The Effectiveness of Foreign Aid: from the Macroeconomic Perspective to the Experimental Evaluation

José G. Montalvo
Marta Reynal-Querol

CREi

Centre de Recerca
en Economia Internacional

The Effectiveness of Foreign Aid: from the Macroeconomic Perspective to the Experimental Evaluation[*]

José G. Montalvo
Marta Reynal-Querol

1. Introduction

Despite the fast growth of some developing countries during the last 10 years, poverty is still a very serious problem in many areas of the world. The latest calculation of the number of poor around the world indicates that in 2005 there were 1,376.7 million people living below the new estimates of the poverty line, defined as $1.25 per day using the 2005 PPP[1] (Chen and Ravallion 2008). Figure 1 shows the evolution of the proportion of people living in developing countries below this poverty line. It can be seen that the proportion has dropped from around 50% in 1981 (1,896.2 millions) to 25% in 2005. However, most of this reduction in poverty is concentrated in a particular country: China. Eliminating China the reduction in the proportion has been smaller, going from 40% in 1981 to 29% in 2005. In fact the number of poor has increased between 1981 and 2005 if we do not count China (from 1,000 million poor to 1,120 million).

Figure 1. Headcount index for the developing world: 1981–2005

% below the poverty line ($1.25 per day 2005 PPP)

Aggregated — Excluded China
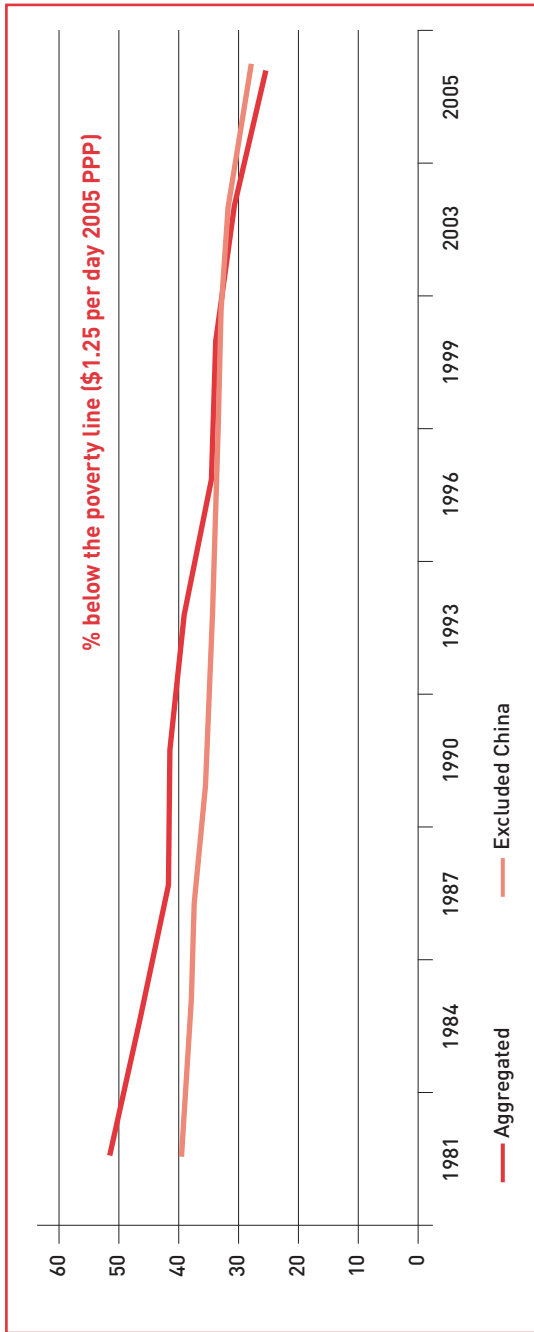
Looking at the regional distribution of poverty in Figure 2 we see a clear reduction in the East Asia and Pacific region (where China is included) but a large increase in Sub-Saharan Africa. Therefore, poverty continues being a critical problem for the international community.

According to newspaper accounts, the solution to the poverty problem requires foreign aid. At least if attention is paid to the numerous charity events sponsored by movie or music starts or the published promises of world leaders.

Among academics there is more controversy. Sachs (2005) proposes scaling-up foreign aid. The problem, as far as Sachs is concerned, is that foreign aid is not enough to overcome the "poverty traps". The existence of a "poverty trap" would imply that if the provision of foreign aid is not high enough then the gains in income per capita of developing countries due to the impact of international aid would be temporary, since they will eventually return to the original equilibrium with a high level of poverty[2]. Therefore, Sachs (2005) argues that there is need for a "big push" in foreign aid. More money will facilitate the application of western technology to the solution of development problems. This vision (accepted by the UN or the Gleneagles agreement[3]), proposes the application of ambitious plans with a large increase in the amount of foreign aid. Easterly (2006) represents the opposite view which claims that big plans pave the road for failure. Therefore, Easterly proposes to scale down foreign aid applying a bottom-up approach. Easterly argues that Sachs did not answer the most important question: how is it possible that after spending 2.3 trillion dollars in foreign aid during the past half century we do not see the application of these technological solutions to developing countries? Instead of big plans, Easterly (2006) argues in favour of a piecemeal approach (searchers instead

Figure 2. Number of poor by region: 1981-2005

Rest developing countries · East Asia & Pacific · Sub-Saharan Africa · South Asia
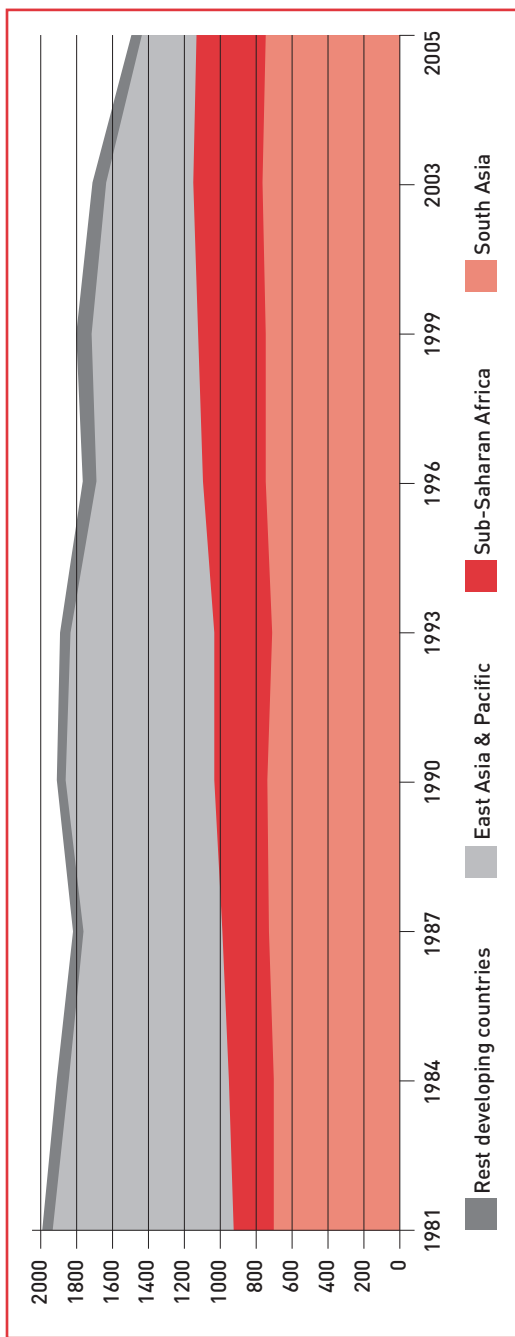
Note: vertical axis measured in thousands.

of planners). Piecemeal reform motivates specific actors to take small steps, one at a time, then tests whether that small step made poor people better off, holds accountable the agency that implemented the small step, and considers the next small step. Easterly (2006) considers that the main issue is not technology but complex economic and political factors: lack of property rights, corruption, lack of adequate institutions to enforce contracts, etc. Collier (2007) argues that rich countries could do a lot to help poor countries. But the most they can do is to intervene after civil wars, reform international law and promote good institutions in developing countries[4]. Collier does not frame things in terms of resource-transfers to poor countries. Instead, his focus is on how developed countries can get poor countries to improve their institutional arrangements.

2. Some preliminary evidence

Before turning to the evidence in detail, it is interesting to look at some simple correlations. This section discusses the data available at the country level and some simple evidence on the relationship between foreign aid and development. Table 1 shows the average proportion of Official Development Assistance (ODA)[5] over GDP for the period 1970–99. In many African countries the size of this ratio was over 5% for many years of that period. In Burkina Faso, for example, aid accounted for two-thirds of the government budget and 8% of GDP over the period 1985–89. In Mauritania, it accounted for 60% and 22%, respectively, for the period 1980–84. In Rwanda, Vanuatu, Gambia, Niger, Tonga and Mali, foreign donors provided over a third of the government budget during some 5-year periods between 1960 and 1999. Some countries are chronically dependent on aid. Aid accounted for 40% of the government budget

Table 1. The 20 most aid-dependent countries

Country	Aid over GDP
Comoros	16.1
Guinea-Bissau	13.9
Mauritania	12.3
Chad	8.1
Gambia, The	8.1
Zambia	8.0
Central Afr. Rep.	7.2
Mali	7.1
Somalia	7.0
Jordan	7.0
Niger	6.2
Burkina Faso	6.2
Malawi	6.1
Lesotho	6.1
Tanzania	5.9
Togo	5.9
Nicaragua	5.8
Senegal	5.3
Burundi	5.2
Rwanda	5.1

Note: ODA over GDP is calculated as an average for the period 1970–1999.
Source: Djankov, Montalvo and Reynal-Querol (2008a).

and 6.2% of GDP in Burkina Faso. In Mauritania it accounted for 37% and 12%, respectively.

Despite this large amount of financial aid, the economic performance of the recipient countries has been disappointing. If we look at Table 1, we will recognize many of the countries with the poorest economic record in recent decades.

It is true that there is an important issue in order to establish the causal effect of aid on mac-roeconomic performance: recipient countries are, almost by definition, the ones with the lowest level of income per capita. Figure 3 shows the relationship between the average proportion of foreign aid over GDP and the level of GDP per capita of recipient countries. We divide the sample into three decades, the 70s, 80s, and 90s to analyze whether there has been any change in the distribution of aid. The slope of the regression lines for the three decades indicates that large amounts of ODA are targeted at poor countries. However, the slope for the 70s is flatter than the one for the 80s and 90s, which means that over time, donors have been more concerned in targeting poor countries.

3. Does foreign aid help?

The previous section contained a preliminary exploration of the relationship between foreign aid and economic development. As already mentioned, identifying the effect of aid on development is a complex matter since there are issues of endogeneity related with the fact that poor countries may receive more aid precisely because they are poorer than other countries. However, even considering this problem, the literature finds little evidence in favour of a positive (or negative) impact of aid on growth.

The literature is vast, so we shall concentrate only on what Hansen and Tarp (2001) call the "third generation". Boone (1996) represents the beginning of this new generation of models on the effectiveness of aid. He finds that aid does not significantly increase investment or human development indicators, but it does increase the size of government. Burnside and Dollar (2000) concentrate on the differential effect of policies, instead of political institutions, on the effectiveness of aid.

Figure 3. Relationship between average proportion of foreign aid over GDP and GDP per capita
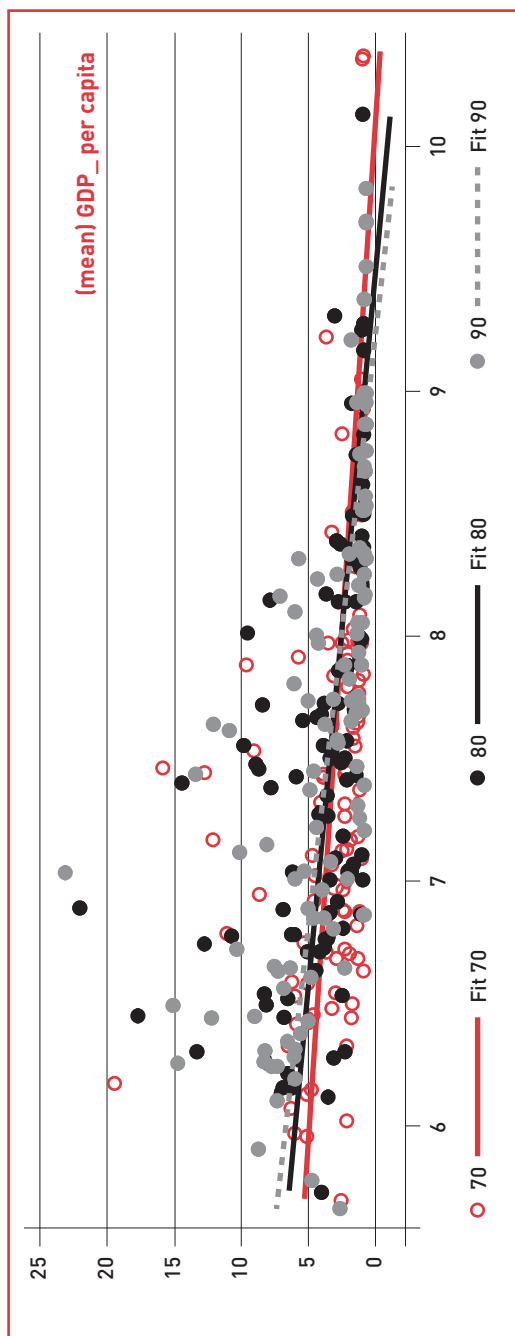
Source: Djankov et al. (2008a).

They find that aid works in good policy environments — notably, good fiscal, monetary, and trade policies. The results in Burnside and Dollar (2000) imply that increasing the conditionality of aid on policies would improve the effectiveness of aid. Related studies have corroborated this finding: The result that the effect of aid depends on good policies has been found to be robust by some authors (Collier and Dehn, 2001; Collier and Dollar, 2002). However, Easterly, Levine and Roodman (2004) find that the results of Burnside and Dollar (2000) are fragile if one changes the sample period (e.g., by extending the sample up to 1997) or if one fills in the missing data for 1970–93.

Hansen and Tarp (2001) examine the relationship between foreign aid and growth in real GDP per capita as it emerges from simple augmentations of popular cross-country growth specifications. They show that aid increases the growth rate, and this result is not conditional on "good" policy. They also find that there are decreasing returns to aid, and the estimated effectiveness of aid is highly sensitive to the choice of the estimator and the set of control variables. But the results in Przeworski and Vreeland (2000) and Barro and Lee (2005) cast doubts on the effectiveness of foreign aid. Both studies analyze the effectiveness of IMF aid and conclude that loans reduce economic growth and investment in the recipient countries. More recently, Rajan and Subramanian (2007) find no evidence of the relationship between aid and economic growth, even after correcting for the fact that aid goes typically to countries with poor economic performance. Roodman (2004) tested the results of seven aid-growth papers for robustness. All the results appear fragile, especially to sample expansion.

Djankov et al. (2008a) use the standard set of controls in the literature of aid and growth: in particular, they follow Burnside and Dollar

(2000), Easterly et al. (2004), and Hansen and Tarp (2001) among others. The set includes initial income, ethno-linguistic fractionalization, assassinations per capita and the product of ethno-linguistic fractionalization and assassination per capita, the institutional quality from ICRG (International Country Risk Guide) used by Knack and Keefer (1995), the M2/GDP to indicate financial depth lagged one period, dummies for sub-Saharan Africa and fast growing East Asia, and period dummies. Finally, they include the policy variable constructed by Burnside and Dollar (2000). When following the basic specification of Hansen and Tarp (2001) they include the budget balance/GDP (Bb), log (1+ inflation) and a variable measuring openness to trade (open), originally constructed by Sachs and Warner (1995), and updated by Roodman (2004). For all the empirical analysis they consider a sample of 112 recipient countries and data from 1960 to 1999 organized in five-year intervals:

$$GROWTH_{it} = \beta_1 y_{it} + \beta_2 X's_{it} + \beta_4 aid_{it} + \gamma_t + \mu_{it} \quad (1)$$

where *GROWTH* is the growth rate of GDP per capita; y_{it} is the log of gross domestic product per capita in the initial year of each sub-period; and the vector X has the usual controls in growth regressions explained above.

As aid generally flows to countries whose growth rate is getting worse, Djankov et al. (2008a) use an instrument for foreign aid. They follow Burnside and Dollar (2000) and Easterly et al. (2004) and use a group of variables that captures donors' "strategic interests" — proxied by dummy variables for the Franc Zone, a dummy for being an ex-colony of the UK, a dummy for Central American countries — the logarithm of population and arms imports as a fraction of total

imports lagged one period. Therefore the equation for aid is the following:

$$AID_{it} = \gamma_y m_{it-1} + \phi_p p_{it} + z'_i \gamma_z + \xi_{it} \quad (2)$$

where the excluded instruments are the logarithm of population (*p*), the group of variables that capture donors' "strategic interests" (*z*), and arms imports as a fraction of total imports lagged one period (*m*).

Figure 4 shows the conditional correlation between foreign aid over GDP and per capita income growth resulting from running the above model. The graph shows a lack of correlation between foreign aid and per capita growth in GDP conditional on all the other explanatory variables.

4. Why does aid not lead to economic prosperity?

Empirical research on the impact of foreign aid on economic development does not find a consistent positive (or negative) effect. There are several reasons that can explain this lack of an effect of aid on poverty and development[6].

4.1. The objective of donors

First of all, donor countries may have objectives that undermine the effectiveness of foreign aid. Almost half of the foreign aid provided by OECD countries does not have poverty alleviation and economic development as its basic objectives. Alesina and Dollar (2000) find that while some donors have the right incentives (raising incomes, poverty reduction, institutional improvement) many others are driven by political and strategic

Figure 4. Conditional correlation between foreign aid over GDP and per capita income growth
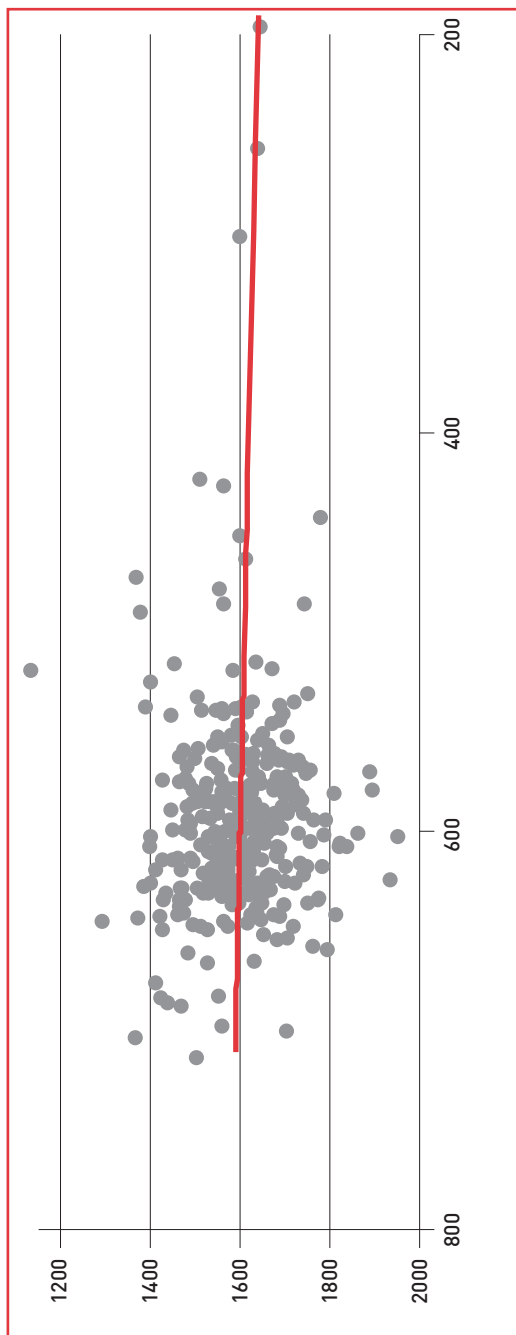
considerations. Another possible reason that explains the ineffectiveness of foreign aid is the so-called "warm glow" effect. Donors may only be interested in the fact of giving itself and not in its effects on the recipient countries. Therefore, the utility of donors does not depend on the well-being of the citizens of recipient countries but only on the satisfaction derived from providing aid. This interpretation is consistent with the evaluation of policies based on inputs (money disbursed) rather than outcomes (effect of the aid on poverty and economic development). It is also consistent with voters who are worried about the total amount of money that is dedicated to foreign aid (say 0.7% of GDP) and not about the results that aid produces in recipient countries[7].

4.2. Foreign aid could reduce the institutional quality of receiving countries

The evidence shows that foreign aid has a negative impact on the democratic stance of developing countries. If the discovery of natural resources produces a large flow of income, that "windfall" may generate corruption, rent-seeking activities and, in extreme situations, a civil war. A large flow of foreign aid may have the same consequences. Casual observation seems to indicate that foreign aid may have unexpected consequences. For instance, one of the largest projects of the World Bank in recent years ($180 million) has been the Chad-Cameroon oil pipeline. The World Bank applied a novel scheme to this project in order to avoid corruption: the revenue was supposed to go into an offshore account and the government of Chad was supposed to spend the money only on education, health, and infrastructure. However, it is well known and documented that already the first $4.5 million received as a signing bonus from the oil companies was deviated. Recently, Chad weakened the regulation that imposes the dedication of most of its oil revenue to poverty reduc-

tion programs and reneged on its deal with the World Bank. Once oil revenues began to reach the government's accounts in 2004, the program (which implied that royalties were deposited in an offshore account and monitored by an independent committee) ran into trouble. Finally, the World Bank decided to suspend all its loans to Chad (World Bank 2008). Maren (1997) provides evidence that Somalia's civil war was caused by the desire of different factions to control the large food aid that the country was receiving.

Theoretical studies have documented several mechanisms that can explain why sudden windfalls of resources in developing countries have led to a decline in their growth rate. Although existing theoretical models differ in their specifics, the basic elements are common: individuals engage in rent-seeking activities to appropriate part of the resource windfall and, by so doing, reduce the growth rate of the economy. In addition most of the theoretical arguments rely in the so-called tragedy of the commons. Lane and Tornell (1996) describe a growth model that incorporates "common access"[8] to the capital stock as a reduced form of a situation where other groups can appropriate part of the returns of a group of individuals. They document the existence of a so-called voracity effect: if powerful interest groups exist and the intertemporal elasticity of substitution is not too low, then the growth rate of the economy will decline when there is a windfall of resources.

The general view of the empirical relationship between foreign aid and institutional quality and democracy, supported by most of the international institutions, proclaims that economic assistance is needed in order to help in the democratization process of developing countries. However the evidence suggests that foreign aid seems to work more as a curse rather than a blessing. Djankov, Montalvo and Reynal-Querol (2008b) analyze the

effect of aid on democratization using a sample of 108 recipient countries (43 are sub-Saharan African countries, 29 from Latin America, and 13 from Asia). Table 2 ranks the 10 countries that receive the largest and the smallest amount of aid conditional on having some institutional change during that 5-year period. On average, aid-dependent countries suffer a 2-point reduction in democracy (on a scale from 0 to 10). In contrast, the countries least dependent on aid suffer a 0.9-point reduction in democracy. These results suggest a positive correlation between aid and the reduction in the democratic level of countries.

Figure 5 shows the partial correlation, using OLS (ordinary least squares), for the relationship between aid and the change in democracy between 1960 and 1999. The slope of this relationship is negative. The effect of aid over GDP in the long run is considerable: if the foreign aid over GDP that a country receives over a period of five years reaches the 75th percentile in the sample, then a 10-point index of democracy is reduced by between 0.5 and almost one point, a substantial effect.

Using information from the Freedom House index, Knack (2004) argues that there is no evidence that aid promotes democracy. Djankov et al. (2008b), use two variables, the democracy score of the Polity IV, and Checks and Balances of the Database of Political Institutions, to calculate the democratic stance of a country. In addition, they consider simultaneously the effect of foreign aid and other easily extractable resources (in particular oil) to avoid an omitted variable problem. Their findings support the view that foreign aid is not neutral, but damages democratic institutions. They provide empirical evidence that a sudden windfall of resources — in the form of foreign aid and rents from oil — damage the political institutions of the receiving country by reducing checks and balances in government and democratic rules.

Table 2. Top and bottom10 recipients of aid and changes in institutions

Country	ODA	Democracy (at the beginning of the period)	Δ Democ
Zambia, 1996	29.52	6	-3
Comoros, 1999	14.30	5	-4
Gambia, 1990	11.99	7	1
Nicaragua, 1995	10.33	6	2
Gambia, 1994	9.34	8	-8
Lesotho, 1970	9.04	9	-9
Botswana, 1971	8.89	7	2
Madagascar, 1998	8.84	8	-1
Jordan, 1992	8.05	1	1
Mali, 1997	7.78	7	-1
Venezuela, 1992	0.017	9	-1
Venezuela, 1999	0.025	8	-1
Argentina, 1976	0.025	6	-6
Brazil, 1985	0.031	2	5
Argentina, 1999	0.032	7	1
Mexico, 1988	0.034	1	1
Mexico, 1997	0.041	4	2
Brazil, 1988	0.043	7	1
Trini. Tobago, 1984	0.044	8	1
Malaysia, 1995	0.044	5	-1

Source: Djankov et al. (2008b).

In their estimation, they consider several explanatory variables besides foreign aid and oil. Sudden changes in the terms of trade are shocks that can lead to social unrest and political instability. This effect is related to the reduced ability of corrupt governments to benefit from exports of natural resources. Negative shocks pressure governments to reduce democracy and checks and

Figure 5. Partial correlation of aid and change in institutions (democracy)

coef = -.70800014, se = .27380025, t = -2.59
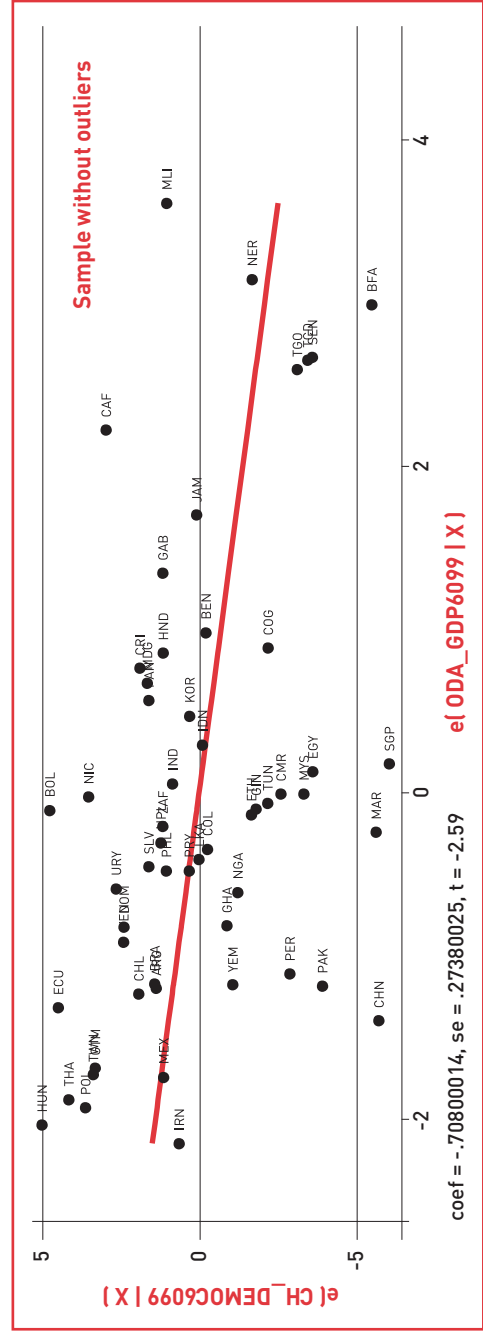
Note: e(ODA_GDP6099 | X) is the residual of the regression of foreign aid on the explanatory variables while e(CH_DEMOC6099 | X) is the residual of the regression of the change in democracy on the same explanatory variables.
Source: Djankov et al. (2008b).

balances in order to increase their capture of resources. On the other hand positive shocks imply an increase in the size of rents that can be appropriated. Finally, they control for the initial quality of political institutions. As aid may flow to countries whose institutions are getting worse, Djankov et al. (2008b) use an instrument for foreign aid. They follow Burnside and Dollar (2000) and Easterly et al. (2004). Therefore, the specification is the following:

$$\Delta INST_{it} = \beta_0 + \beta_1 AID_{it} + \beta_2 OIL_{it} + \beta_3 SHOCKS(-)_{it}$$
$$+ \beta_4 SHOCKS(+)_{it} + \delta INST_{it-1} + \lambda_t + \varepsilon_{it} \qquad (3)$$

$$AID_{it} = \gamma_y y_{it-1} + \phi_p p_{it-1} + z'_i \gamma_z + \xi_{it} \qquad (4)$$

where $\Delta INST_{it}$ is the change in institutions, AID is a measure of the change in the stock of aid received by a country measured as the net foreign aid (flow) over GDP, OIL is the size of rents of oil over GDP, $SHOCKS$ is the size of the absolute negative or positive shock to the terms of trade and $INST$ is the level of institutional development at the beginning of the period[9]. The excluded instruments are the logarithm of initial income (y), the logarithm of population in the initial period (p), the group of variables that capture donors "strategic interests" (z), and the dummy for Sub-Saharan Africa. Djankov et al. (2008b) show the robustness of the results and check the sensitivity of the basic results to the inclusion of the additional variables proposed in the empirical literature on democratization.

The magnitudes of the effects are striking. If a country receives the average amount of aid over GDP over the whole period, then the recipient country would have gone from the average level of democracy in recipient countries in the initial year to a total absence of democratic institutions.

One possible explanation is that parties in power will engage in rent-seeking activities in order to appropriate these resources, and they will try to exclude others from engaging in the government decision-making process. These resources induce rent-seeking behaviour and corruption by parties in government. Resources that are relatively easy to extract motivate parties in power to try to concentrate decisions on how to redistribute those resources to themselves while excluding others. By doing so political institutions are damaged because they become less democratic and less consensual. Because most foreign aid is not contingent on the level of democracy in recipient countries, there is no incentive for governments to keep a good level of checks and balances.

4.3. Donor's coordination and aid effectiveness

Another hypothesis, little explored in the literature, is that the effectiveness of foreign aid depends on the fragmentation of donors. Having many donors with scarce coordination may imply a duplication of projects and the absence of a coherent development plan. These problems will reduce the effectiveness of foreign aid[10]. This is the topic of study of Djankov et al. (2008a). Following the OECD, they distinguish 37 donors, among which 15 are multilateral and 22 are bilateral agencies. For 1960–64, the United States is by far the largest donor, with nearly two-thirds of official development assistance (64.1%). France is second with 9.8% and the United Kingdom third with 8%. By 1995–99, Japan is the largest bilateral donor, with 22.8%, followed by the International Development Association (IDA) with 12.3% and the United States with 10.5%. Using

these data, Djankov et al. (2008a) measure the degree of competition among donors by constructing a donor fragmentation index. Knack and Rahman (2007) calculate two measures of donor fragmentation using the index to analyze the impact of donor fragmentation on the quality of government bureaucracy. Easterly (2007) uses the Herfindahl-Hirschman index to calculate a donor fragmentation index as a measure of specialization[11]. The index of donor fragmentation has the following form,
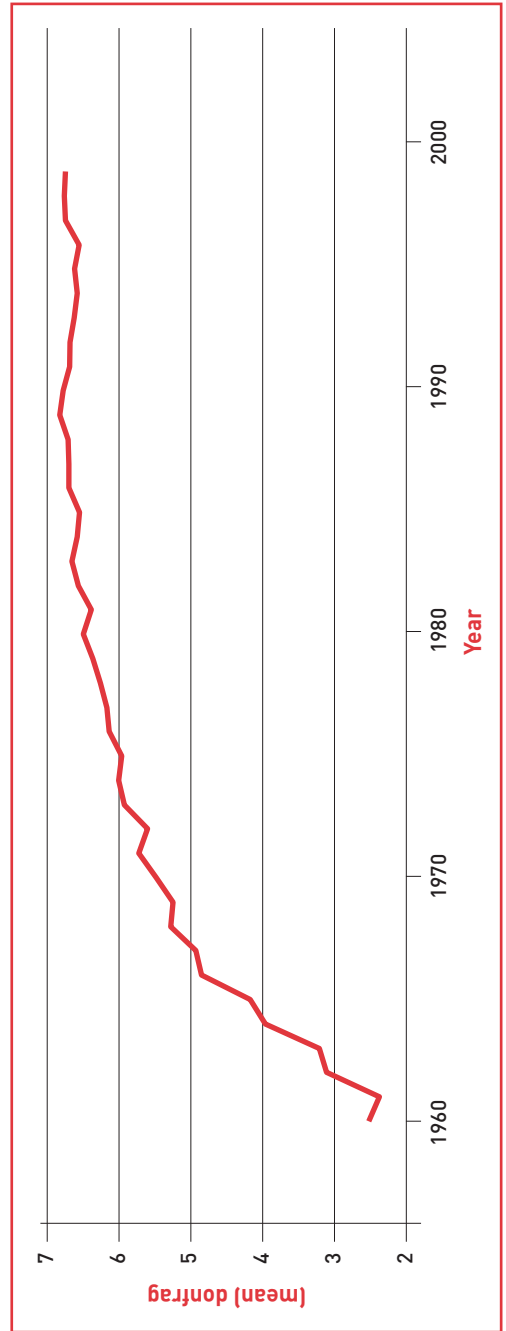
$$FRAG = 1 - \sum_{i=1}^{N} + \pi_i^2$$

where π_i is the proportion of aid given by donor i with respect to all aid the country received. That is, π_i is the relative size of donor i. It measures the probability that if we take two dollars of foreign aid each dollar would come from a different donor.

Figure 6 shows the evolution of the average annual donor fragmentation over time. From this figure it is clear that donor fragmentation has increased. This started with the establishment of the International Development Association, established in 1960, Japan's Overseas Economic Cooperation Fund (1961), and the Asian Development Bank in 1966. The late 1980s and early 1990s saw the establishment of the Multilateral Investment Guarantee Agency, the European Bank for Reconstruction and Development, and France's Pomarco and Denmark's Investment Fund for Central and Eastern Europe.

Not all recipient countries have fragmented donors. For some recipient countries and periods, there is only one donor: for example in Cape Verde in 1960–64 (Portugal) and 1965–69 (Germany), Oman in 1960–1964 (the UK) and Papua

Figure 6. The evolution of average donor fragmentation, 1960-1999

New Guinea in 1960–69 (Australia). Some Middle Eastern countries — Bahrain, Oman, Syria and the United Arab Emirates — have few donors throughout the sample period. Many African countries — for example Botswana, the Gambia, Guinea-Bissau, Malawi, Mozambique and Zambia — start with one or two donors in 1960–64 and have nearly every donor present by 1999.

Having many donors, and higher donor fragmentation, does not lead to receiving more foreign aid. In particular, the correlation between donor fragmentation and aid is -0.13. Donor fragmentation is high in sub-Saharan Africa (correlation coefficient is 0.27), in countries with corrupt governments (with a correlation of -0.21 with the ICPRG index), and in countries with high level of government consumption (correlation equal to 0.18) and countries in civil war (0.16). In contrast, donor fragmentation is lowest in East Asia (-0.45) and in middle-income countries (correlation with log GDP is -0.28).

Djankov et al. (2008a) argue that the burden imposed by the interests of multiple donors is an important determinant of the effectiveness of foreign aid. Acharya et al. (2006) argue that the "immediate consequence of the proliferation of donor organizations is a very large increase in the transaction costs incurred by agencies of recipient governments in their engagements with aid donors. The more donors there are, the easier it is to assume or assert that the lack of development progress is someone else's fault; and the greater are the temptations for individual donor agencies to focus efforts on obtaining good results from their own projects, even if this impinges adversely on overall aid performance." Morss (1984) argues that, "…donor and project build-up, which continues into the 1980s, is having a negative impact on the major government institutions of developing nations. Instead of working to establish com-

prehensive and consistent development objectives and policies, government officials are forced to focus on pleasing donors by approving projects that mirror the current development enthusiasm of each donor."

When many donors are involved, aid may have no effect or in some cases even a negative one. The former may be the result of increased coordination problems between the government and various donors. The latter can take place when the presence of multiple donors increases corruption in government. In particular, Djankov et al. (2008a) document the supply of aid money in developing countries and find that the presence of multiple donors in a given country renders aid ineffective. Consistent with Easterly et al. (2004), they do not find a positive effect of aid on growth, nor do they find a positive effect of aid in good policy environments. Instead, they find that an aid-receiving country at the median of the donor fractionalization distribution will grow one percentage point faster than a country at the 75th percentile. They also test the hypothesis that this result is driven by the effect of multiple donors on the increase in corruption. We describe these results in the next section.

4.4. Aid, corruption and bureaucratic quality

One reason that could justify the lack of an effect of foreign aid on growth is the generation of many rent-seeking activities. There is a large body of evidence on the rent-seeking activities generated by foreign aid. We describe some studies on the effect of foreign aid on corruption.

Reinikka and Svensson (2004) use panel data from a unique survey of primary schools in Uganda to analyze the extent to which grants actually reached the schools. They find that during the period 1991–95, schools on average received only

13% of the grants. The rest disappeared on the way. Moreover, they show that surveys in other African countries confirm that Uganda is not a special case. Olken (2005) shows that 28% of the aid money directed at community-development infrastructure projects in Indonesia is lost due to corruption. Competition may not be beneficial in the market of aid, because it could generate corruption in the government. This could happen by various donors working with different strata of the government, sometimes with little oversight of how the money is spent. Gibson et al. (2005) argue that the presence of multiple donors increases the recipient government's negotiation power. Donors become less demanding in selecting and supervising projects and it is easier for corrupted officials to appropriate resources. Therefore donor fragmentation could reasonably increase corruption. Knack and Rahman (2007) show theoretically that bureaucratic quality will erode more in recipients with greater donor fragmentation. They also provide some empirical evidence, using the ICRG bureaucratic quality variable, of this relationship. They find that high levels of aid, and greater fragmentation of aid (computed from project counts) are associated with larger declines in bureaucratic quality.

Djankov et al. (2008a) test these hypotheses using three measures of corruption: a variable that captures control against corruption from the World Bank Institute, the ICRG index of corruption, and the CPISCORE index from Transparency International. The variable advocated by Kaufmann and Kraay (2008) measures corruption in government. It varies between -2.5 and 2.5, with higher values indicating more control against corruption. The ICRG corruption variable measures the level of control for corruption. It ranges from 0 to 6, where high values indicate low levels of corruption. The CPISCORE measures the perception of corruption, as determined by expert assessments

and opinion surveys. It ranges between 0 and 10, with high numbers indicating low levels of corruption. Djankov et al. (2008a) regress corruption on aid, donor fragmentation, and the core control variables including latitude, ethnic fractionalization and legal traditions (common law and civil law). The idea is that legal tradition captures the level of intervention of government. They find that if a country goes from the median of donor fragmentation to the 75th quartile, the average quality of institutions is reduced by 0.4 points.

5. The experimental evidence

In the previous section, we argued that the economic evaluation of the effectiveness of foreign aid based on macro data seems to indicate that aid does not have any impact on growth and it even has some undesirable consequences. However, another interpretation of the results is that the identification of the effects of aid using macro-data is quite difficult. In recent years many economists have moved from country analysis of aid effectiveness to the microeconomic evaluation of specific aid projects. In particular, the fast growing literature uses randomized experiments to evaluate the impact of projects financed with foreign aid (Montalvo 2007). The ultimate objective of this research program is to construct a catalogue of best practices in development assistance, comparing the relative effectiveness of alternative projects. In essence, the idea is to characterize which projects work, which projects do not work, and why. The evaluation of the impact of foreign aid and, in general, development interventions, helps to understand the effects of programs that, even when well intended and well run, may have no impact or even unintended consequences.

The increasing prevalence of randomized experiments for the evaluation of development programs has generated several controversies[12]. The criticism comes from the advocates of the traditional macroeconomic approach[13] to development and the microeconomic structural approach[14] proponents. First of all, some authors, like Deaton (2010), argue that experimental and quasi-experimental methods are used inappropriately. Deaton (2010) argues also that "the evidence from randomized experiments has no special priority… they do not occupy any special place in some hierarchy of evidence". But it seems clear that in internal validity of a properly performed randomized experiment is superior to any other econometric method, where proper identification can be comprised by many factors. Imbens (2010) argues that otherwise the insistence of the Food and Drug Administration on the randomized evaluation of new drugs would be unreasonable. Angrist and Pischke (2010) argue that methods based on experimental or pseudo-experimental designs are superior to the standard econometric procedures. Rodrick (2008) presents a less radical approach to the interpretation of the merits of randomized experiments. Rodrick (2008) recognizes the superiority of experiments in terms of internal validity but questions their external validity[15]. This is a fair criticism. Generally in randomized experiments there is a trade-off between external validity and internal validity.

Finally, Deaton (2010) and Ravallion (2009) complain about the predominance that randomized evaluation is attaining in the field of economic development. Ravallion (2009) writes the following: "Doctoral students are searching for something to randomize. Philanthropic agencies are sometimes unwilling to fund non-experimental evaluations. Even the World Bank is responding". Deaton (2010) argues that the results of the experimental approach cannot be interpreted without an economic model. This criticism used to be a fair attack on the reduced form evaluation of the early experiments. Recently the proponents of randomized evaluation are increasingly integrating theoretical models, and predictions, with the results of randomized experiments. See for instance Duflo et al. (2009).

In this section we shall discuss the application of the experimental methodology to different types of projects related with three basic fields[16]: health, education and the development of the financial sector (micro-credits).

5.1. The evaluation of health interventions

The interventions in the health sector are aimed at two basic objectives: the change of sanitation and sexual habits and the change in the health system from the supply side (changing the incentives of service providers). In this subsection we describe a few examples of interventions in this sector (Kremer 2007).

As already mentioned above, one of the most influential recent studies on health interventions in developing countries is the evaluation of a deworming program presented in Miguel and Kremer (2004). In some such countries, close to 90% of the children are infected. Miguel and Kremer (2004) consider a program of deworming in Kenya, which uses schools, instead of clinics, as the base for the system of delivery. The deworming program reduced worm load and increased self-reported health. Not surprisingly, it also reduced school absenteeism by 25%. However, the most interesting result was the low cost of improving education (compared with other programs): it only cost $3.50 dollars to get an extra year of education. In addition, there were important externalities: other schools that were not included in the treatment group also saw a reduction in the worm

load and absenteeism of their students. Miguel and Kremer (2007) consider the sustainability of this program. Since health education (wash your hands frequently, wear shoes, etc.) did not have the expected impact, Miguel and Kremer (2007) analyze if the program of deworming could be sustainable without foreign aid. For this purpose the NGO that helped with the first stage of the experiment, instituted a cost sharing mechanism. When the users had to pay part of the cost, instead of getting a full subsidy, the take-up fell by 80%. The revenue raised with this system was very low, which clearly indicates that the deworming program was not sustainable in the long run without continuous foreign aid.

Another scheme of subsidies for health is embedded in the PROGRESA program: the cash transfer for poor mothers in rural areas was conditional on participation in preventive health measures and children's school attendance. Shultz (2004) reports that the illness rate of children in the treatment group was 39.5% lower than in the control group. Children in the treatment group were also 1 cm taller and they had a 25% less chance of being anaemic. In addition, children in the treatment group logged 0.7 additional years of education with respect to the control group.

Finally, recent projects try to evaluate the management of health systems at large. Bloom et al. (2007) analyze the contracting out of the management of government health services to NGO's in five districts that had been randomly selected. They show that the targeted outcomes improved by half standard deviation with respect to the comparison district.

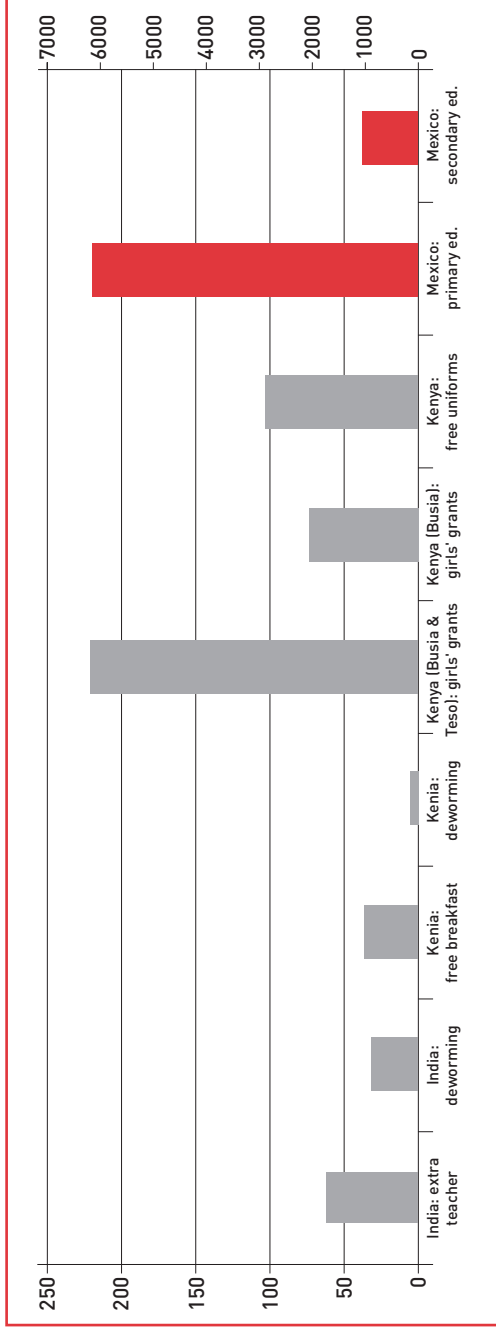## 5.2. The evaluation of education interventions

In the educational sector, some of the worries are the same as in the health sector. As there are ghost doctors, doctors who do not show up for work, there are also ghost teachers[17]. The development programs have been centred on three issues: increasing participation in school, improving school quality, and reforming the administrative structure. There are several experiments that analyze the impact of alternative programs to reduce the cost of education. The conditional transfers of PROGRESA increased enrolment by 3.4%. The deworming experiment of Kenya led to a 25% increase in the presence of students in schools and this is being replicated in India. Other programs are also being evaluated (Duflo 2007): an experiment on the provision of school uniforms in Kenya shows that it reduces the dropout rate by 15% and an experiment on the provision of free breakfast shows an increase in participation of 30%. Other experiments are the program of extra teachers in India, based on the remedial education provided by the Balsakhi, and an experiment on scholarships for girls based on test performance in Kenya.

Figure 7 summarizes the cost per extra year of education of alternative programs. This indicator allows the comparison of very different experiments in terms of costs and benefits. Surprisingly enough, the most cost effective program to increase participation in schools is deworming. The subsidies in primary education of the PROGRESA programme are very expensive since, in any case, most of the students were studying primary education. The grants for girls with good academic performance and the free lunches are also expensive procedures to increase participation, at least in relative terms.
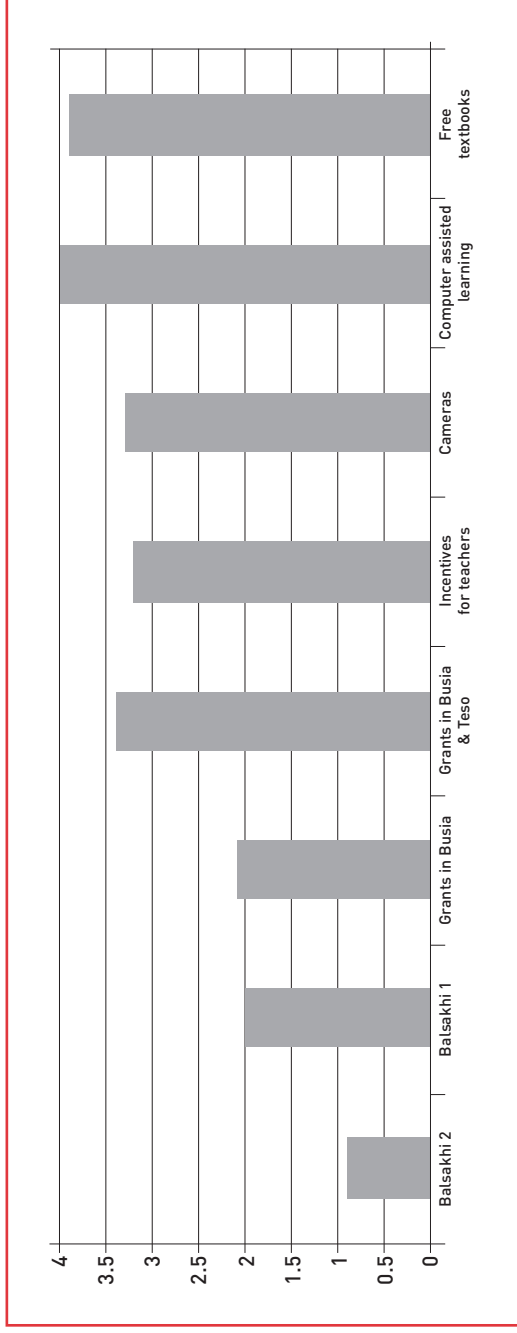
The second problem is to increase the quality of education. Many interventions have an effect on participation but no effect on standardized test scores. Therefore, we need to answer the following question: is it useful to spend resources to increase the participation rate at school if the

Figure 7. Cost per extra year of education induced

250

200

150

100

50

0

India: extra teacher

India: deworming

Kenia: free breakfast

Kenia: deworming

Kenya (Busia & Teso): girls' grants

Kenya (Busia): girls' grants

Kenya: free uniforms

Mexico: primary ed.

Mexico: secondary ed.

7000

6000

5000

4000

3000

2000

1000

0

Note: Cost for an additional year of education in dollars: the right axis measures the grey bars while the left axis measures the red bars.
Source: Duflo (2007).

Figure 8. Cost of increasing 0.1 standard deviations the test scores

4

3.5

3

2.5

2

1.5

1

0.5

0

Balsakhi 2

Balsakhi 1

Grants in Busia

Grants in Busia & Teso

Incentives for teachers

Cameras

Computer assisted learning

Free textbooks

Source: Duflo (2007).

students learn nothing at school? There are many randomized experiments in developing countries looking at this particular problem. Most of the results are disappointing. Those experiments have covered the case of the provision of free textbooks, the provision of free flip charts, or the use of extra teachers for remedial education (the Balsakhi program). The Balsakhi (which means "the child's friend") are young women who have finished secondary school and are hired in the local community to teach students lagging behind in basic maths and literacy. Other experiments have analyzed the effect of cameras to reduce absenteeism among the teachers; the payment of incentives to teachers based on test scores; or computer assisted education. Figure 8 contains a comparison of the cost of increasing test scores in 0.1 standard deviations for each of the programs mentioned previously that had any positive effect (this condition excludes the provision of flip charts which did not have any significant effect on test scores). The most cost effective systems are remedial education although the effect is small. Free textbooks and computer assisted education are the most expensive procedures.

5.3. The evaluation of financial interventions

In recent years NGOs and governmental bodies have introduced microcredit programs, targeted at the poor in low income countries. Expanding credit access has become a key element of development strategies everywhere. The evaluation of these programs shows that they are quite successful in improving health and nutrition for families (Pitt and Khandker 1998), while being sustainable in the long run (the default rate is very low). Recent research is trying to disentangle the different components of microcredits in order to improve its potential as an anti-poverty device. Among these components there are four elements:

1. Oriented at productive activities. Karlan and Zinman (2008) consider the potential role of consumer credit instead of entrepreneurial credit. They estimate the impact of consumer credit supply expansion using a field experiment in South Africa. Karlan and Zinman (2008) find that the marginal loans increase credit access and produce measurable benefits (increase employment, and reduce poverty).

2. The bias towards women. Pitt and Khandker (1998) show that the effect of program participation differs according to the gender of the program participant. Recent evidence shows that credit provided to women improves measures of health and nutrition of boys and girls while the credit provided to men has no significant effect.

3. The weekly repayment schedule. Does it matter if the repayment schedule is weekly, monthly or yearly? Obviously, the cost of the alternative schedules is different and, therefore, there is scope for improvement. Field and Pande (2007) use a randomized field experiment to assign clients randomly to different types of repayment schedules. Their findings indicate that more flexible repayment schedules can allow micro-finance institutions to lower transaction costs without increasing default rates.

4. Group liability. The group liability clause in the typical micro-finance contract claims to improve repayment rates and reduce transaction costs by providing incentives to monitor and enforce others' contracts. The reason is that clients have incentives to screen the trustworthiness of other clients before allowing those individuals into the program. Clients have also incentives to monitor the quality of the investment projects of other clients and to enforce the repayment of the loans by peer pressure.

However, group liability can also deter a good client from borrowing, questioning the long run sustainability of this type of programs. Individual in good credit standing may face higher net interest rates if they join the program than if they look for credit alternatives outside the program. Gine and Karlan (2007) conduct a field experiment comparing individual-liability centers (treatment group) versus group liability (control group). They find no increase in default rates in the treatment group.

6. Conclusions

Many developing countries have received large amounts of foreign aid during the last forty years but the results are quite disappointing. This *opuscle* reviews the empirical evidence on the effectiveness of foreign aid and discusses some political economy considerations that could explain, at least partly, the ineffectiveness of development assistance. These political economy effects are related to the incentives of donors and aid agencies, the interaction between donors and recipient countries, and the delivery of aid in those countries.

The disappointing results on the average effect of foreign aid on growth have led to a line of research on the conditions under which aid maybe effective. The empirical evidence is also mixed on whether aid helps conditional on good policies. Most of the literature agrees that those effects of foreign aid are elusive and fragile. Recent papers find that foreign aid has a negative effect on the institutional development and the democratic stance of recipient countries. It is likely that the macroeconomic approach to the evaluation of the effectiveness of foreign aid is not well suited to provide a clear answer to the big question: Is foreign aid god or bad?

The difficulties of the macroeconomic approach to identify the effect of foreign aid are one important reason why the use of randomized experiment is becoming the standard in the evaluation of the effectiveness of foreign aid. The final part of the *opuscle* summarizes some of those findings, in the context of education, health and financial interventions/programs. The evidence is accumulating fast. We already know that deworming is an extraordinarily effective way to improve health, and even education, in developing countries. We also know that, at least in some parts of India, the use of extra teachers for remedial education is very effective to improve the quality of education while providing free textbooks is not such a good idea. Obviously, more research is needed to complete a comprehensive manual of best practices in developing assistance. In addition, experimental evidence should be complemented with economic theory to improve the external validity of the results.

Notes

* We would like to thank the anonymous referee, whose comments have enhanced the interest of the paper.

(1) PPP stands for Purchasing Power Parity.

(2) Researchers have been unable to verify empirically that there are poverty traps. See for instance Kraay and Raddatz (2007).

(3) The results of the negotiation in the 31st G8 summit, held from July 6 to July 8 of 2005, is popularly known as the "Gleneagles agreement" because of the hotel where the meeting took place. The G8 countries agreed to provide US$50 billion in aid for developing countries and to forgive debt to the Highly Indebted Poor Countries. G8 members of the EU committed to a joint target of 0.56% of GDP in 2010 and 0.7% in 2015.

(4) For a recent discussion on these general issues see Banerjee (2007) or Easterly (2008).

(5) ODA flows include grants and concessional loans — that is, loans whose grant element is at least 25%.

(6) Notice that the results discussed in this section are conditional on the appropriateness of the econometric specification and, in some cases, the instruments used in the estimation.

(7) Martens et al. (2005) and Montalvo (2008) discuss many other political economy mechanisms.

(8) Common access implies that all the individuals have open access to resources, or that it is very costly to limit access.

(9) The specification can be interpreted as regressing changes on changes. AID is the net change in the stock of foreign aid over GDP; OIL is the annual rents from oil over GDP and the SHOCKS are, by definition, changes in the levels.

(10) There are reports of the multiple vaccination of a little girl by different NGOs after the tsunami in Banda Ache. (El Pais, April13, 2005. P.A2) The reaction after the inoculation of so much virus content was the development of an illness. Faced with the danger of an epidemic, several doctors were called to the area just to find out that the illness was caused by the inexistent coordination of the NGOs working in the area.

(11) Montalvo and Reynal-Querol (2005a, 2005b, 2008) discuss the relationship between the properties of the index of fractionalization and polarization in the context of the determinants of civil wars and genocides.

(12) For a general approach to randomized evaluation on development programs see Duflo et al. (2006).

(13) We call traditional macro approach to the evaluation of development policies using macroeconomic aggregates to estimate the models. The main criticism of the supporters of this approach to the use of experiments is that many important macroeconomic questions cannot be answered using experiments.

(14) The structural approach relies on the construction of theoretical models from first principles (utility function, production function, etc.) and the evaluation of policies by simulating the model with parameters calibrated based on previous research.

(15) Internal validity implies that the statistical inference about causal effects is valid for the population under study. An experiment is externally valid if its inferences can be generalized to other populations different from the one used in the experiment.

(16) For a lengthy discussion on these issues, see Montalvo (2007).

(17) Ghost workers are people who should be present in education and health facilities but they are absent most of the time.

References

Acharya, A., A. T. Fuzzo de Lima and M. Moore (2006), "Aid proliferation: how responsible are the donors," *Journal of Development Studies*, vol. 42(1), 1–21.

Alesina, A. and D. Dollar (2000), "Who gives foreign aid to whom and why." *Journal of Economic Growth*, vol. 5, 33–63.

Angrist, J. and J.S. Pischke (2010), "The credibility revolution in empirical economics: how better research design is taking the con out of econometrics", *Journal of Economic Perspectives*, vol. 24(2), 3–30.

Barro, R. and J.W. Lee (2005), "IMF programs: who is chosen and what are the effects?", *Journal of Monetary Economics*, vol. 52(7), 1245–1269.

Banerjee, A. (Ed.) (2007), *Making Aid Work,* Boston Review/ MIT Press (April 2007).

Bloom, E., I. Bhushan, D. Clingingsmith, R. Hong, E. King, M. Kremer, B. Loevinsohn and J. Schwartz (2007), "Contracting for health: evidence from Cambodia," mimeo.

Boone, P. (1996), "Politics and the effectiveness of foreign aid," *European Economic Review*, vol. 40, 289–329.

Burnside C., and D. Dollar (2000), "Aid, policies and growth," *American Economic Review*, vol. 90(4), 847–88.

Chen, S. and M. Ravallion (2008), "The developing world is poorer than we thought, but no less successful in the fight against poverty", World Bank Working Paper 4703.

Collier, P. (2007), *The Bottom Billion*, Oxford: Oxford University Press.

Collier, P. and D. Dollar (2002), "Aid allocation and poverty reduction", *European Economic Review*, vol. 46, 1475–1500.

Collier, P. and J. Dehn (2001), "Aid, shocks and growth", World Bank Policy Research Working Paper Series 2688.

Deaton, A. (2010), "Instruments, randomization and learning about development," *Journal of Economic Literature*, vol. 48(2), 424–55.

Djankov, S., J. G. Montalvo and M. Reynal-Querol (2009), "Aid with multiple personalities", *Journal of Comparative Economics* vol. 37(2), 217–229.

Djankov, S., J. G. Montalvo and M. Reynal-Querol (2008b), "The curse of aid," *Journal of Economic Growth*, vol.13(3), 169–194.

Duflo, E., M. Kremer and J. Robinson (2009), "Nudging farmers to use fertilizers: evidence from Kenya," mimeo, MIT.

Duflo, E. (2007), "The evaluation of educational interventions in developing countries: evidence from randomized experiments," in J. G. Montalvo (Ed.), *The Scientific Analysis of Development Aid*, FBBVA, Madrid.

Duflo, E., R. Glennerster and M. Kremer (2006), "Using randomization in development economics research: a toolkit," NBER Technical Working Paper, 333.

Easterly, W. (Ed.) (2008), *Reinventing Foreign Aid*, MIT Press.

Easterly, W. (2007), "Are aid agencies improving?", *Economic Policy*, vol. 22(52), 633–678,.

Easterly, W. (2006), *The White Man's Burden: Why the West's Efforts to Aid the Rest have done so Much Ill and so Little Good,* Oxford: Oxford University Press.

Easterly, W. (2003), "The cartel of good intentions: the problem of bureaucracy in foreign aid," *Journal of Policy Reform*, vol. 5(2), 67–91.

Easterly, W., R. Levine and D. Roodman (2004), "Aid, policies and growth: a comment." *American Economic Review*, vol. 94(3), 774–780.

Field, E. and R. Pande (2007), "Repayment frequency and default in micro-finance: evidence from India," mimeo.

Gibson, C., K. Andersson, E. Ostrom, and S. Shivakumar (2005), *The Samaritan's Dilemma: the Political Economy of Development Aid*. Oxford: Oxford University Press.

Gine, X. and D. Karlan (2007), "Group versus individual liability: a field experiment in the Philippines," mimeo.

Hansen, H. and F. Tarp (2001), "Aid and growth regressions", *Journal of Development Economics*, vol. 64(2), 547–570.

Imbens, G. (2010), "Better LATE than nothing: some comments on Deaton (2009) and Heckman and Urzua (2009)", *Journal of Economic Literature*, vol. 48, 399–423.

Karlan, D. and J. Zinman (2008), "Expanding credit access: using randomized supply decisions to estimate the impacts," *Review of Financial Studies*, vol. 23(1), 433–464.

Kaufmann, D. and A. Kraay (2008), "Governance indicators: where are we, where should we be going?," *The World Bank Research Observer,* 23, 1, 1–30.

Knack, S. and A. Rahman (2007), "Donor fragmentation and bureaucracy quality in aid recipients," *Journal of Development Economics*, vol. 83(1), 176–197.

Knack, S. (2004), "Does foreign aid promote democracy?", *International Studies Quarterly*, vol. 48, 251–266.

Knack, S. and P. Keefer (1995), "Institutions and economic performance: cross-country tests using alternative institutional measures", *Economics and Politics*, vol(7), 207–227.

Kray, A. and C. Raddatz, (2007), "Poverty traps, aid and growth," *Journal of Development Economics*, vol. 82(2), 315–347.

Kremer, M. (2007), "Improving health behaviour and systems: some evidence from randomized evaluations," in J. Montalvo (Ed.), *The Scientific Analysis of Development Aid*, FBBVA, Madrid.

Lane, P. and A.Tornell (1996), "Power, growth, and the voracity effect." *Journal of Economic Growth*, vol. 1(2), 213–41.

La Porta, R, F. Lopez de Silanes, A. Shleifer, and R. Vishny, (1999), "The quality of government", *Journal of Law, Economics and Organization*, vol. 15(1), 222–279.

Maren, M. (1997), *The Road to Hell: The Ravaging Effect of Foreign Aid and International Charity*, New York, The Free Press.

Martens, B., U. Mummert, P. Murrell and P. Seabright (2002), *The Institutional Economics of Foreign Aid*. Cambridge: Cambridge University Press.

Miguel, E. and M. Kremer (2007), "The illusion of sustainability", the *Quarterly Journal of Economics*, vol. 122(3), 1007–1065.

Miguel, E. and M. Kremer (2004), "Worms: Identifying impacts on education and health in the presence of treatment externalities", *Econometrica*, vol. 72(1), 159–217.

Montalvo, J. G. (2007), "The effectiveness of foreign aid and its evaluation using randomized experiments," in J. G. Montalvo (Ed.), *The Scientific Analysis of Development Aid*, FBBVA, Madrid.

Montalvo, J. G. (2008), "The political economy of international aid," *Princeton Encyclopedia of the World Economy*.

Montalvo, J. G. y M. Reynal-Querol (2005), "Ethnic polarization, potential conflict and civil wars," *American Economic Review*, vol. 95(3), 796–816.

Montalvo, J. G. and M. Reynal-Querol (2005), "Fractionalization, polarization and economic development," *Journal of Development Economics*, vol. 76, 293–323.

Montalvo, J. G. and M. Reynal-Querol (2008), "Discrete polarization with an application to the determinants of genocides", *Economic Journal*, vol.118 (533), 1835–1865.

Morss, E. R. (1984), "Institutional destruction resulting from donor and project proliferation in Sub-Saharan African countries", *World Development*, vol. 12(4), 465–70.

Olken, B. (2005), "Monitoring corruption: Evidence from a field experiment in indonesia", NBER Working Paper 11753.

Pitt, M. and S. Khandker (1998), "The impact of group-based credit programs on poor households in Bangladesh: does the gender of the participants matter?", *Journal of Political Economy*, vol.106(5), 958–996.

Przeworski, A. and J.R. Vreeland (2000), "The effect of IMF programs on economic growth", *Journal of Development Economics*, vol. 62(2), 385–421.

Rajan, R. and A. Subramanian (2008), "Aid and growth: what does the cross country evidence really show?", *Review of Economics and Statistics*, vol. 90(4), 643–665.

Ravallion, M. (2009), "Should the "randomista" rule?" *Economists' Voice*, vol. 6(2), 1–5.

Reinikka, R. and J. Svensson (2004), "Local capture: evidence from a central government transfer program in Uganda", *Quarterly Journal of Economics*, vol. 119(2), 679–705.

Rodrick, D. (2008), "The new development economics: we shall experiment, but how shall we learn?," mimeo, Kennedy School of Government.

Roodman, D. (2004), "The anarchy of numbers: aid, development and cross-country empirics", Center for Global Development Working Paper 32, http://www.cgdev.org/content/publications/detail/2745.

Sachs, J. (2005), *The End of Poverty*, New York: The Penguin Press.

Sachs, J.D. and Warner, A. (1995), "Economic reform and the process of global integration", *Brookings Papers on Economic Activity,* vol. 26(1), 1–118.

Schultz, P. (2004), "School subsidies for the poor: evaluating the Mexican PROGRESA poverty program," *Journal of Development Economics*, vol. 74(1), 199–250.

Tornell, A. and P. Lane (1999), "The voracity effect," *American Economic Review*, vol. 89, 22–46

World Bank (2008), Statement on Chad-Cameroon Pipeline 2009/073/AFR.

Opuscles already published

José García Montalvo

José García Montalvo is Professor of Economics at the Universitat Pompeu Fabra (UPF) and Research Professor at the IVIE. Currently he holds an ICREA-Academia Fellowship. He won the National Prize of Bachelor Studies in Economics (Spanish highest national GPA in Economics, 1988). He got his Ph. D. in Economics at Harvard University in 1993. He has served as consultant, among many others, for the European Union, the OECD, the Inter American Development Bank and the World Bank. He was the Chairman of the Department of Economics and Business of the Universitat Pompeu Fabra during the period 2007 to 2010. He has published 11 books and more than 100 articles in academic journals such as the *American Economic Review, Economic Journal, the Review of Economics and Statistics, Journal of Business and Economic Statistics, Journal of Development Economics* among others.

Marta Reynal-Querol

Marta Reynal-Querol is ICREA Research Professor at the Department of Economics and Business at Universitat Pompeu Fabra (UPF). She holds a Ph. D. in Economics from the London School of Economics and Political Science (2001). She is member of the Editorial Board of the Journal of Conflict Resolution and the European Journal of Political Economy. She is also member of the Council of the European Economic Association (EEA). She holds an ERC-Starting grant obtained in the first call of the European Research Council. She won the Banco Herrero prize 2011 for the most outstanding Spanish economist under 40 years old. She worked at the World Bank between 2001 and 2005. She has publications in the *American Economic Review, American Political Science Review, Review of Economics and Statistics, The Economic Journal, Journal of Economic Growth, Journal of Development Economics, Journal of Conflict Resolution*, among others.