

Can Foreign Aid Buy Growth?

William Easterly

William Easterly is Professor of Economics, New York University, New York City, New York and Senior Fellow, Center for Global Development, Washington, D.C.

William.Easterly@NYU.Edu

Abstract: The widely publicized finding that “aid promotes growth in a good policy environment” is not robust to the inclusion of new data or alternative definitions of “aid”, “policy” or “growth”. The idea that “aid buys growth” is on shaky ground theoretically and empirically. It doesn’t help that aid agencies face poor incentives to deliver results and underinvest in enforcing aid conditions and performing scientific evaluations. Aid should set more modest goals, like helping some of the people some of the time, rather than trying to be the catalyst for society-wide transformation.

Research on foreign aid effectiveness and growth frequently becomes a political football. But when a regression result is passed from one source to the next, context is often stripped away so that what the result means in public discussion is different than what the original research actually demonstrated.

Consider the revealing episode of how an academic paper on foreign aid influenced actual foreign aid commitments. The story starts with an academic study by Burnside and Dollar (2000), which circulated widely as a working paper for several years in the late 1990s before publication in the high-profile *American Economic Review*. The authors set out to investigate the relationship between foreign aid, economic policy, and growth of per capita GDP using a new database on foreign aid that had just been developed by the World Bank. They run a number of regressions in which the dependent variable of growth rates in developing countries depend on initial per capita national income, an index that measures institutional and policy distortions, foreign aid, and then aid interacted with policies. To avoid the problems that aid and growth may be correlated over periods of a few years, but not on a year-to-year basis, they divide their sample into six four-year time periods running from 1970-73 to 1990-93. In certain specifications they also include variables for ethnic fractionalization, whether assassinations occurred, dummy variables for certain regions, and even a measure of arms imports. In many of their specifications, they found the interaction term between foreign aid and good policy to be significantly positive, and summarized (p. 847): “We find that aid has a positive impact on growth in developing countries with good fiscal, monetary, and trade policies but has little effect in the presence of poor policies.”

I believe the Burnside and Dollar (2000) paper meets high academic standards, is intuitively plausible, their conclusions are appropriately hedged, and the paper has become a healthy stimulus to further research. However, their paper also was the basis of a policy recommendation to increase foreign aid, if only policies were good, without further testing of whether this result holds when expanding the dataset or using alternative definitions of “aid,” “policies,” and “growth.” Their general finding was passed on from one media report to another, and was cited by international agencies in their advocacy of an increase in foreign aid.

International aid agencies soon began to mention the results by of Burnside and Dollar (2000). The results from the working paper version were reported in a World Bank (1998) report on *Assessing Aid*. A White Paper from the British Department for International Development (2000) argued, based on the working paper version of the Dollar-Burnside paper, that “development assistance can contribute to poverty reduction in countries pursuing sound policies.” The Canadian International Development Agency put out a draft policy paper in June 2001 (later finalized after public discussion in September 2002) that said World Bank researchers “provide compelling evidence that good governance and a sound policy environment are the most important determinants of aid effectiveness.”

But the issue of the effectiveness of foreign aid heated up in the weeks before a U.N. conference called “Financing for Development” that was held in Monterrey, Mexico, in March 2002. In the run-up to this conference, there was a major debate about whether to increase foreign aid – and in particular about what the United States, with the

lowest aid-to-GDP ratio of any rich country, should do. The Burnside and Dollar (2000) paper was often invoked, either explicitly or implicitly, in this debate.

The media publicized the Burnside and Dollar (2000) findings further in March 2002. *The Economist* rebuked then-U.S. Treasury Secretary Paul O'Neill for his skepticism about foreign aid, on the grounds that "there is now a strong body of evidence, led by the research of David Dollar, Craig Burnside and Paul Collier, all economists at the World Bank, that aid does boost growth when countries have reasonable economic policies" ("Help in the Right Places," 2002). An article in the *New Yorker* chimed in that "aid can be effective in any country where it is accompanied by sensible economic policies," and explicitly discussed the Dollar and Burnside (2000) study (Cassidy, 2002). *The Financial Times*, in an analysis column by its Washington correspondent Alan Beattie (2002) was quite explicit:

At present, the centre of gravity of expert opinion seems to settle around a slightly less optimistic thesis propagated by World Bank economists David Dollar, A. Craig Burnside and Paul Collier: aid can help, but it should be concentrated on countries with good macroeconomic policy and governments genuinely committed to improving public services and infrastructure, and stamping out corruption. Estimates by Mr Dollar and Mr Burnside suggest that 1 per cent of gross domestic product in aid given to a poor but well-managed country can increase its growth rate by a sustained 0.5 percentage points.

In this same spirit, the president of the World Bank, James Wolfensohn, gave a speech shortly before the Monterrey Conference in which he cited a number of lessons learned by the aid community. Wolfensohn (2002) argued: “We have learned that corruption, bad policies, and weak governance will make aid ineffective.” He went on to argue that corruption, bad policies, and weak governance had improved in poor countries, that donors had become more discriminating in directing aid to “good” countries, and that therefore there should be “roughly a doubling of current aid flows.”

As the Monterrey conference got underway, President George W. Bush seemed to be reading from this same script. On March 14, 2002, he announced a \$5 billion increase in U.S. foreign assistance, about a 50 percent percent increase.¹ Bush noted in his speech:

Yet many of the old models of economic development assistance are outdated. Money that is not accompanied by legal and economic reform are oftentimes wasted. ...Sound economic policies unleash the enterprise and creativity necessary for development. So we will reward nations that have more open markets and sustainable budget policies, nations where people can start and operate a small business without running the gauntlets of bureaucracy and bribery.

The White House followed up on November 26, 2002, with the creation of a Millennium Challenge Corporation to administer the \$5 billion dollar increment in foreign aid.

Arguing that aid is only effective in sound policy and institutional settings, the

¹ Another factor in the administration decision was the personal lobbying by the rock star Bono, who seems to be the most influential figure in the aid policy community.

administration .announced 16 indicators of country performance that would be used to guide the selection of countries eligible for MCC aid, three of which were versions of the Burnside and Dollar policy measures (most of the rest were measures of quality of institutions). The White House said on its website that the new aid was motivated by the idea that “economic development assistance can be successful only if it is linked to sound policies in developing countries.”²

Hence, we have an unusually clear link running from a growth regression in an economic study to a policy outcome. However, for professional economists this process has some disquieting signs. The regression result is passed down from one source to the next without questions about the robustness or broader applicability of the results. In this paper, I put the results of Burnside and Dollar (2000) in a broader context. The next section considers recent empirical work on the connections between aid and economic growth, including what happens when such work uses alternative definitions of “aid,” “good policy,” and “growth.” The following section investigates the theoretical

Empirical Evidence on the Links from Aid to Economic Growth

There was a long and inconclusive literature on aid and economic growth in the 1960s, 1970s, and 1980s, which was hampered by the limited data availability and

² For the full text of Bush’s speech of March 14, 2002, see <http://www.whitehouse.gov/news/releases/2002/03/20020314-7.html>. For the announcement of the Millennium Challenge Corporation on November 26, 2002, see <http://www.whitehouse.gov/news/releases/2002/11/20021126-8.html#3>. For the quoted passage on the motivation behind this new aid, see <http://www.whitehouse.gov/infocus/developingnations/>.

considerable debate about the specification and the mechanisms by which aid would affect growth. For example, if greater aid was given in response to slower growth, then interpreting how aid flows affect growth could be difficult. Hansen and Tarp (2000) offer an extensive review of this earlier literature. The literature got new life with a paper by Boone (1996), which found that aid financed consumption rather than investment. (Financing consumption of a few poor people is not so bad, but the proponents of aid hoped for the kind of society-wide transformation that would come from aid financing investment and growth.)³ This paper was notable for introducing political determinants of aid as instruments to address problems of reverse causality. The Burnside and Dollar (2000) paper gained prominence because it addressed the skepticism implied by Boone and by the lack of consensus from the earlier literature.

Since the Burnside and Dollar (2000) paper, a number of papers have reacted to their results, including Hansen and Tarp (2001), Dalggaard and Hansen (2001), Guillamont and Chauvet (2001), Collier and Dehn (2001), Lensink and White (2001), and Collier and Dollar (2001). These papers conduct useful variations and extensions based on the BD specification (some of which had already figured in the earlier literature), introducing variables such as aid squared, terms of trade shocks, variability of agricultural output and exports, and even such complicated terms as an interactive term combining aid with terms of trade shocks. Some of these papers confirm the message of Burnside and Dollar that aid only works in a good policy environment, while others find that when certain other variables are added, the coefficient on the interaction between aid

³ Some proponents have argued that aid could also buy time for reformers to implement painful but necessary changes in economic policies. This seems plausible but has not been systematically tested. One could try to alter the incentives to consume aid by tying transfers to purchases of investment goods, as in Bruce and Waldman 1991.

and policy becomes near-zero and/or statistically insignificant. This literature has the usual limitations of how to choose the appropriate specification without clear guidance from theory, which often means there are more plausible specifications than there are data points in the sample.

Rather than trying to discuss and summarize all of these studies of aid and growth, I will illustrate the issues that arise in this literature by offering some extensions build explicitly on the Burnside and Dollar (2000) approach. I will first discuss expanding their dataset to include more recent evidence, and then explore how their results are affected even within the original dataset by different definitions of “aid,” “good policy” and “growth.”

Easterly, Levine, and Roodman (2003) use the exact same specification as Burnside and Dollar (2000), but simply added more data that had become available since their study was performed as well as hunting for more data in their original sample period (1970-93). (We were able to find more data even over their sample period by going to the original sources – for example on institutional quality -- rather than secondary sources.) Using a sample covering 1970-97, we did their same regression with four-year averages with the same control variables including terms for aid/GDP, their policy index (a weighted average of budget deficits/GDP, inflation, and an index of openness to trade), and the interaction between aid/GDP and the policy index. We found that the coefficient on the crucial interaction term between aid and policy was insignificant in the expanded sample including new data, indicating no support for the conclusion that “aid works in a good policy environment.”

Figure 1 compares the partial scatter underlying the Burnside and Dollar (2000) result on growth and the interactive term between aid and policy with the partial scatter using the same specification but more data. The codes for the data points give the World Bank 3-letter abbreviation for the country name, while the numbers indicate successive 4-year average periods. The partial scatter shows the unexplained portion of economic growth against the unexplained portion of the aid*policy interaction term (that is, unexplained by the other Burnside-Dollar right-hand side variables listed above). Because the explained part of the growth and aid-policy terms changes with the new dataset, the two diagrams do not show the overlapping points in the same location. A datapoint where growth controlling for other factors is high and the aid*policy term is high (because aid is high and policy is good) supports the Burnside-Dollar hypothesis. A point where unexplained growth is high but aid*policy is low (either because aid is low or policy is bad) is evidence against the Burnside-Dollar finding. The prevalence of such points in the second diagram indicates little support for the Burnside-Dollar results.

But even in the original Burnside and Dollar (2000), the significance of the interactive variable between aid and public policy was not robust to other, equally plausible, definitions of “aid”, “policies,” and “growth.”⁴

Let us first try varying the definition of “aid,” while sticking to the original time period and country sample in the Burnside and Dollar (2000) paper. Their definition of aid is the grant element of aid, excluding the loan component of “concessional” loans which are made at extremely low interest rates, a measure of aid that is called Effective

⁴ These extensions arose out of discussions and joint work with Levine and Roodman when working on Easterly, Levine and Roodman (2003). David Roodman assisted me in producing the exact findings shown here.

Development Assistance in this literature (Serven et al., 1996). This concept makes some sense.⁵ However, the standard definition of aid according to the Development Assistance Committee of the OECD is grants and concessional loans net of repayment of previous aid loans – a measure which treats forgiveness of past loans as current aid. This measure of aid is called net Official Development Assistance (ODA), and may be a reasonable measure of the actual transfer to liquidity-constrained governments. The correlation between the two measures is high (.933). But using this alternative definition, the interactive terms with aid and policy is no longer statistically significant, not even at a 10 percent level in the Burnside-Dollar policy specification and country sample (as shown in the Appendix).

Next, consider a different measure of what is meant by good policy. Burnside and Dollar (2000) construct an index number for what is meant by good policy which includes the budget surplus, the inflation rate, and a measure of the openness of an economy developed by Sachs and Warner (1995). The weights of these three terms in the policy index were determined by a regression where these terms were used as independent variables to predict growth, without including any terms for foreign aid or other variables. To reconsider the role of policy, consider first an alternative measure of openness. The Sachs-Warner measure of openness is a dummy variable with a value of either zero or one, where an economy is treated as closed if it has high tariff barriers *or* high nontariff barriers *or* a socialist economic system *or* a state monopoly of key exports *or* a high black market premium. This measure has been criticized both for being

⁵ There is some question about where their 1970-74 data came from, as the exercise of calculating the grant element of foreign aid (Effective Development Assistance, or EDA) began in 1975 (Serven et al. 1996). It apparently used an earlier version of this exercise. I performed a regression of ODA on EDA and found them to be highly correlated. I also used this regression to fill in the missing observations on EDA for 1970-74 and 1994-97.

subjective – for example, in how it classifies “socialist” economies – and for being opaque, because a closed economy may mean many different things (Rodrik and Rodriguez, 2001). As an alternative to measure openness and trade distortions, consider a regression using the black market premium, which is ubiquitous in growth regressions. Add also financial depth (the ratio of M2 to GDP) as a variable in the policy index, since it has been the subject of an extensive literature (Levine 1997). Lastly, experiment with the change in the trade-to-GDP ratio in the policy index, which has been used as a measure of integration with global trade (Dollar and Kraay, 2001).⁶

Following the approach of Burnside and Dollar (2000), let us try several policy indexes using combinations of these variables, where the variables were weighted according to their power in explaining growth in a regression that left out all aid variables. Rerun the Burnside and Dollar regressions with these alternative measures of policy. Each variant of the policy index is still significantly correlated with economic growth, which suggests that the alternative measures of policy are capturing some real effect. But the interactive term of aid and good policy was no longer statistically significant in any of the alternative definitions of the policy index. (Again, a regression table showing specific results appears in the Appendix.)

Finally, consider redefining what is meant by “growth.” As noted earlier, Burnside and Dollar (2000) defined growth as real per capita GDP growth over four years. However, a four-year period may capture business-cycle fluctuations, and may not be long enough a period of “good policy” to set up beneficial effects of aid. Much of the growth literature considers decades or longer. Thus, let us consider periods of eight, 12,

⁶ The Dollar and Kraay (2001) specification was actually the change in growth regressed on the change in trade share. To be consistent with this specification, we add the lagged growth rate in the regression that uses the change in trade share.

and 24 years respectively for averages of “aid”, “policies” and “growth” – where 24 years is a pure cross-section regression that covers their entire sample from 1970 to 1993. In the 12-year and 24-year specifications, the policy variable remains positively and significantly correlated with economic growth. However, the coefficient on the interaction term between aid and policy no longer enters significantly for periods of 12 years and for the pure cross-section of 24 years. The coefficient remains significant when using an eight-year period if the sample includes all developing countries, but not when the sample is restricted to low-income countries (where aid should presumably be more important). Obviously, lengthening the sample period decreases sample size and thus decreases statistical power. Nonetheless, these tests are important because it is more intuitive that aid would affect long-run growth over long periods of good policy than over short ones.

Thus, the result that aid boosts growth in good policy environments is fragile to defining growth, aid, and policy over a sufficiently short period. Alternative period lengths from one to 12 years and for the whole period length of 24 years, using the extended dataset of Easterly, Levine and Roodman (2003), *all* yielded insignificant results on the interactive term between aid and policy.

Clearly, the empirical links from aid to economic growth are far more fragile than the drumbeat of media and development agency references to the Burnside and Dollar (2000) paper suggested. When considering or carrying out an empirical study on this subject, it is crucial to consider what is meant by seemingly commonsensical terms like “aid,” “good policy,” and even “growth.”

The Theory of Aid and Economic Growth

The empirical literature on the connections between aid and economic growth has been hampered by the lack of a clear theoretical model by which aid would influence growth, and which could pin down the empirical specification of the aid-growth relationship. For many years, the standard model used to justify aid was the “two-gap” model of Chenery and Strout (1966). In this model, the first gap is between the amount of investment necessary to attain a certain rate of growth and the available domestic saving one between investment and saving, while the second gap is the one between between import requirements for a given level of production and foreign exchange earnings. At any moment in time, one gap is binding and foreign aid fills that gap. I concentrate here on the investment-saving gap, both for simplicity of exposition and because of the influence of this particular gap over subsequent literature and policy analysis. Chenery and Strout built on earlier work by many other development economists, such as Arthur Lewis (1954) and Walt Rostow (1960). The latter left an indelible mark on development thinking by promising that an aid-financed increase in investment would launch a “takeoff into self-sustained growth.”

The model is straightforward. Economic growth depends on investment as a share of GDP, adjusted by a factor which reveals whether investment is of high or poor quality. The amount of investment will be the sum of domestic savings and foreign aid. The model can be spelled out in this way:

$$g = (I/Y)/\mu$$

$$I/Y = A/Y + S/Y$$

where I is required investment, Y is output, g is target GDP growth, A is aid, and S is domestic saving.

The parameter μ was known as the incremental capital-output ratio (ICOR), usually thought to range between about 2 and 5, where a high incremental capital-output ratio was often taken as a measure of poor “quality of investment.” The ICOR gives how many units of additional capital are required to yield a unit of additional output. When both the units of additional capital and units of additional output are divided by initial output, we have the investment ratio to GDP and the growth rate, respectively. So the ICOR is the ratio of the investment ratio to the growth rate. For example, if the investment rate is 24 percent and the ICOR is 4, then the economy will grow at 6 percent. However, if the economy makes a more efficient use of capital and has an ICOR of 3, then it takes only an 18 percent rate of investment to achieve 6 percent growth.

The model of the “financing gap” approach thus makes two key assumptions. First, it assumes the above stable linear relationship between investment and growth over the short to medium run. This assumption grows out of a Leontief-style production function with fixed requirements for capital and labor per unit of output. Most economists since Solow (1957) have felt uncomfortable with a Leontief-style production function that does not allow the substitution of labor for capital. In labor-abundant Ethiopia, roads are built with labor crews breaking up rocks with picks. In labor-scarce New York, roads are built with many fewer laborers driving heavy equipment.

On theoretical grounds, there are sound reasons to doubt whether the incremental capital-output ratio is a constant, and thus whether the relationship from investment to

growth is linear. There are also sound reasons to doubt that variations in the ICOR necessarily represent the quality of capital investment.

First consider a Solow-style neoclassical model, in which an exogenous increase in investment will raise growth temporarily during the transition from one steady state to another. However, in such a model there is no permanent causal relationship between investment and growth. Moreover, the incremental capital-output ratio in such a model means much more than quality of investment. During a transition to a new steady state, the measured ICOR during the transition is higher, the higher is the initial level of the investment rate and the lower is the change in the investment rate. Also, the ICOR is also higher in steady state the lower is the population growth rate. None of these factors reflect “quality of investment.”

The main alternative to neoclassical growth models, endogenous growth models, stress a multitude of inputs besides physical capital, such as technology, human capital, intermediate new goods, organizational capital, social capital, and institutional design. The incremental capital-output ratio would change with these other inputs, and so there would not be a stable linear relationship between investment and growth nor would the ICOR measure “investment quality” in this case either.⁷

A second key assumption of the model in which aid fills a financing gap and allows greater investment is that aid will actually finance investment rather than consumption. This assumption will hold true only if investment is liquidity-constrained and incentives to invest were favorable. If the cause of low investment is that the

⁷ Some early endogenous growth models like Romer (1987) featured a linear relationship between output and physical capital, but these were discarded later in the literature -- including by Romer (1993) himself. Empirically, many cross-section regressions featured a statistically significant linear relationship between investment and growth, but this relationship did not hold at shorter time intervals (Easterly, 1999). The longer term relationship may reflect reverse causality from growth to investment (Blomstrom et al., 1995)

incentives to invest are poor, then aid will not increase investment. Aid could actually *worsen* incentives to invest if the recipient believes that future poverty will call forth future aid (the classic “Samaritan’s Dilemma”). Aid in either case would finance consumption rather than investment, which is what Boone (1996) found in a cross-section sample. Similarly, the Burnside and Dollar (2000) finding that aid only affects growth in the presence of good public policies can be interpreted as an argument that aid will not necessarily raise investment.

In Easterly (2001), I tested the “financing gap” model in which aid improves investment and growth, using time series data. There are two steps in the argument. First, foreign aid needs to increase investment. Next, investment needs to increase economic growth. How many of these countries show a significant and positive effect of foreign aid on investment, with a coefficient greater than or equal to one? There are 88 aid recipient countries on which we have data spanning the period 1965-95.

First, consider a regression done for each country where the dependent variable here is Investment/GDP and the independent variable is Overseas Development Assistance ODA/GDP. If aid increases investment, then the coefficient on this regression should be positive and greater than or equal to one. Just six of the 88 countries pass this test. The magic six include two economies with trivial amounts of aid: Hong Kong (which got an average of .07 percent of GDP in aid 1965-95) and China (average of 0.2 percent of GDP). The other four countries are Tunisia, Morocco, Malta, and Sri Lanka.

The next step is to run a regression for each country where the dependent variable is the growth rate and the independent variable is the rate of investment. The coefficient from this regression can then be checked to see whether it falls into the plausible range

for the incremental capital-output ratio of between 2 and 5. Using annual data, four countries out of 88 pass the tests of a positive and significant relationship between growth and investment, a constant not significantly different than zero, and an ICOR between 2 and 5. The four economies that pass the tests are an unusual assortment: Israel, Liberia, Reunion (a French colony), and Tunisia.

Thus, there is one country which passes both tests and where the “financing gap” approach seemed to hold empirically: Tunisia. Of course, one success out of 88 countries is more likely due to chance than to any Tunisian proclivity for financing gaps. To dramatize the gap between the predictions of the financing gap model said and the actual outcome, simulate growth outcomes that would have occurred if aid always caused investment to rise and investment always caused growth. One of the more extreme cases of the 87 out of 88 countries that did not fit the model was Zambia. If Zambia had converted all the aid it received since 1960 to investment and all of that investment to growth, it would have had a per capita GDP of about \$20,000 by the early 1990s. Instead, Zambia’s per capita GDP in the early 1990s was lower than it had been in 1960, hovering under \$500.

The “financing gap” model in which aid increases investment and then that investment increases economic growth has dubious theoretical foundations and numerous empirical failings. Yet no other model of aid and growth has arisen to take its place. The financing gap model continues to be used today in the World Bank and other institutions making aid policy. For example, the International Monetary Fund and the International Development Association (2002) did a debt sustainability analysis for Uganda in August 2002 in which growth is a linear function of investment, assuming “the efficiency of

investment to remain constant (ICOR equal to 3.7).” A check of the World Bank’s website in January 2003 on the official projection model, known as the “Revised Minimum Standard Model – Extended” (RMSM-X), found it to still be based on the two-gap model.⁸ The British Department for International Development (2002) noted that aid is necessary because “**finance** {bold in original} itself is vital for countries with very low resources of their own.” When the World Bank (2002) calculated the aid requirements of meeting the “Millenium Development Goal” of cutting world poverty in half, it explicitly acknowledged using the “two-gap model” to come up with an estimate of \$40-60 billion in additional aid (roughly a doubling of current levels) required to meet the implied growth targets. They note their estimates are sensitive to the incremental capital-output ratio used, where “reducing ICORs is generally associated with improving... economic policies.” Easterly (1999, 2001) offers numerous other examples of use of the financing gap model in recent aid agency work.

Aid Institutions: Moving the Money

No doubt many economists in the institutions making aid policy feel uncomfortable with the financing gap model that aid has a high likelihood of raising investment, which in turn has a high likelihood of raising economic growth. Yet the idea that “aid buys growth” is an integral part of the founding myth and ongoing mission of the aid bureaucracies. The aid bureaucracies define their final objective as “poverty reduction” (today’s more politically correct name for “growth”), and their immediate

⁸ The website is <<http://www.worldbank.org/data/rmsm>>. In fairness, the date of text at the website is given as 1999.

output as aid money disbursed. Sometimes they stress the immediate output of aid dispersed more than the final objective of poverty reduction or growth achieved. Judith Tendler's (1975) observation remains true today:

A donor organization's sense of mission, then, relates not necessarily to economic development but to the commitment of resources, the moving of money. ... The estimates of total capital needs for development assistance in relation to supply seem to have been the implicit standard by which donor organizations have guided their behavior and judged their performance... the quantitative measure has gained its supremacy by default. Other definitions of success and failure of development assistance efforts have been hard to come by.

Although voices have been raised throughout the years against "pushing loans" and "moving money," and change may actually have occurred, the continuity of stressing aid volume is more noticeable than the changes. The World Bank (1998) noted in its report *Assessing Aid* that a stress on disbursing aid had continued: "Disbursements (of loans and grants) were easily calculated and tended to become a critical output measure for development institutions. Agencies saw themselves as being primarily in the business of dishing out money." The World Bank's International Development Agency (IDA) continued to define itself in terms of volume in 2001: "IDA, as the largest source of concessional assistance to the world's poorest countries, plays a critical role in their efforts to achieve growth and poverty reduction." A World Bank (2001) publication,

“Ten Things You Never Knew About the World Bank,” advertised ten accomplishments of the organization – and all ten involved volumes of assistance for different purposes.

The stress on aid disbursements is understandable given the peculiar nature of the aid mechanism. The beneficiaries are supposed to be the poor of the world, who have little voice in their own governments, much less in the high-income country governments who control the aid agencies. One has little or no feedback from the intended beneficiaries whether aid is in fact raising productive capacity. Moreover, the high-income country governments may have many different objectives for their aid besides poverty reduction, such as rewarding allies, promoting donor country exports, or fighting drug trafficking. Multiple objectives often work against each other and weaken each other, so that aid may end up serving none of its multiple goals especially well.

The governments of the poor countries, through which the aid is directed, often have little incentive to raise the productive potential of the poor, especially when doing so might engender political activism that threatens the current political elite. The aid agencies themselves in this difficult environment do not have much incentive to achieve results, since the results are mostly unobservable. One can hardly monitor growth itself for a given country for a given year, since growth in any given year or even over a few years reflects too many other factors besides aid. In these circumstances, it is understandable the aid agencies prefer to emphasize an observable indicator of effort – aid disbursements.

Even when economic performance is clearly deteriorating despite important and rising aid, as in the case of Africa illustrated in Figure 3, the aid bureaucracies try to

finesse the issue by promising that better times are “just around the corner.” The World Bank, for example, has been singing this refrain about in Africa for over two decades. From a 1981 World Bank report, *Accelerated Development in Sub-Saharan Africa* (p. 133): “Policy action and foreign assistance ... will surely work together to build a continent that shows real gains in both development and income in the near future.” From a 1984 World Bank report, *Toward Sustained Development in Sub-Saharan Africa* (p.2): “This optimism can be justified by recent experience in Africa ...some countries are introducing policy and institutional reforms.” From a 1986 World Bank report, *Financing Growth with Adjustment in Sub-Saharan Africa* (p. 15): “Progress is clearly under way. Especially in the past two years, more countries have started to act, and the changes they are making go deeper than before.” From a 1989 World Bank report, *Sub-Saharan Africa: From Crisis to Sustainable Growth* (p. 35): “Since the mid-1980s Africa has seen important changes in policies and in economic performance.” From a 1994 World Bank report, *Adjustment in Africa* (p. 3): “African countries have made great strides in improving policies and restoring growth” From a 2000 World Bank report, *Can Africa claim the 21st Century?;* “Since the mid-1990s, there have been signs that better economic management has started to pay off.” From a 2002 World Bank press release on *African Development Indicators;* “Africa's leaders ... have recognized the need to improve their policies, spelled out in the New Partnership for African Development (NEPAD).”

In this dicey policy environment, the aid agencies derived great comfort from research results like those of Burnside and Dollar (2000) that appeared to show aid disbursements achieving growth, after controlling for policies and other factors. Aid

agency management interpreted this study as vindicating the emphasis on aid money disbursed, if only under the right conditions (World Bank, 2002). Of course, the Burnside and Dollar study offers no broad brush endorsement for a strategy of moving aid money.

Selectivity in Foreign Aid

The new theme in foreign aid, inspired in part by the work of Burnside and Dollar (2000), is greater selectivity. Aid should be directed to where it can do good.

Indeed, in some cases foreign aid has been strikingly successful. For example, the World Bank's the \$70 million loan to Ceara state government in the Brazilian northeast concluded in June 2001. The loan facilitated innovate government-led initiatives in land reform, rural electrification, and water supply, and a fall in infant mortality. There are country-wide success stories like Uganda, with heavy involvement by the World Bank and other aid agencies. Earlier success stories associated with aid included South Korea and Taiwan. There are also sectoral success stories, like the elimination of smallpox, the near-elimination of river-blindness, family planning, and the general rise in life expectancy and fall in infant mortality, in which foreign assistance played some role.

However, there are also numerous examples of aid failing. Ferguson (1994) describes a Canadian aid project to help farmers in the mountains of Lesotho gain access to markets and develop modern methods of livestock management and grain production. The problem was that the beneficiaries mainly depended on migration to jobs in South Africa, and they already had access to markets where they had long since learnt that grain production was not competitive given the region's poor agricultural conditions. The main

long run effect of the project seemed to be the building of roads that brought grain from South Africa *into* the region -- driving the few existing local farmers out of business. An even more dispiriting example is the \$45 million World Bank Roads Rehabilitation and Maintenance Project in Sierra Leone, disbursed in the middle of brutal civil war during 1998-2001. About 33 percent of the credit went to compensate contractors for lost time and destruction of their civil works. The rationality of financing infrastructure that was simultaneously being destroyed by rampaging armies is not immediately apparent.

How can scarce aid resources be directed away from less successful projects and toward those more likely to succeed? Aid agencies have two broad sets of tools for this task: imposing conditions on loans before they are granted and evaluating the effect of loans after they are completed. Virtually all observers of aid agencies agree that they allocate too little effort either to insuring that loan conditions were actually observed or to later evaluation of loan effectiveness.

Conditionality

Aid agencies often place conditions on loans and aid (the distinction between aid loans and aid grants is not very meaningful for low income countries, because the loans are heavily subsidized – I will use “loans” and “aid” interchangeably). These conditions typically include macroeconomic stability (low budget deficits and inflation), non-interference with market pricing, privatization of state-owned enterprises, and openness to international trade. However, the agencies then often provide additional future loans with little regard for the performance on previous loans. This problem arises for both the World Bank and the International Monetary Fund. The IMF likes to stress that it is not an aid agency. However, in low income countries, especially in Africa, the IMF has

delivered concessional loans on a sustained basis, part of which loans were later forgiven, which is observationally equivalent to delivering “aid” to these nations.

There was no progress on economic reform indicators from one adjustment loan to the next in the same country (Easterly, 2002; Van de Walle, 2001). A common reason for aid to be given even after conditions are violated is that with high political instability, a new government took power and was given a clean slate by the aid agencies. But there are a number of cases where aid was given repeatedly even to the same government in the same country. For example, World Bank reports on Kenya repeated a recommendation for increased funding for road maintenance in 1979, 1983, 1989, 1994, 1996, and 2000. A World Bank (1998) report noted that in Kenya “the World Bank provided aid to support identical agricultural policy reforms five separate times.” Yet the IMF and World Bank gave Kenya 21 adjustment loans during 1980-2000, all under the same regime of President Daniel Arap Moi. President Moi of Kenya got one conditional aid loan each from the World Bank and IMF in the year 2000, despite his poor track record and the new emphasis on selectivity.

Indeed, aid agencies have been repeatedly promising to be more selective for quite a while. Way back when, President John F. Kennedy described: “objective No. 1: To apply stricter standards of selectivity ... in aiding developing countries” (Message to Congress, April 2, 1963). The attempt to foster “structural adjustment” (“structural” reforms such as removing price controls and macroeconomic “adjustment” such as reducing budget deficits) in the developing countries in the 1980s and 1990s was about

directing aid money selectively to countries that met conditions of having good policies. The new selectivity is supposed to be about rewarding countries that reform on their own, in contrast to structural adjustment that is now alleged to have imposed reforms on countries. In both cases, aid and concessional loans are selectively available to countries that meet conditions, so if any practical difference exists, it is extremely subtle.

But the fundamental problem remains that both the success of past aid to follow conditions and the failure of past aid to follow conditions are both taken as justifications for future aid. For example, in 2002, a World Bank task force made recommendations on how to direct aid to states convulsed by predatory autocrats and corruption (the World Bank euphemism was “low income countries under stress”). In other words, a nation will selectively receive aid if it is a “good performer”-- unless it is a bad performer, in which case it will receive aid from the “bad performer” fund. In these circumstances, the imposition of conditions is no more than a wistful hope, rather than a policy with consequences.

Evaluation

Despite the potential benefits of learning from past experience, aid agencies seem reluctant to promote honest evaluations that could lead to publicity about failures. Aid agencies typically give low priority to evaluating projects after completion. The World Bank reviews only 5 percent of its loans after 3 to 10 years following the last disbursement for development impact (Meltzer Commission, 2000). Even these evaluations are based in part self-evaluations by the staff in charge of the original projects and their implementing agencies, are done on a paltry budget, and are often sanitized as

they are reviewed by management. The World Bank has done surveys of borrowing governments since the mid-1990s on how the Bank has performed from the governments' point of view, but the Bank has declined to make them public and there seems to be little mechanism for having managers learn from them (Wade, 2001).

Since what evaluation does take place is using reports from the very people who implemented the project, there are disconnects like that delicately described in OECD and UNDP (1999, p. 26)) on Mali:

[I]t has to be asked how the largely positive findings of the evaluations can be reconciled with the poor development outcomes observed over the same period (1985-1995) and the unfavourable views of local people. Gauging the degree to which project objectives are achieved during the actual project period clearly fails to give a proper reflection of the lasting impact on standards of living.

Although I have concentrated here on World Bank experience because of my familiarity with its operations, this focus should not be taken to suggest that the World Bank compares poorly to other official aid agencies. UN agencies working on development issues do not have a stellar record; they often appear to spend most of their energies on large international summits which accomplish little beside preparing for further summits. Nor should non-governmental organizations (NGOs) be automatically assumed to be superior to official aid agencies. There is virtually no systematic evaluation of NGO projects, and they face some of the same incentives as official agencies to emphasize observable effort rather than focus on less observable results.

Increasing evaluation of the aid agencies need not be especially costly. In some cases, it may involve little more than specifying concrete and measurable objectives (not the dispersal of money) in advance. In other cases, case study information can be made available to outside scholars. In particular, aid agencies have almost never engaged in controlled experiments of particular interventions, despite the small amounts required relative to loan volume. The development literature has increasingly stressed scientific evaluation of interventions through controlled experiments. For example, Duflo (2001) studied an Indonesian school construction initiative that had a randomized design allowing scientific evaluation. She was able to derive estimates of the effect of school construction on learning and wages. Likewise, Kremer and Miguel (forthcoming) analyzed randomized controlled trials of treatment of intestinal parasites (worms) in school children. They found positive effects on children's school performance of a deworming program. Interventions whose value is confirmed by scientific evaluation are far from being the missing panacea, but it is clear that this kind of scientific rigor has been much too slow to find its way into the aid agencies.

In 1998, as part of legislation authorizing additional funds from the U.S. government to the International Monetary Fund, the U.S. Congress set up an advisory commission to consider the future roles of several international financial institutions. The commission was chaired by Alan Meltzer. One of the recommendations of the Meltzer commission was that aid agencies like the World Bank undergo an independent evaluation (International Financial Institution Advisory Commission, 2000). Despite the good sense of this recommendation, it has yet to happen, maybe because the Bank management feels it is being singled out. Perhaps aid agencies should collectively agree

to an “Evaluation Compact” in which they all agree to an independent evaluation of their effectiveness.

The results of such evaluations could shed light on what makes aid institutions work well or less well, a subject on which there is surprisingly little knowledge after five decades of foreign aid. Aid agencies face a peculiar incentive problem: they spend one group of people’s money on a different group of people. The intended beneficiaries have almost no voice in how the money is spent. There has been surprisingly little research thinking about how to design proper incentives for aid agencies to achieve results in this situation, as well as how the aid agencies can design contracts to create good incentives for recipients. Such research would likely involve principal-agent theory, organization theory, game theory, and political economy.

A Realistic Vision for Foreign Aid

How to achieve a beneficial aggregate impact of foreign aid remains a puzzle. Aid agencies should set more modest objectives than expecting aid to “launch the takeoff into self-sustained growth.” Aid agencies have misspent much effort looking for the Next Big Idea that would enable aid to buy growth. Poor nations include an incredible variety of institutions, cultures, and histories: the millennia-old civilizations in gigantic China and India; African nations convulsed by centuries of the slave trade, colonialism, arbitrary borders, tropical diseases, and local despots; Latin American nations with two centuries of independence and five centuries of extreme inequality, Islamic civilizations with a long history of technical advance relative to the West and then a falling behind; and

recently created nations like tiny East Timor. The idea of aggregating all this diversity into a “developing world” that will “take off” with foreign aid is a heroic simplification. World Bank President James Wolfensohn (2001) talked in 2001 about how “we” must act to achieve the goal of “ensuring a beneficial globalization” by doubling foreign aid. President George W. Bush said in his announcement of increased aid in March 2002: “We must include every African, every Asian, every Latin American, every Muslim, in an expanding circle of development.” In virtually no other field of economics do economists and policymakers promise such large welfare benefits for modest policy interventions as “we” do in aid and growth. The macroeconomic evidence does not support these claims. There is no Next Big Idea that will make the small amount of foreign aid the catalyst for economic growth of the world’s poor nations.

The goal of having the high-income people make some kind of transfer to very poor people remains a worthy one, despite the disappointments of the past. But the appropriate goal of foreign aid is neither to move as much money as politically possible, nor to foster society-wide transformation from poverty to wealth. The goal is simply to benefit some poor people some of the time.

If some of the flaws noted in this article can be corrected, the international aid agencies could gradually evolve into more effective and more accountable agencies, much as national governments in the now-rich countries gradually evolved from gangs of venal scoundrels to somewhat more effective and accountable civil servants (with plenty of further evolution still desirable in both cases!). In any case, improving quality of aid should become before increasing quantity. This is difficult but not impossible.

I recently made a trip to Ethiopia, where amidst other business, I visited a project of a British aid organization called Water Aid, which receives funds from official aid agencies. Water Aid has put in a water pipe to carry clean water from springs on top of the mountains bordering the Great Rift Valley to villages down in the Valley. The project was run entirely by Ethiopians, with representatives from the villages on the board of the agency. At a bustling water tap in one village, the villagers watered their cattle and collected drinking water for a nominal fee paid to Water Aid, to be used for maintenance of the system. Previously the villagers had walked every other day two miles to collect water from a polluted river that transmitted disease. Children had been kept out of school, farmers kept out of farming, all to pursue the all-consuming and back-breaking task of fetching water. Now, life was better. I don't know if this experience is replicable on a broader scale or even if this anecdote of Water Aid offers any insight into how to make aid more effective. But I am glad that some aid dollars can reach some very needy people some of the time.

Acknowledgements

I am grateful for research assistance and stimulating intellectual debate from David Roodman. Ross Levine also contributed many ideas in discussions of aid issues. I thank the editors -- Andrei Shleifer, Brad de Long, Michael Waldman and Timothy Taylor – for helpful suggestions. I have benefited from comments on this and related work by Robert Ayres, Nancy Birdsall, Erik Bloom, William Cline, Simon Evenett, Amar Hamoudi, Ruth Levine, Devesh Kapur, Charles Kenny, Michael Kremer, Craig Neal, John Nellis, Lant Pritchett, S. Ramachandran, Judith Tandler, Nic Van de Walle, and Dennis Whittle

References

- Banks, Arthur. Cross-National Time-Series Data Archive. Bronx, NY: Databanks International, 2002.
- Beattie, Alan. 2002. "A measure of good intentions." *Financial Times*. March 11. p. 23.
- Boone, Peter (1996), "Politics and the Effectiveness of Foreign Aid," *European Economic Review* 40, 289–329.
- Bruce, Neil and Michael Waldman, "Transfers In Kind: Why They Can Be Efficient and Non-Paternalistic", *American Economic Review*, 81, December 1991, 1345-1351
- Burnside, Craig and David Dollar, "Aid, Policies, and Growth," *American Economic Review* 90(4) (September 2000): pp. 847–68.
- Canadian International Development Agency. 2002. *Canada Making a Difference in the World: A Policy Statement on Strengthening Aid Effectiveness.* September. <http://www.acdi-cida.gc.ca/aideffectiveness>.
- Cassen, Robert. *Does Aid Work?* Oxford University Press. 1985
- Cassidy, John. 2002. "Helping Hands; How Foreign Aid Could Benefit Everybody." *New Yorker*, March 18. p. 60.
- Chang, Charles C.; Fernandez-Arias, Eduardo and Serven, Luis. "Measuring Aid Flows: A New Approach." Inter-American Development Bank (Washington, DC) Working Paper No. 387, December 1998.
- Chenery, Hollis B. and Alan M. Strout, "Foreign Assistance and Economic Development", *The American Economic Review*, Volume LVI, Number 4, Part I, September 1966.
- Collier, Paul and Jan Dehn (2001), "Aid, Shocks, and Growth," Working Paper 2688, World Bank, Washington, DC, October.
- Collier, Paul and David Dollar. 2002. "Aid Allocation and Poverty Reduction," *European Economic Review* 45(1), 1-26 (forthcoming)
- Dalgaard, Carl-Johan and Henrik Hansen (2001), "On Aid, Growth and Good Policies," *Journal of Development Studies* 37, 17-41.
- Department for International Development, United Kingdom, *Eliminating World Poverty: Making Globalisation Work for the Poor*, White Paper on International

Development Presented to Parliament by the Secretary of State for International Development by Command of Her Majesty December 2000

Department for International Development, United Kingdom, *The Case for Aid for the Poorest Countries*, 2002.

Development Assistance Committee Online. Paris: Development Assistance Committee (DAC), 2002.

“Does Aid Help?” 2002. Washington Post. February 9. p. A26.

Dollar, David and Aart Kraay (2001), Trade, Poverty, and Growth, World Bank mimeo.

Duflo, Esther. Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment , *American Economic Review*. September 2001. 91(4): 795-813.

Easterly, William, Ross Levine, and David Roodman (2003), New data, new doubts: revisiting aid, policies, and growth, Center for Global Development mimeo. www.cgdev.org

Easterly, William. 2002. “What did structural adjustment adjust? The association of policies and growth with repeated IMF and World Bank adjustment loans,” Center for Global Development Working Paper. www.cgdev.org

Easterly, William (2001), *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*. Cambridge MA: MIT Press, 2001.

Easterly, William (1999) “The Ghost of Financing Gap: Testing the Growth Model of the International Financial Institutions”, *Journal of Development Economics*, (60)2 December 1999 pp. 423-438

Easterly, William and Levine, Ross. “Africa’s Growth Tragedy: Politics and Ethnic Divisions.” *Quarterly Journal of Economics*, November 1997, 112(4), pp. 1203–50

Goldin, Ian, Halsey Rogers, and Nicholas Stern, “The Role and Effectiveness of Development Assistance: Lessons from World Bank Experience,” in World Bank, *A Case for Aid: Building A Consensus for Development Assistance*, 2002.

Guillamont, Patrick and Lisa Chauvet, “Aid and Performance: A Reassessment,” *Journal of Development Studies* 6, 66–92.

Hansen, Henrik and Finn Tarp (2000), “Aid Effectiveness Disputed,” *Journal of International Development*, 12, 375–98.

- Hansen, Henrik and Finn Tarp (2001), "Aid and Growth Regressions," *Journal of Development Economics*, 64, 547–70.
- "Help in the right places." 2002. *Economist*. March 14.
- Her Majesty's Treasury and Department for International Development, 2002, *The Case for Aid to the Poorest Countries*, United Kingdom.
- International Development Association, Additions to IDA Resources: Thirteenth Replenishment Supporting Poverty Reduction Strategies, 2001.
- International Financial Institution Advisory Commission. 2000. The "Meltzer Commission" Report, March. <http://www.house.gov/jec/imf/meltzer.pdf>.
- International Monetary Fund (IMF). International Financial Statistics database. Washington, DC: July 2002.
- International Monetary Fund and International Development Association, 2002, Uganda: Updated Debt Sustainability Analysis and Assessment of External Debt Management Capacity, August.
<http://www.imf.org/external/np/hipc/2002/uga/ugadsa.pdf>
- Knack, Stephen and Keefer, Philip. "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures." *Economics and Politics*, November 1995, 7(3), pp. 207–27.
- Kremer, Michael and Edward Miguel "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities," forthcoming in *Econometrica*. (NBER Working Paper 8481, 2001)
- Lensink, Robert and Howard White 2001, "Are There Negative Returns to Aid?" *Journal of Development Studies* 6, 42–65.
- Levine, Ross. "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, 1997
- Lewis, W. Arthur, "Economic Development with Unlimited Supplies of Labor", *Manchester School*, May 1954, 22, 139-92.
- Mosley, Paul, John Hudson, and Sara Horrell (1987), "Aid, the Public Sector and the Market in Less Developed Countries," *Economic Journal* 97, 616–41.
- OECD and UNDP, 1999, *Improving the effectiveness of aid systems: the case of Mali*, (OECD: Paris and UNDP: Bamako Mali).

- Papanek, Gustav F. (1972), "The Effect of Aid and Other Resource Transfers on Savings and Growth in Less Developed Countries," *Economic Journal* 82, 934–50.
- Rodriguez, Francisco and Dani Rodrik, "Trade Policy and Economic Growth: A Skeptic's Guide to the Cross-National Evidence," *NBER Macroeconomics Annual* 2000.
- Romer, Paul. "Crazy Explanations for the Productivity Slowdown," in Fischer, S. Ed., *NBER Macroeconomics Annual*. Cambridge: MIT Press, 1987, 163-202
- Romer, Paul. "Idea gaps and object gaps in economic development," *Journal of Monetary Economics*, Volume 32, No. 3, December 1993, 543-574.
- Rostow, W.W. *The Stages of Economic Growth: A Non-Communist Manifesto*, Cambridge, 1960.
- Sachs, Jeffrey and Andrew Warner "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity* 1995:1.
- Solow, Robert M. "Technical Change and The Aggregate Production Function," *Review of Economics and Statistics* 1957, volume XXXIX, pp. 312-320
- Svensson, Jakob. "Foreign Aid and Rent-Seeking", *Journal of Development Economics*, 2001.
- Svensson, Jakob. 2002. "[Why Conditional Aid Doesn't Work and What Can Be Done About It?](#)", *Journal of Development Economics*, forthcoming.
- Tendler, Judith. *Inside Foreign Aid*, The Johns Hopkins University Press, 1975
- Van de Walle, Nicolas. *African Economies and the Politics of Permanent Crisis, 1979-99*, Cambridge University Press, 2001
- Wade. Robert 2001. "The U.S. Role in the Malaise at the World Bank: Get up Gulliver," G-24. September.
- World Bank, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action*, 1981
- World Bank, *Sub-saharan Africa: Progress Report on Development Prospects and Programs*, 1983
- World Bank, *Toward Sustained Development in Sub-Saharan African: A Joint Program of Action*, 1984
- World Bank, *Financing Adjustment with Growth in Sub-Saharan Africa, 1986-90*, Washington DC 1986.

- World Bank, *Sub-Saharan Africa: From Crisis to Sustainable Growth – A Long Term Perspective Study*, 1989
- World Bank, *Adjustment in Africa: Reforms, Results, and the Road Ahead*, 1994
- World Bank, *A Continent in Transition: Sub-Saharan Africa in the Mid-1990s*, Africa Region, World Bank, Washington DC November 1995.
- World Bank, *Assessing Aid: What Works, What Doesn't, and Why*, 1998
- World Bank, *Can Africa claim the 21st Century?* World Bank, 2000
- World Bank. 2001. *Ten Things You Never Knew About the World Bank*.
- World Bank, 2001. Goals for Development: History, Prospects, and Costs, preliminary draft, 12/21/01
- World Bank, The Costs of Attaining the Millenium Development Goals, 2002a.
- World Bank 2002b. *African Development Indicators*. Press Release April 11, 2002.
- World Bank 2002c, WORLD BANK GROUP WORK IN LOW-INCOME COUNTRIES UNDER STRESS: A TASK FORCE REPORT, September.
- World Bank 2002d. World Development Indicators 2002 database. Washington, DC.

Figure 1: Partial scatters of growth against aid*policy in original BD results and results using ELR dataset

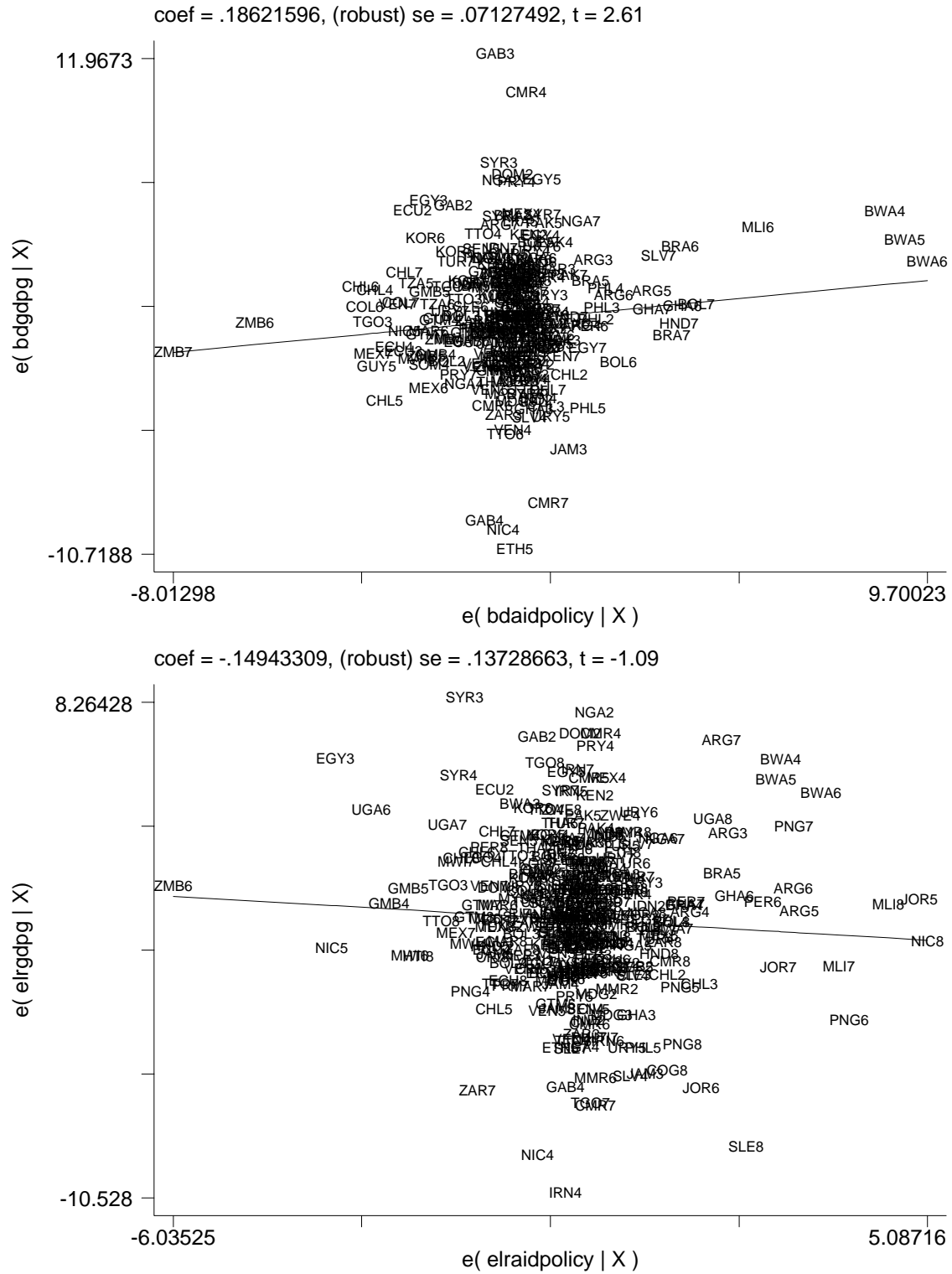
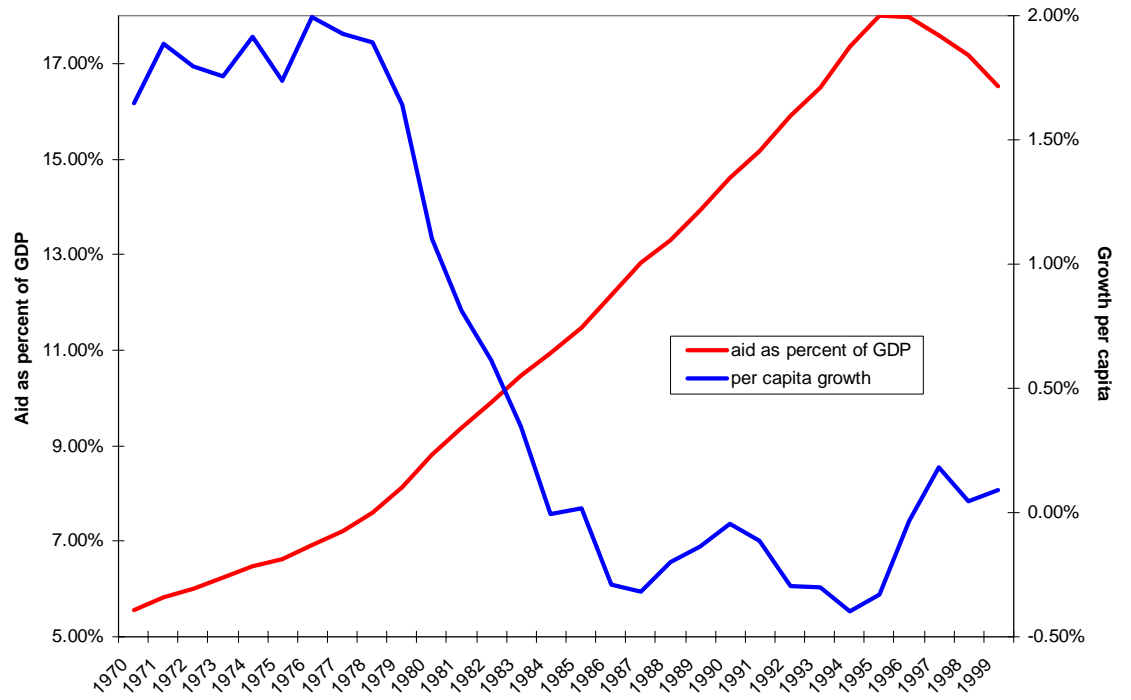


Figure 2: Aid and growth in Africa (10-year moving averages)



Appendix: Regressions of Burnside-Dollar specification and dataset for different definitions of “aid”, “policies” and “growth”

Testing the robustness of panel regressions to alternative definition of aid (dependent variable: per capita growth, BD data and sample, 1970-93, outliers omitted in all regressions)

Sample	All developing countries Using BD	All developing countries using Net ODA for aid	Low income countries using Net ODA for aid
Right-hand side variable:	definition for aid	using Net ODA for aid	using Net ODA for aid
Aid/GDP	-0.021 (-0.13)	0.156 (0.49)	-0.104 (-0.2)
Aid/GDP * policy	0.186 (2.61)***	0.188 (1.3)	0.32 (1.31)
Policy	0.712 (3.63)***	0.855 (4.12)***	0.736 (1.61)
Observations	270	266	181
R-squared	0.39	0.42	0.47

Robust t statistics in parentheses

* significant at 10%; ** significant at 5%; *** significant at 1%

Other control variables that are same as in Burnside and Dollar are not reported

Testing the robustness of panel regressions to alternative policy definitions (BD dataset and sample, 1970-93, dependent variable: per capita growth) outliers omitted

Sampling universe	All developing countries		Only low income countries	
	Substituting black market premium and M2 for Sachs-Warner	Adding change in trade share to policy index in previous regression	Substituting black market premium and M2 for Sachs-Warner	Adding change in trade share to policy index in previous regression
Right-hand side variable:				
Aid	-0.007 (0.04)	-0.086 (0.54)	-0.262 (0.87)	-0.203 (0.81)
Aid * policy	0.092 (0.82)	0.111 (1.41)	0.21 (1.11)	0.112 (0.81)
Policy	0.738 (2.77)***	0.853 (3.35)***	0.425 (0.95)	0.813 (2.07)**
Observations	270	264	180	177
R-squared	0.35	0.43	0.4	0.46

Robust t statistics in parentheses

Testing the robustness of panel regression to different period lengths (dependent variable: per capita growth, BD data and sample, 1970-93), outliers omitted

Sampling universe BD regression	All developing countries Regression 5 OLS			Only low income countries regression 8, TSLS		
	8 year periods	12 year periods	24 year period (pure cross- section)	8 year periods	12 year periods	24 year period (pure cross- section)
Right-hand side variable:						
Aid	-0.278 (1.60)	-0.117 (0.69)	-0.212 (1.16)	-0.292 (1.10)	-0.223 (0.68)	-0.026 (0.09)
Aid * policy	0.178 (2.17)**	0.069 (0.72)	0.051 (0.43)	0.148 (0.97)	0.147 (0.74)	-0.036 (0.16)
Policy	0.752 (3.49)***	0.848 (3.03)***	0.829 (2.06)**	0.941 (1.76)*	0.566 (0.80)	1.066 (1.17)
Observations	142	97	52	99	67	37
R-squared	0.58	0.6	0.7	0.62	0.66	0.78
Robust t statistics in parentheses						

* significant at 10%; ** significant at 5%; *** significant at 1%

Variable definitions and sources (for further details, see Easterly, Levine, and Roodman 2003 at www.cgdev.org)

Variable	Code	Data source	Notes ²
Per-capita GDP growth	GDPG	World Bank 2002d	
Initial GDP per capita	LGDP	Summers and Heston 1991, updated using GDPG	Natural logarithm of GDP/capita for first year of period; constant 1985 dollars
Ethnic fractionalization	ETHNF	Easterly and Levine 1997	Probability that 2 random individuals will belong to different linguistic groups
Assassinations Institutional quality	ASSAS ICRGE	Banks 2002 PRS Group's IRIS III data set (see Knack and Keefer 1995)	Per million population Based on 1982 values, the earliest available. BD say they use 1980 values. Computed as

			the average of five variables
M2/GDP, lagged one period	M2-1	World Bank 2002d	
Sub-Saharan Africa	SSA	World Bank 2002d	Codes nations in the southern Sahara as sub-Saharan
East Asia	EASIA		Dummy for China, Indonesia, South Korea, Malaysia, Philippines, and Thailand.only
Budget surplus/GDP	BB	World Bank 2002d; IMF 2002	World Bank primary data source. Additional values extrapolated from IMF, using series 80 and 99b (local-currency budget surplus and GDP)
Inflation	INFL	World Bank 2002d	Natural logarithm of 1 + inflation rate
Sachs-Warner, updated	SACW	Sachs and Warner 1995	Extended to 1998. Slightly revised pre-1993
Policy	POLICY		Weighted average of BB, INFL, and SACW
Aid (Effective Development Assistance)/GDP	AID	Chang et al. 1998; IMF 2002; DAC 2002	Values available from Chang et al. for 1975-95. Values for 1970-74, 1996-97, extrapolated based on correlation of EDA with Net ODA. Converted to 1985 dollars with World Import Unit Value index from IMF 2002, series 75. GDP computed like LGDP above