGOs getting financed by the EU are representative NGOs in Europe and (ii) that those projects financed by the EU are representative of all the projects that the NGO implements. Our data were in current euros which we converted to constant dollars. Our sample covers a 12-year period from 1990 to 2001. The number of countries actually used varies according to the regressions owing to missing observations for key exogenous variables. Bilateral aid is obtained from the OECD. We created a dummy variable "IMF" that assumes the value 1 if the recipient country has a structural adjustment

[8] For a more detailed exposition of the relationship between the EU and NGOs, see Cox and Koning (1997).

program supported by the IMF (Enhanced Structural Adjustment Facility -ESAF or Poverty Reduction and Growth Facility -PRGF), and 0 otherwise. Exogenous variables included in the regressions on human development indicator include female illiteracy, the level of governance proxied by the ICRG Index, the level of rural development proxied by a measure of agricultural value added per worker, the level of development measured as real GDP per capita, the poverty headcount and population growth rate, which have been taken from various sources, including the World Development Indicators compiled by the World Bank. Data on expenditures have been taken from IMF staff estimates and the World Bank databases. For a more detailed description of our data sources, refer to Appendix A.

Endogeneity issues

As do the authors of most papers in the aid effectiveness literature, we share a concern about the issue of a potential simultaneity bias. If aid is dependent on some social indicators, then it might not be exogenous with respect to the human development index taken into consideration. The same is true for the government's effort. We have therefore three regressors that might be potentially endogenous; NGO aid, bilateral aid, and social spending. We use the Davidson and MacKinnon test (1993) which is similar to the Durbin-Wu-Hausman test to check for the endogeneity of our regressors. The test involves an OLS regression of the original dependent variable on the original regressors augmented by the residuals of the first stage instrumental variable regressions. A rejection of the null hypothesis indicates that the instrumental variables fixed effects estimator should be employed. This test may be employed to a subset of endogenous variables and help identify which variable can cause endogeneity.

V. FOREIGN AID AND MDGS

A. The infant mortality regression

Methodology

In this section we try to answer the following question: does aid reduce infant mortality and illiteracy? We examine this question by estimating variants of the following regressions:

$$\ln HDI_{jit} = \beta_0 + \beta_1 \ln GEpc_{it} + \beta_2 \ln NGOAid_{it} + \beta_3 \ln BAid_{it} + \beta_4 \ln z_{it} + \mu_i + \varepsilon_{it} \quad (1)$$

where i indexes countries, t indexes time, $HDIj$ is a Human Development Indicator ($j \in$ [Infant Mortality, Illiteracy]), $NGOAid_{it}$ is per capita NGO aid, $BAid_{it}$ represents per capita bilateral aid, z_{it} is a vector of other exogenous variables that might affect the human development indicators, and GE_{it} measures the recipient government's effort in promoting human development. The last is proxied here by either per capita health spending or per capita education spending; μ_I is the unobserved country specific effect, and ε_{it} is a time-varying error term.

We estimate equation (1) for infant mortality with a one-way error component static panel model.[9] We tested our equation for serial correlation and found none. A random effects regression model has two main advantages compared with the fixed effect estimation. First, it gives more efficient estimates, and, second, it allows us to explore the effects of time invariant variables of interest, such as the average poverty headcount in a country. However, as the random effects model assumes that there is no correlation between individual effects and the regressors, it may suffer from inconsistency. Therefore, we use the random effects model when our estimations pass the Hausman specification test, i.e., the test does not reject the null hypothesis of no systematic differences between the estimates obtained from fixed and random effects. We used least squares estimation.

Results

Our base sample for infant mortality is an unbalanced panel of 58 countries from 1990 to 2001 including 233 observations.[10] Table 3 below presents results from our estimations. The three sets of results reported in columns I, II, and III include health expenditure, NGO aid per capita, and bilateral aid per capita as explanatory variables, but the sets of exogenous variables included in the three regressions are slightly different. In column IV, we present results without health expenditure per capita. These have been included for illustrative purposes. The addition of GDP per capita causes the coefficient on health expenditure per capita to lose its significance, possibly owing to the high correlation between the two variables.

Our main findings are that increased health expenditure per capita reduces infant mortality as does greater NGO aid per capita[11]. We do not find any significant impact of total bilateral aid on infant mortality. Our result is in line with Boone (1996) who found "no significant impact of aid on improvement in infant mortality, primary schooling rations nor life expectancy." As expected, higher levels of development (measured by GDP per capita) and possibly greater rural development (measured by agricultural value added per worker) lead to lower levels of infant mortality. If GDP per capita increases by 1 percent, infant mortality decreases by 0.3 percent. Reducing female illiteracy can have the strongest positive impact on infant mortality as a decrease in female illiteracy by 1 percent decreases infant mortality by 0.52 percent in our first regression. As expected, an increase in poverty leads to higher infant mortality as well; the elasticity of infant mortality with respect to poverty ranges from 0.16 to 0.26. We also find a significant impact of the level of governance (proxied by ICRG) in reducing infant mortality, albeit with lower elasticities. Population growth rate, urbanization, and the presence of an IMF-supported structural adjustment program are found to be insignificant. A number of reasons could be proposed to explain why NGO aid seems to work better than

[9] The Davidson and MacKinnon test showed that regressors were all strictly exogenous.

[10] Refer to Appendix C for the sample.

[11] NGO aid is defined as projects implemented by foreign NGOs and, hence, is a resource for the recipient country that is outside the budget.

bilateral aid in reducing infant mortality. First, as can be seen in section III, Figure 1b, NGOs and bilateral donors allocate aid differently: on average and over the entire period, countries with lower infant mortality rates receive relatively less NGO aid, but relatively more bilateral aid. Conversely, countries with the highest mortality ratios receive relatively more NGO aid, but less-than-the-mean bilateral aid. There seems to be a certain inconsistency between the avowed objectives of bilateral donors and their actual aid allocation, as indicated by Alesina and Dollar (2000). Second, maybe NGOs have direct links to the poor and vulnerable and are therefore more efficient. Third, as argued by Boone (1996), aid transiting through recipient governments could be diverted for the benefit of wealthy elites linked to those in power.

Table 3. Infant Mortality Regressions

Infant Mortality				
	I	**II**	**III**	**IV**
Health expenditure per capita [(1)]	-0.0527	-0.0607	-0.0145	
	[0.034]**	[0.021]**	[0.597]	
Bilateral aid per capita [(1)]	0.0063	0.0086	0.0064	0.0171
	[0.648]	[0.514]	[0.611]	[0.160]
NGO aid per capita [(1)]	-0.0152	-0.0126	-0.0102	-0.0131
	[0.027]**	[0.086]*	[0.147]	[0.037]**
Female illiteracy	0.5272	0.3314	0.3167	0.336
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Urbanization	0.0593	0.0641	0.1055	0.1286
	[0.710]	[0.543]	[0.308]	[0.185]
Poverty headcount		0.2694	0.1921	0.1696
		[0.001]***	[0.023]**	[0.045]**
Population growth rate	0.0293	0.0877	0.0322	0.0384
	[0.453]	[0.151]	[0.590]	[0.500]
ICRG		-0.0027	-0.0022	-0.0027
		[0.030]**	[0.067]*	[0.012]**
IMF	0.0057	0.0109	-0.0025	0.0025
	[0.761]	[0.611]	[0.905]	[0.897]
GDP per capita [(2)]			-0.3083	-0.2915
			[0.000]***	[0.000]***
Agricultural value added per worker	-0.0611	-0.162	-0.0291	-0.071
	[0.343]	[0.001]***	[0.611]	[0.187]
Constant	2.4439	2.952	4.1838	4.223
	[0.008]***	[0.000]***	[0.000]***	[0.000]***
Observations	233	202	202	253
Number of countries	58	49	49	50

Note: p values in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%.
All variables except ICRG and IMF are in natural logs. Specifications II, III, and IV have been modeled as random effect regressions whereas I has been modeled as a fixed effect regression based on results of Hausman tests for consistency between fixed and random effect models.
(1) Health expenditure per capita, NGO aid per capita, and bilateral aid per capita are in real US dollar terms. The base year being used is 2000.
(2) GDP per capita is in constant US$ terms with base year 1995.

B. The illiteracy regression

Methodology and results

Our base sample for adult illiteracy is an unbalanced panel of 76 countries from 1990 to 2001 including 420 observations.[12] We use two stage least squares regression technique, as we found some endogeneity in regressors.[13] Results are presented in Table 4 below:

Table 4. Adult Illiteracy

Adult Illiteracy	I	II	III	IV
Education expenditure per capita (1)	-0.055	-0.031	-0.029	-0.146
	[0.001]***	[0.067]*	[0.117]	[0.002]***
Bilateral aid per capita (1)	0.0456	0.077	0.072	0.173
	[0.597]	[0.307]	[0.378]	[0.384]
Urbanization	-1.035	-1.036	-0.898	-0.486
	[0.000]***	[0.000]***	[0.000]***	[0.303]
Population growth rate	0.175	0.242	0.153	0.210
	[0.000]***	[0.000]***	[0.000]***	[0.001]***
Real NGO aid per capita (1)	0.001	0.004	0.000	-0.006
	[0.891]	[0.470]	[0.956]	[0.658]
IMF	-0.018	-0.002	-0.020	-0.021
	[0.161]	[0.884]	[0.110]	[0.280]
ICRG		-0.000		
		[0.548]		
GDP per capita (2)			-0.151	
			[0.010]***	
Poverty headcount				0.108
				[0.732]
Constant	6.794	6.666	7.173	4.340
	[0.000]***	[0.000]***	[0.000]***	[0.133]
Observations	420	358	420	319
Number of countries	76	62	76	54

Note: p values in brackets; * significant at 10%; ** significant at 5%; *** significant at 1%.

All variables except ICRG and IMF are in natural logs. The specification has been modeled as a random effect model, using instrumental variable regression. The instrument set includes the lag of education expenditure as an instrument for education expenditure in the current period and the lag of past NGO aid per capita as an instrument for bilateral aid per capita. The choice of the instrument set has been determined using the Davidson MacKinnon test for exogeneity.

(1) Education expenditure per capita, NGO aid per capita and Bilateral aid per capita are in real US$ terms; the base year being used is 2000.

(2) GDP per capita is in constant US$ terms with base year 1995.

[12] Refer to Appendix C for the sample.

[13] We used the Davidson MacKinnon test for exogeneity.

Our main findings include a significant and negative impact of education expenditure on adult illiteracy. We do not find any significant impact of NGO aid per capita and total bilateral aid per capita. The coefficient on urbanization is negatively signed and is significant in three out of four estimations. More urbanized countries with slower population growth present lower levels of adult illiteracy. The presence of an IMF-supported structural adjustment program does not seem to be detrimental to literacy. We do not find any significant impact of the level of governance or the average poverty level in a country on its level of illiteracy.

VI. GOVERNMENT EFFORTS AND FOREIGN AID

The results from the regressions on infant mortality and on illiteracy find that government effort measured by social sector expenditures plays an important role in improving human development indicators. In this section, we explore the relationship between government effort and official and nongovernmental aid flows. We want to verify how foreign aid affects government efforts, measured as the share of health or education expenditure in total public spending. We expect that, in absence of fungibility (Pack and Pack, 1993), bilateral aid would increase social spending as it would augment the size of the budget devoted to health and education because donors often earmark funds to social sectors. Bilateral aid could also be insignificant, if it is used for other purposes or if aid is fungible. With regard to NGO aid, funds do not transit through government programs, and the issue becomes whether an increase in NGO activity has a catalytic effect on government action or if, on the contrary, a substitution effect occurs. If a school is already built by an NGO, will the government have the incentive to provide more teachers or will it allocate a corresponding budget to non-education expenditures?

Methodology

We examine the above question by estimating variants of the following regressions:

$$\ln GEex_{it} = \beta_0 + \beta_1 \ln GEex_{it-1} + \beta_2 \ln Mil_{it} + \beta_3 \ln BAidex_{it} + \beta_4 \ln NGOex_{it} + \beta_5 z_{it} + \beta_6 \ln IMF_{it} + \mu_i + \mu_t + \varepsilon_{it} \qquad (2)$$

where i indexes countries; t indexes time; $GEex_{it}$ measures the recipient country effort proxied by the government's education/health expenditure as a percentage of total government expenditure; $NGOAid_{it}$ is NGO aid as a percentage of expenditure; $BAidex_{it}$ is bilateral aid as a percentage of government expenditure; x_{it} is a vector of exogenous variables that might affect social spending. IMF_{it} indicates the presence of an IMF-supported program; μ_i is the unobserved country specific effect; μ_t is a year dummy, and ε_{it} is a time-varying error term.

We have used the dynamic specification for social expenditures in equation (2) for our estimations. We tested the above equation and found serial correlation. It seemed reasonable to assume that there would be some degree of persistence in the share of government expenditure that is allocated to different sectors in a single country. An ordinary least squares

regression in this context would be inconsistent owing to the violation of the assumption of lack of correlation between the error term and regressors. This correlation is introduced because the error term contains the country specific effects, and the lagged dependent variable is also a function of country specific effects. Similarly, the within transformation would not solve the problem as it would introduce a negative correlation between the lagged dependent variable and the transformed error. The random effects model cannot be used as there is a correlation between the error term, $\mu_i + \varepsilon_{it}$, and the lagged dependent variable.

The general approach to estimation of the dynamic specification as above is to use the Generalized Method of Moments (GMM) approach. Whereas the first difference GMM uses past levels of the dependent variable as instruments for the equation in first differences, the system estimator is an extended version of the linear GMM estimator that also includes lagged levels of the dependent variable as instruments for the equation in levels (Blundell and Bond, 1998). We present first difference and system GMM results for our specifications for social expenditure. However, in dynamic panel data models where the autoregressive parameter is moderately large and the number of time series small, the first difference estimator has been found to have large finite sample biases and poor precision in simulation studies as lagged levels provide weak instruments for first differences (Alonso-Borrego, 1996). Blundell and Bond (1998) provide Monte Carlo simulation results to compare the performance of system and first difference and find that, in case of the coefficient on the lagged dependent variable being >0.8, we can expect the first difference estimate of the coefficient to be seriously downward biased and imprecise. They show that this bias remains substantial even for panels with 11 periods per individual.

OLS and Within Group estimators of the model can be used to assess a range for the coefficient on the lagged dependent variable, as the former is likely to be biased upward whereas the latter would be expected to be biased downward (Bond, 2002). We therefore also present the OLS and Within Group estimates of the lagged dependent variable for the social spending regressions.

We report GMM difference and system one-step results for which inference based on the asymptotic variance matrix has been found to be more reliable than for the asymptotically more efficient two-step estimator.[14] Simulation evidence suggests that there are modest gains in efficiency from using the optimal two-step weight matrix.[15] It also suggests that the "asymptotic standard errors tend to be much too small or asymptotic t-ratios much too big for the two-step estimators in sample sizes where the equivalent tests based on the one-step estimator are quite accurate."[16]

[14] Blundell and Bond (1999).

[15] Bond and Windmeijer (2002).

[16] Bond (2002).

Results

The base sample for regressions on government effort in the area of health is an unbalanced panel of 50 countries over the period 1990-2001, consisting of 305 observations[17]. The results from estimating equation (2) are presented in Table 5 below:

Table 5. Health Expenditure

Health Expenditure	**GMM-SYS**	**GMM-SYS**	**GMM-DIFF**	**GMM-DIFF**
Health expenditure (t_{-1})	0.958	0.938	0.459	0.463
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Military expenditure	0.019	0.010	-0.077	-0.101
	[0.488]	[0.643]	[0.370]	[0.240]
Bilateral aid	0.012	0.019	-0.001	-0.002
	[0.441]	[0.180]	[0.967]	[0.919]
GDP per capita	0.011	0.022	-0.184	-0.075
	[0.741]	[0.383]	[0.383]	[0.645]
Current revenue	0.149	0.111	0.398	0.426
	[0.003]***	[0.015]**	[0.000]***	[0.000]***
ICRG	0.000		0.006	
	[0.989]		[0.072]*	
NGO aid	-0.006	-0.005	-0.006	-0.014
	[0.407]	[0.458]	[0.619]	[0.256]
IMF	0.070	0.062	0.046	0.041
	[0.045]**	[0.031]**	[0.173]	[0.249]
Constant	-0.728	-0.617		
	[0.000]***	[0.007]***		
Hansen test	[1.000]	[1.000]	[1.000]	[1.000]
Arellano Bond AR(1) test	[0.013]	[0.004]	[0.007]	[0.003]
Arellano Bond AR(2) test	[0.999]	[0.814]	[0.255]	[0.163]
Observations	264	305	226	259
Number of countries	43	50	41	47

Note: p values in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%. One-step GMM results are reported with robust standard errors. A full set of year dummies is included in both specifications. The instrument set includes lags of health expenditure dated t-2 and earlier as instruments in level and system equations. Predetermined variables include NGO aid and presence of an IMF-supported program, the implied moment conditions are included in the instrument matrix. A full set of year dummies has been included in both specifications. The lags of health expenditure and NGO aid have been used as regressors. All variables except *ICRG*, *IMF* and GDP per capita are expressed as a percentage of expenditure. The OLS estimate for the lagged dependent variable is 0.963 whereas the within groups estimate is 0.539, suggesting that there is indeed a significant downward bias in the estimates obtained by the first difference estimates.

GMM system and difference results are reported. Our preferred results are the system results. The coefficient on the lagged dependent variable is estimated to be close to 1, and we

[17] Refer to Appendix C for the sample.

therefore expect that there is a significant downward bias in this estimate using the difference method. For each regression, we report the Hansen J test of over-identifying restrictions. It does not reject the joint null hypothesis that the instruments are valid, i.e., uncorrelated with the error term, and that the excluded instruments are correctly excluded from the estimated equation. Examining p-values of the AR(1) and AR(2) tests of autocorrelation, we can see that, as expected, we reject the null of no first order serial correlation in residuals and do not find evidence for second order serial correlation.

We find a significant and positive impact of the past year's share of health in total expenditure on the percentage of expenditure devoted to health in the current period. We do not find any evidence that either bilateral aid or NGO aid has an impact on the share of spending on health care in total expenditure. The fact that bilateral aid does not change government spending on health means that there is no additionality suggesting that bilateral aid is fungible and that if aid increases non-aid-financed expenditures decline. This possible fungibility could explain the lack of effect of bilateral aid on infant mortality. On the other hand, the fact that NGO aid does not affect negatively government spending implies additionality of the public sector's efforts and NGO initiatives. The presence of IMF-supported program in a country leads to a higher share of expenditure being allocated to health. This result could reflect the fact that, while IMF programs generally call for fiscal tightening, the Poverty Reduction and Growth Facility has attempted to limit the adverse impacts on priority sectors such as health care and education. As expected, current revenue is also found to have a significant and positive impact on public spending on health. The level of governance is found to be significant and positive in the first difference result, but is insignificant using the system estimation.

The base sample for regressions on government effort in the area of education is an unbalanced panel of 51 countries over the period 1990-2001 and consists of 313 observations.[18] The results are presented in Table 6 below.

As in the case of the previous exercise involving the share of public expenditure devoted to health care, we prefer the system results because the coefficient on the lagged dependent variable is close to unity. For each regression, we report the Hansen J test of over-identifying restrictions. It does not reject the joint null hypothesis that the instruments are valid. Examining p-values of the AR(1) and AR(2) tests of autocorrelation, we can see that as expected we reject the null of no first order serial correlation in residuals, and do not find evidence for second order serial correlation at the 5 percent level.

We find that the share of public spending devoted to education during the previous period had a significant and positive impact on the share of expenditure devoted to education in the current period. We do not find any evidence that NGO aid has an impact on the share of health care in total expenditure. The first difference results do find a mildly significant and positive impact of bilateral aid on education expenditure. However, as indicated above, first difference results are probably biased, and we can therefore conclude only that there is no

[18] Refer to Appendix C for the sample.

substitution effect of increased bilateral aid on education expenditures. The presence of an IMF-supported program in a country seems to lead to a higher share of expenditure being allocated to education. Increased current revenue is also found to have a significant and positive impact on government effort in education.

Table 6. Government Effort in Education

Education Expenditure	**GMM-SYS**	**GMM-SYS**	**GMM-DIFF**	**GMM-DIFF**
Education expenditure (t_{-1})	0.836	0.803	0.429	0.368
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Military expenditure	-0.019	0.010	-0.038	0.000
	[0.423]	[0.579]	[0.493]	[0.997]
Total bilateral aid	0.006	0.009	0.026	0.019
	[0.586]	[0.439]	[0.058]*	[0.168]
GDP per capita	0.000	-0.009	0.190	0.088
	[0.989]	[0.656]	[0.224]	[0.428]
Current revenue	0.184	0.244	0.465	0.452
	[0.004]***	[0.000]***	[0.000]***	[0.000]***
ICRG	0.000		0.001	
	[0.827]		[0.594]	
NGO aid	-0.009	-0.005	0.000	0.002
	[0.259]	[0.490]	[0.988]	[0.763]
IMF	0.070	0.056	0.055	0.039
	[0.048]**	[0.064]*	[0.099]*	[0.184]
Constant	-0.363	-0.502		
	[0.092]*	[0.016]**		
Hansen test	1.00	1.00	1.00	1.000
Arellano Bond AR(1) test	0.00	0.00	0.00	0.00
Arellano Bond AR(2) test	0.13	0.13	0.08	0.08
Observations	272	313	234	267
Number of countries	44	51	41	47

Note: Robust p values in brackets * significant at 5%; ** significant at 1%. One-step GMM results are reported with robust standard errors. A full set of year dummies is included in both specifications. The instrument set includes lags of education expenditure dated t-2 and earlier as instruments in level and system equations. Predetermined variables include NGO aid and presence of an IMF-supported program; the implied moment conditions are included in the instrument matrix. A full set of year dummies has been included in both specifications. The lags of education expenditure and NGO aid have been used as regressors. All variables except *ICRG*, *IMF* and GDP per capita are expressed as a percentage of expenditure. The OLS estimate for the lagged dependent variable is 0.878 whereas the within groups estimate is 0.412, suggesting that there is indeed a significant downward bias in the estimates obtained by the first difference estimates.

VII. CONCLUSION

The objective of this paper was to reassess the effectiveness of foreign aid in terms of its impact on selected human development indicators. We chose to evaluate how aid affects infant mortality and illiteracy because improvements in both indicators are official objectives

of all donors who have adopted the Millennium Development Goals. We based our empirical study on two separate measures of aid – bilateral aid flows to the governments and non-governmental aid. We choose to distinguish between those two aid types as official aid and NGO aid flows differ both in their allocation pattern and in their implementation.

Our results show that NGO aid significantly reduces infant mortality while bilateral aid does not. A number of reasons could explain this result. First, as their proponents claim, NGO aid may be more effective than government actions in reaching out to the poor. Improving infant mortality may be more efficiently done at the grassroots level. Second, NGO aid is allocated more toward countries with high infant mortality while bilateral aid favors countries with already lower infant mortality. This demonstrates that, while official donors have adopted reaching MDGs as their official policy, their aid allocation pattern is not consistent with their avowed objectives. Third, bilateral aid seems fungible and increases in aid don't seem to be reflected in health expenditures. The lack of additionality implies that bilateral aid increases lead to declines in non-aid-financed expenditures, canceling the potentially positive effect of bilateral aid on infant mortality. Fourth, our measure of official aid as total bilateral aid per country may not be the appropriate indicator as it covers all types of projects and programs[19]. Fifth, Boone's (1996) claim that recipient governments divert aid to benefit a wealthy elite may also be an explanation for our results.

Concerning illiteracy, our results are less significant. Apart from the usual control variables that behave as expected, only government education expenditures are shown to reduce illiteracy. A possible explanation for these results is that a 10-year period is too short for aid to have an impact as improvements in illiteracy take much more time to be recorded. Research should be conducted again when longer time series will be available. Finally, we also examined the impact of foreign aid on government efforts and found that NGO aid does not reduce the recipient governments' efforts.

From a policy perspective, if we take infant mortality as a "flash indicator" of the living conditions of the poor (Boone, 1996), in our study, NGO aid appears more effective in reaching out to the poor and vulnerable populations, and therefore donors who have chosen to channel aid through NGOs have made the right choice. This paper is the first empirical study on the effectiveness of NGO aid at the macro level and confirms the legitimacy of NGO actions. Whether NGO aid can be easily scaled up is a different question that should be answered in future research.

[19] As shown by Clemens, Radelet, and Bhavnani, (2004), decomposing bilateral aid into different structural categories cam yield very different results in terms of its effectiveness.

Appendix A. Data Description and Sources

1) NGO AID
Source: European Commission, budget line B7-6000.
The data represent commitments of European Commission to cofinancing NGO projects in a given country in a given year.

2) Bilateral Aid
Source: OECD
Total official development assistance committed to a country in a given year by the countries that are part of the Development Assistance Committee.

3) Infant mortality rate
Source: World Development Indicators
The number of infants who die before reaching one year of age, per 1,000 live births in a given year.

4) Total adult illiteracy rate
Source: World Development Indicators
The proportion of adults aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life.

5) Female adult illiteracy rate
Source: World Development Indicators
The proportion of female adults aged 15 and above who cannot, with understanding, read and write a short, simple statement on their everyday life

6) Public education expenditure
Sources: World Development Indicators for education data and IMF staff estimates for total expenditures. See Appendix B contains for on the level of government that is relevant for each country.

7) Public health expenditure
Source: IMF staff estimates. See Appendix B for the relevant level of government for each country.

8) Health expenditure per capita
Source: World Development Indicators and staff estimates

9) Education expenditure per capita
Source: World Development Indicators and staff estimates

10) Agriculture value added per worker (constant U.S. 1995 dollars)
Source World Development Indicators
Agriculture value added per worker is a measure of agricultural productivity. Value added in agriculture measures the output of the agricultural sector (ISIC divisions 1-5) less the value of intermediate inputs. Agriculture comprises value added from forestry, hunting, and fishing

as well as cultivation of crops and livestock production. Data are in constant 1995 U.S. dollars.

11) GDP per capita
Source: World Development Indicators.
The data are in constant 1995 U.S. dollars.

12) ICRG
Source: International Country Risk Guide/ Political Risk Services (IBC USA Publications, Inc.). Composite index based on political financial and economic risk ratings compiled by ICRG. Political risk accounts for 50 percent of the composite rating while financial and economic risk ratings account for 25 percent each. The highest overall rating (theoretically 100) indicates the lowest risk, and the lowest rating (theoretically 0) indicates the highest risk.

13) IMF
Source: IMF
Dummy that assumes value 1 if there is a structural adjustment program supported by the IMF in a country in a given year and 0 if there is no program.

14) Urbanization
Source: World Development Indicators
Urban population as a percentage of total population.

15) Population growth rate
Source: World Development Indicators

16) Military expenditure
Source: World Development Indicators
Military expenditure as a percentage of central government expenditures.

17) National poverty
Source: World Development Indicators
Percentage of the population living below the national poverty line. National estimates are based on population-weighted sub-group estimates from household surveys.

Appendix B. Level of Government Relevant for Public Expenditure Data

Angola	General	India	General	Dominican Republic	Central
Benin	Central	Indonesia	General	Ecuador	Central
Botswana	Central	Kiribati	Central	El Salvador	Central
Burkina Faso	Central	Korea	Central	Grenada	Central
Burundi	Central	Lao PDR	General	Guatemala	Central
Central African Republic	Central	Malaysia	Central	Guyana	Central
Cape Verde	Central	Maldives	Central	Honduras	Central
Chad	Central	Marshall Islands	Central	Jamaica	Central
Cameroon	Central	Mongolia	General	Mexico	Central
Comoros	Central	Myanmar	Central	Nicaragua	Central
Congo, Dem. Rep. Of	Central	Nepal	Central	Panama	Central
Congo, Republic of	Central	Papua New Guinea	Central	Paraguay	Central
Cotê d'Ivoire	Central	Philippines	Central	Peru	Public Sector
Equatorial Guinea	Central	Samoa	Central	St. Kitts and Nevis	Public Sector
Eritrea	Central	Solomon	Central	St. Lucia	Central
Ethiopia	General	Sri Lanka	Central	St. Vincent & the Grenadines	Central
Gabon	Central	Thailand	Central	Suriname	Central
Gambia, The	Central	Tonga	Central	Trinidad & Tobago	Central
Ghana	Central	Vanuatu	Central	Uruguay	Central
Guinea	Central	Vietnam	General	Venezuela	Central
Guinea Bissau	Central	Algeria	Central	Albania	General
Kenya	Central	Bahrain	Central	Bosnia & Herzegovina	General
Lesotho	Central	Djibouti	Central	Bulgaria	General
Liberia	Central	Egypt	General	Croatia	Cons. Central
Madagascar	Central	Iran	General	Cyprus	Central
Malawi	Central	Jordan	Central	Czech Republic	General
Mali	Central	Kuwait	Central	Hungary	General
Mauritius	Central	Lebanon	Central	Macedonia	General
Mozambique	Central	Libya	Central	Malta	Central
Namibia	Central	Mauritania	Central	Netherlands Antilles	Central
Niger	Central	Morocco	Central	Poland	General
Nigeria	Central	Oman	Central	Romania	General
Rwanda	Central	Qatar	Central	Slovak Republic	General
São Tomé & Príncipe	Central	Saudi Arabia	Central	Turkey	Central
Senegal	Central	Syria	Central	Armenia	Central
Seychelles	Central	Tunisia	Central	Azerbaijan	General
Sierra Leone	Central	United Arab Emirates	Central	Belarus	General
South Africa	General	West Bank & Gaza	Central	Estonia	General
Swaziland	Central	Yemen	Central	Georgia	General
Tanzania	Central	Argentina	General	Kazakhstan	General
Togo	Central	Bahamas, The	Central	Kyrgyz Republic	General
Uganda	Central	Barbados	Central	Latvia	General
Zambia	Central	Belize	Central	Lithuania	General
Zimbabwe	Central	Bolivia	Public Sector	Moldova	General
Bangladesh	Central	Brazil	Federal	Russia	General
Bhutan	Central	Chile	Central	Tajikistan	Central
Cambodia	General	Colombia	Central	Turkmenistan	General
China	General	Costa Rica	Central	Ukraine	General
Fiji	Central	Dominica	Central	Uzbekistan	General

Appendix C. Countries

Countries in sample for stylized facts on infant mortality

Algeria	Cote d' Ivoire	Lao PDR	Peru
Argentina	Dominican Republic	Lesotho	Philippines
Barbados	Ecuador	Liberia	Rwanda
Bangladesh	Egypt, Arab Rep.	Madagascar	Senegal
Belize	El Salvador	Malawi	South Africa
Benin	Equatorial Guinea	Mali	Sri Lanka
Bolivia	Eritrea	Mauritania	Sudan
Botswana	Ethiopia	Malaysia	Swaziland
Brazil	Fiji	Mauritius	Syrian Arab Republic
Burkina Faso	Gambia, The	Mexico	Tajikistan
Burundi	Ghana	Mongolia	Tanzania
Cambodia	Guatemala	Morocco	Thailand
Cameroon	Guinea-Bissau	Mozambique	Togo
Cape Verde	Haiti	Namibia	Trinidad and Tobago
Central African Republic	Hong Kong, China	Nepal	Tunisia
Chad	Honduras	Nicaragua	Uganda
Chile	India	Niger	Uruguay
China	Indonesia	Nigeria	Venezuela, RB
Colombia	Israel	Pakistan	Vietnam
Comoros	Jamaica	Panama	Zambia
Congo, Rep.	Jordan	Papua New Guinea	Zimbabwe
Costa Rica	Kenya	Paraguay	

Countries in base sample for infant mortality regressions

Algeria	China	Ghana	Malawi	Pakistan	Tanzania
Bangladesh	Colombia	Guatemala	Mali	Panama	Thailand
Benin	Costa Rica	Honduras	Mauritania	Papua New Guinea	Trinidad and Tobago
Bolivia	Dominican Republic	India	Mongolia	Paraguay	Tunisia
Brazil	Ecuador	Indonesia	Morocco	Peru	Uganda
Burkina Faso	Egypt, Arab Rep.	Jamaica	Mozambique	Philippines	Vietnam
Cambodia	El Salvador	Jordan	Nepal	Rwanda	Zambia
Cameroon	Eritrea	Kenya	Nicaragua	Senegal	Zimbabwe
Chad	Ethiopia	Lao PDR	Niger	Sri Lanka	
Chile	Gambia, The	Madagascar	Nigeria	Swaziland	

Countries in the base sample for regressions on adult illiteracy and stylized facts

Algeria	China	Indonesia	Morocco	Swaziland
Argentina	Colombia	Israel	Mozambique	Syrian Arab Republic
Bangladesh	Congo, Rep.	Jamaica	Namibia	Thailand
Barbados	Costa Rica	Jordan	Nepal	Togo
Belize	Cote d' Ivoire	Kenya	Nicaragua	Trinidad and Tobago
Benin	Dominican Republic	Lao PDR	Niger	Tunisia
Bolivia	Ecuador	Lebanon	Nigeria	Uganda
Botswana	Egypt, Arab Rep.	Lesotho	Pakistan	Uruguay
Brazil	El Salvador	Madagascar	Panama	Venezuela, RB
Burkina Faso	Ethiopia	Malawi	Paraguay	Vietnam
Burundi	Fiji	Malaysia	Peru	Zambia
Cambodia	Gambia, The	Mali	Philippines	Zimbabwe
Cameroon	Ghana	Mauritania	Senegal	
Central African Republic	Guatemala	Mauritius	South Africa	
Chad	Honduras	Mexico	Sri Lanka	
Chile	India	Mongolia	Sudan	

Countries in the base sample used for regressions on government effort in health

Algeria	Colombia	Jordan	Namibia	Sierra Leone
Argentina	Cyprus	Kenya	Nepal	South Africa
Bolivia	Ecuador	Lebanon	Nicaragua	Sri Lanka
Botswana	Egypt, Arab Rep.	Lesotho	Panama	Swaziland
Brazil	El Salvador	Madagascar	Papua New Guinea	Thailand
Burkina Faso	Ethiopia	Malaysia	Paraguay	Tunisia
Burundi	Fiji	Mauritius	Peru	Uganda
Cameroon	Guinea	Mexico	Philippines	Uruguay
Chile	India	Mongolia	Senegal	Yemen, Rep.
China	Indonesia	Morocco	Seychelles	Zimbabwe

Countries in the base sample used for regressions on government effort in education

Algeria	China	Guinea	Mauritius	Paraguay	Thailand
Argentina	Colombia	India	Mexico	Peru	Tunisia
Bolivia	Cyprus	Indonesia	Mongolia	Philippines	Uganda
Botswana	Ecuador	Jordan	Morocco	Senegal	Uruguay
Brazil	Egypt, Arab Rep.	Kenya	Namibia	Seychelles	Yemen, Rep.
Burkina Faso	El Salvador	Lebanon	Nepal	Sierra Leone	Zimbabwe
Burundi	Ethiopia	Lesotho	Nicaragua	South Africa	
Cameroon	Fiji	Madagascar	Panama	Sri Lanka	
Chile	Ghana	Malaysia	Papua New Guinea	Swaziland	

Appendix D. Millennium Development Goals

Goal 1: Eradicate extreme poverty and hunger
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than $1 a day
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger

Goal 2: Achieve universal primary education
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling

Goal 3: Promote gender equality and empower women
Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and in all levels of education no later than 2015

Goal 4: Reduce child mortality
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate

Goal 5: Improve maternal health
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio

Goal 6: Combat HIV/AIDS, malaria, and other diseases
Target 7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS
Target 8: Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

Goal 7: Ensure environmental sustainability
Target 9: Integrate the principles of sustainable development into country policies and program and reverse the loss of environmental resources

Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation
Target 11: Have achieved, by 2020, a significant improvement in the lives of at least 100 million slum dwellers

Goal 8: Develop a global partnership for development
Target 12: Develop further an open, rule-based, predictable, nondiscriminatory trading and financial system (includes a commitment to good governance, development, and poverty reduction—both nationally and internationally)
Target 13: Address the special needs of the least developed countries (includes tariff-and quota-free access for exports enhanced program of debt relief for HIPC and cancellation of official bilateral debt, and more generous ODA for countries committed to poverty reduction)
Target 14: Address the special needs of landlocked countries and small island developing states (through the Program of Action for the Sustainable Development of Small Island Developing States and 22nd General Assembly provisions)

Target 15: Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term
Target 16: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth
Target 17: In cooperation with pharmaceutical companies, provide access to affordable, essential drugs in developing countries
Target 18: In cooperation with the private sector, make available the benefits of new technologies, especially information and communication

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