

To Empower or Impoverish? The Sector-by-Sector Effectiveness of Foreign Aid

Mike Findley¹ (mike_findley@byu.edu)
Darren Hawkins¹ (darren_hawkins@byu.edu)
Rich Nielsen² (rnielsen@fas.harvard.edu)
Dan Nielson¹ (dan_nielson@byu.edu)
Sven Wilson¹ (sven.wilson@byu.edu)

¹Department of Political Science
Brigham Young University

²Department of Government
Harvard University

September 11, 2009

Paper prepared for the PLAID Data Vetting Workshop, Washington D.C., September
17-18, 2009.

1. Introduction

To hear economist Jeffrey Sachs (2006) or U2's Bono tell the tale, foreign aid provides the single greatest hope for lifting the world's poor out of their misery. Sincere pleas for more aid by the rock-star economist and the economist rock star rarely fail to move their listeners, and together the two men have helped make ending global poverty through foreign aid the "next big project" on the international agenda.

Aid cheerleaders like Sachs and Bono point to many examples throughout the world where aid has helped to heal the sick, educate the illiterate, and feed the hungry. Indeed, they argue, for the many poor countries without meaningful access to global capital, aid can provide roads, energy, medicine, and textbooks, among many other necessities, to citizens who would otherwise go without.

Yet the critics of aid have made equally passionate claims asserting exactly the opposite. Economists William Easterly (2007) and Dambisa Moyo (2009) have argued that, not only has foreign assistance failed to live up to its billing as the liberator of the world's poor, aid has instead done great harm. Infusions of cheap or free hard currency prop up corrupt dictators, enabling bad governments to remain unaccountable to their citizens. What is more, aid, like oil or diamonds, becomes a prize to be won, and thus it emboldens rebels and ignites civil wars.

Indeed for Moyo, aid has proved the single greatest reason for the dire straits faced by the vast majority of sub-Saharan Africans, many of whom subsist on less than one dollar per day. "No longer part of the potential solution, [aid is] part of the problem – in fact aid *is* the problem" (Moyo 2009, 47; emphasis in original).

Still other analysts stake out a middle ground. Economist Paul Collier (2007) has argued that aid, put to proper use in carefully selected instances, can become part of the solution even if it often

persists – like a natural resource “curse” – as part of the problem. Economists Burnside and Dollar (2000) famously found that aid, when employed by recipient governments pursuing the “good” policies of free trade and fiscal responsibility, can significantly boost economic growth. Several empirical studies have supported the original Burnside and Dollar findings (Chauvet and Guillaumont 2003), but several others have called the conclusions into question (Easterly et al. 2003, Roodman 2007). Differences in results hinge on rather esoteric nuances in statistical specification and the specific data included or excluded.

1.1 Growing Beyond Growth

Thus we arrive at a spot where analysts fling at each other many contradicting arguments about aid, and they bolster their claims with evidence pointing in very different directions. But who is right? Our answer: all of them and none of them. Indeed, to date most prominent aid analysts have aimed at a target that is simply too big.

Foreign aid addresses a vast variety of purposes – indeed, our own categorization includes more than 800 distinct sets of aid activities – from providing sanitation or potable water to building roads, schools, or airports; and from boosting agricultural production to fighting malaria. Some of these projects, notably those focused on infrastructure or industry, we might reasonably expect to have economy-wide effects in the short run. Other projects, however, such as disaster relief or AIDS prevention, we might expect to boost the economy only indirectly and even then only in the long run. Still other projects, like preserving rainforests or protecting native peoples, may only improve the economy in the very long run and may even have short-run negative effects. Why should we expect all aid to do all one thing in promoting economic growth?

We are not alone in asking this question. Calls for disentangling different types of aid began at least 25 years ago as Cassen (1986) called for disaggregation; White (1998) followed with another appeal, but to no avail. Indeed, Clemens et al. (2004) have presented compelling evidence that only aid to sectors like infrastructure, industry, and agriculture should and does have short-term effects on economic growth; the other types of aid has no general economic impact. We strongly agree with the ethos prompting such qualifications. Different types of aid are intended to do different things, so it should not shock us when much aid has little effect on something as vast, aggregate, and mercurial as economic growth.

Most prominent studies of aid thus have two things in common: they are, first, focused almost exclusively on economic growth and, second, they are performed by economists. We see nothing fundamentally wrong with either of these patterns. Indeed, one of us (Wilson) is a card-carrying economist with a PhD from the University of Chicago. But the rest of us are political scientists, and all of us agree that politics and government have generated too little systematic attention in the discussion of aid.

Economic growth is a worthy subject and the effects of aid on growth merit real attention. Yet it has surprised us that so little systematic work has focused on outcomes other than growth – especially given that so many aid projects target purposes that might affect growth only remotely or not at all. Indeed, donors make clear that they are interested in outcomes other than growth (Isenman and Ehrenpreis 2003)

We advocate shortening the chain between causes and effects. Education aid ought to improve literacy and boost enrollment rates; health aid should fight infant mortality and promote longer life expectancy; post-conflict aid should prevent recurrence of civil wars; governance aid should promote democracy; aid that builds infrastructure should attract foreign investment. And so on.

While also accounting for the dominant political motivations behind aid such as trade and alliances, we look specifically at more direct outcomes that the specific varieties of aid should produce. We thus examine the specific sectoral outcome effects of aid targeted to particular purposes or sectors. Of course, while examining the more direct sectoral effects of aid we need also to account for the politics that frame all aid decisions.

1.2 It's the Polity, Genius

Most analysts admit that politics matters in aid allocation, but few have attempted systematically to tell us what differences in political interests and institutions among donors and recipients ought to either promote aid success or enable aid failure. In this book we argue that donor and recipient politics matter critically for aid's effects.

First, most donors pursue mixed goals in giving foreign assistance. Indeed, many government, or bilateral, donors apparently seek to relieve poverty only after first using aid to cement alliances, bolster trade partnerships, or buy diplomatic cooperation in arenas like the United Nations (see Alesina and Dollar 2000; Kuziemko and Werker 2006; Dreher et al. 2008). Why should it surprise observers that such aid – much of it not primarily intended to relieve poverty – has minimal, or even negative, effects on economic growth? The key will be to assess the effects of aid holding constant these other international political factors.

Despite the unsurprising – to us as political scientists at least – revelation of the underlying political motives, still no persuasive studies have provided comprehensive explanations of aid allocation without reference to the poverty level of recipients. That is, poorer countries receive more aid than wealthier countries, all else equal. Thus, much aid, despite the otherwise self-interested or even venal motives behind some donations, clearly targets poverty relief.

Here again, however, donor politics, which dictate the specific type of anti-poverty aid, may matter for aid effectiveness. The effects of some aid – say, to combat typhoid or build a telecommunications network – can be more closely monitored and measured than outcomes in other aid categories – say, to promote better efficiency in education administration through budget support.

Thus, we argue that the density and availability of information about outcomes in specific sectors should help determine the effectiveness of aid to the same sectors. Aid to sectors whose outcomes donors can more easily monitor ought to produce more significant effects than aid to sectors where outcomes are more difficult to measure. These insights grow out of contract theory, where parties' ability to hide action and information proves crucial to undermining agreements (Williamson 1973, 2002; Kiewiet and McCubbins 1991). We elaborate on this argument below.

Moreover, donors' domestic politics often dictate that recipients use contractors or consultants from the donor country to build the road or dam or provide ideas on how to make the bureaucracy more efficient. In such cases of “tied aid” or technical assistance, the welfare of the poor in the recipient country may matter less to officials than the wealth of the contractors and consultants who provide political support for those donor governments.

Perhaps even more crucially, the political interests and institutions in recipient countries ought to critically affect aid outcomes. Some recipients face greater political incentives to produce public goods and may see aid as helpful to those ends (see Bueno de Mesquita et al. 2003). Other government leaders may see aid as if it were a natural resource to be exploited and siphoned off for their own gain (see Collier 2007).

We argue here that the degree of “personalism” in politics – or the extent to which political institutions motivate politicians to service narrow clienteles of geographic or issue-specific

followings – will help determine aid effectiveness. Aid to less personalistic regimes will prove more effective than aid to more personalistic regimes (see Carey and Shugart 1995, Nielson 2003, Hicken and Simmons 2008). We also discuss this argument in greater detail below, but it is important to note here that this is not a simple argument that democracies will use aid more effectively; indeed, some democratic institutions strongly induce personalistic politics, and some autocratic institutions may even work against personalism.

As noted, we are not alone in asking questions about the systematic effects of politics on aid effectiveness or in examining outcomes in the individual sectors that aid projects specifically target. But we do remain rather lonely. If we do our job right, we hope that attention in the aid literature will shift away from the “he said/she said” debates over the general effects of foreign aid on growth toward, first, the specific outcomes the aid projects target and, second, to the politics that intervene between aid’s express purpose and the outcomes it actually produces.

2. Towards a Sector-by-Sector Analysis of Foreign Aid

We seek to answer the question of which aid works and offer only a partial answer to this question in the current paper. Our larger project has the goal of disaggregating aid to understand which sectors of aid affect development outcomes, but we can only offer a small sample of results here. We introduced our theoretical model here as a way of motivating the set of analyses to come in this paper, but we do not test whether politics and personalism count. Unfortunately, due to the data challenges involved, testing these core argument must wait for later iterations of the project. Instead, this paper only begins to untangle the variable sectoral effects of targeted aid.

Thus, as a first step towards understanding the sector-by-sector effectiveness of foreign aid, and as a way to contribute to vetting the new PLAID 1.6 data set, this current paper disaggregates

aid flows numerous different ways and compares how these different measures correlate with development outcomes. Current work disaggregating aid or its outcomes appears more like islands of research with no sense of how the various islands fit together. Even prominent works that have explicitly linked different themes often do so using quite different methods and approaches (e.g., Collier 2007). Our analysis provides a transparent, thorough, and uniform approach to the aid effectiveness question that is long overdue.

The results offer initial support for the need to disaggregate aid and the development outcomes that aid is often designed to address. Even within a given sector, the results of the analysis are often very sensitive to who is giving the aid, what the purpose is, and how the aid is coded. A couple of decades of aid research has relied almost exclusively on the Organization for Economic Cooperation and Development (OECD) database with the Creditor-Reporting-System (CRS) coding scheme, raising the question of how valid the CRS coding is. A non-trivial amount of money is given by multilateral donors, and has been coded by PLAID, suggesting that there may be multiple stories, only one of which has been told at length.

The primary contribution of this paper, therefore, is to compare the effects of aid flows across sectors. But we expect to learn some initial lessons about whether aid is effective at bettering education, democracy, the respect of human rights, the environment, and terrorism prevention. Indeed, the results across sectors do not provide a single story: aid is not always positively correlated with development goals; sometimes it appears to be part of the problem; and at other times aid is ostensibly unimportant in encouraging or discouraging development. As we extend the project further to address other issues, such as endogeneity, we expect that the results will provide valuable insights into the effectiveness of foreign aid.

2.1 Comparing Disaggregated Aid Measures: A First Step

We subdivide our outcomes of interest and foreign aid allocations into five non-exhaustive categories: education aid, democracy aid, human rights aid, environment aid, and conflict prevention aid.¹ By sector, we further disaggregated as follows. We consider aid intended to directly affect a given outcome separately from aid intended to affect other outcomes, but that might have indirect effects in other areas. Some discussion of this choice is warranted. The direct category is straightforward – any project directly referencing education as an objective is included, for example.

The indirect category is less clear. To continue the education example, we ask which other sectors of aid potentially have an impact on education outcomes? Some sectors such as health or conflict are straightforward, because poor health prevents people from attending school (Miguel and Kremer 2004) and conflict disrupts educational systems (Lai and Thyne 2007); aid in these areas should increase educational attainment. And yet other areas are less clear; for instance, telecommunications aid might have an impact on education if it reaches schools or if basic technology exists to utilize this aid. For each of the sectors we evaluated the PLAID codes and constructed a set of indirect codes with justifications for our coding. In no way do we claim that this our coding of indirect codes contains all of the relevant codes, but it does contain a justifiable set.

Because bilateral and multilateral donors may have a different set of incentives (Nielson and Tierney 2003), we consider aid from these two sources separately. And because PLAID introduced an elaborate and extensive new coding scheme, results using PLAID codes are compared to those identified by the CRS. In all cases except one (#7 below), we use PLAID and CRS purpose codes to classify the projects. As part of PLAID's new coding scheme, projects can be assigned multiple codes: one purpose code and one or more activity codes. Examining PLAID activity codes offers a

¹ A full description of sector coding, along with our justification, is available upon request.

first look at whether and how useful they might be to researchers. Our eleven disaggregated categories are summarized below:

1. All PLAID 1.6 data: Direct sectoral aid projects
2. All PLAID 1.6 data: Indirect sectoral aid projects
3. CRS projects only: Direct sectoral aid projects
4. CRS projects only: Indirect sectoral aid projects
5. PLAID-added projects only: Direct sectoral aid projects
6. PLAID-added projects only: Indirect sectoral aid projects
7. PLAID-added activity code projects: Direct sectoral aid projects
8. Multilateral donor projects only: Direct sectoral aid projects
9. Multilateral donor projects only: Indirect sectoral aid projects
10. Bilateral donor projects only: Direct sectoral aid projects
11. Bilateral donor projects only: Indirect sectoral aid projects

Clearly there are other ways to disaggregate aid including distinguishing between projects and general budget support (e.g., Cordella and Dell’Ariccia 2003) or separating grants from loans (e.g., Cordella and Ulku 2004). One might also separate aid given prior to the end of the Cold War to aid given afterwards. The sector-specific approach we adopt differs from these other methods, but is appealing because it maps more directly to development outcomes of interest.

Once projects are divided by sector, the next task is to construct meaningful measures that capture the flow of sectoral aid. We adopt two conventional practices to measure aid: the ratio of aid to GDP (e.g., Burnside and Dollar 2000) and the natural log of aid per capita (e.g., Alesina and Dollar 2000). Because of the dearth of disbursement data, and caveats given by the OECD about disbursement data (OECD Creditor Reporting System 2009), we only use foreign aid commitments. Aid does not have immediate effects in most cases, taking a long and sometimes convoluted journey from the donor’s commitment to the receipt and implementation of funds in a country. And yet how long aid takes to have an effect is not well-known as is evidenced by a wide variety of lag structures in empirical analyses of aid. In this paper, we do not attempt to provide a solution, but

rather use smoothed lags of three and six years to capture the variation and potentially different times from commitment to impact.

We estimate the effects of these aid measures on specific development outcomes worldwide from the period of 1945 to the present, though the vast majority of observations occur from 1970 on. The specific development outcomes are discussed in each part of the results section to follow. The context in which aid might affect these outcomes is complex. Significant heterogeneity exists across countries in their level of development as well as their development trajectories over time, necessitating an estimation strategy capable of accounting for these factors.

In this paper, we use a multilevel model for time-series cross section data (Gelman and Hill 2007; Singer and Willett 2003), also known as a latent growth model, which is well-suited for our data. We do not discuss all of the details of multi-level models in this report, but suffice to say that multi-level models allow us to estimate different intercepts and slopes for each recipient country over time, thus incorporating into our models a greater degree of the heterogeneity that clearly exists among the countries in our dataset. This approach provides a relatively conservative test of whether aid is related to development outcomes because the model specifically accounts for other potential confounders inherent in a country's normal development trajectory. Multilevel models help solve problems of comparability of units across time, but they do not necessarily resolve endogeneity concerns. Currently we are developing matching methods (Rubin 1973; Ho et al 2007) that will allow us focus more on causal effects over time, but we do not report matching results here.

3. Results

In what follows, we discuss first how we conceptualize aid effectiveness in each sector as well as how effectiveness is measured for purposes of empirical analysis. We reiterate here that not all aid is

intended to produce development outcomes; donors give aid for many different reasons (Alesina and Dollar 2000; Kuziemko and Werker 2006; Dreher et al. 2008). The financial transfers occur nonetheless and reasonable questions follow: What would it mean for that aid to be effective in the context of development? Does the aid actually help countries develop?

Following a sectoral discussion of aid effectiveness, we consider how the different aid measures (multilat vs. bilat, purpose vs. activity codes, CRS vs. PLAID) correlate with these development outcomes. A series of coefficient plots display the results of our analyses. The coefficient plots display *only the estimates for the aid variables* across all of the different measures of aid. Note that our primary interest in this report is to evaluate the direction and statistical significance of each of the analyses as well as the magnitude of the results compared to other comparable analyses.

Tables containing our primary analyses for each sector appear in *Appendix A* and offer results for the control variables that we used for each sector. We will not, however, discuss any of the control variables as our intent is not to make claims about the relative strength of the aid measures relative to other potential explanatory factors. Certainly many other factors such as a country's poverty level or economic growth have a strong impact – perhaps much stronger than foreign aid – on development outcomes and we will consider those later in the book project.

3.1 Education

Most scholars contend that educational foreign aid must either boost a country's economy or improve specific educational outcomes to be considered effective. Those who consider economic outcomes most often use GDP as a measure of effectiveness. They look at the correlation between educational foreign aid dollars and GDP, using both net GDP and GDP per capita (Asiedu and Nandwa, 2007). Because aid is often intended to alleviate poverty by enhancing economic growth,

the focus on the relationship between education aid and GDP is understandable. These studies seldom find a positive correlation between education aid and GDP, however. This approach reflects a human capital viewpoint – people are considered entities of economic production, and education’s primary purpose is to fuel the engine of the economy (Pritchett 2001).

Others maintain that a human development approach is more appropriate for determining the effectiveness of foreign aid (Sen 2003). From a human development viewpoint, educational foreign aid is effective if it has specific positive educational outcomes that are not necessarily associated with economic growth. These outcomes often lead individuals, and the societies in which they are embedded, to greater economic prosperity. But they are also indicative of valuable human traits that make for a richer, happier life (Pritchett 2001: 388). Because one of the primary ultimate outcomes of aid is to help *people*, it seems logical that factors other than economic growth be considered in determining the effectiveness of educational aid, which is the strategy we pursue here. Considering the recent international push for universal primary education by 2015, this approach needs to be engaged in a serious and sustained way and should have important policy implications.

Most scholars to date have used enrollment rates as the educational dependent variable of interest; the greatest emphasis has been placed on primary enrollment rates (Clemens 2004; Dreher, Nunnenkamp, and Thiele 2008; Michaelowa and Weber 2006). They have so far found that aid does have some positive impact on increasing school enrollments in some areas. Unfortunately, the primary enrollment data is available for a very limited, and spotty, set of countries and years making broader inference difficult. Other potential variables include literacy rates, years of schooling completed, international test scores, university enrollment, numbers of academic works published in each country, and changes in worker distributions from agriculture to industry. In this paper, we use the average years of schooling completed because it is an important educational outcome with broad

spatial and temporal coverage. Although there are likely problems of comparability of education, a measure of years of schooling completed seems to be at least as good a measure as its primary alternative (enrollment rates).

UNESCO has the broadest set of education indicators, but the coverage is spotty except in the most recent decade. Some scholars have attempted to assemble more complete databases for years of schooling completed, including Barro and Lee (2001) and Cohen and Soto (2007). According to Bosworth and Collins (2003), these two databases do not have a high correlation over time (.28). Because the Barro and Lee (2001) data set is the most widely used, we use it as our dependent variable in this analysis. In the larger project, we will use the Cohen and Soto data set as an alternative, as well as additional outcomes measures from UNESCO, despite the spotty coverage.

As noted above, we categorized educational aid into direct and indirect types of aid. In the direct category, we include all projects that explicitly reference educational objectives, whereas in the indirect category we include codes from other sectors that have an impact on education, such as health, communications, and conflict. We also control for a variety of factors including the effects of time, GDP per capita, the size of the country's population, and the level of democracy.

Figures 1 and 2 show the results of 44 analyses of education aid/GDP and education aid per capita on the average years of schooling completed. The solid black dots show the results for the analyses in which education aid for the 5 previous years is considered. The hollow white dots show the results for the analyses in which education aid for the previous 10 years is considered.

[FIGURES 1 AND 2 ABOUT HERE]

Using all education data from PLAID 1.6, the results reveal a negative and, in one case, statistically significant relationship between aid and the average years of school completed (see the

direct and indirect categories of Figures 1 and 2). This raises the question of whether there is a result when we divide the data between CRS and PLAID. When examining only the CRS data, the results are revealing. In two of the cases (using the aid/GDP measure), direct education aid has a negative and statistically significant effect on years of schooling. Indirect aid from the CRS is negative, but not statistically significant. Turning to the PLAID-added data, we find that the direction of the relationships flip flop from model to model and are not statistically significant. The results for the PLAID activity codes are similar to the purpose codes.

Turning to differences in donors, education aid from bilateral donors is again negatively correlated with educational outcomes in most of the models across the two graphs, but the results are only significant in a couple of cases (Bilat direct). These result makes sense because bilateral donors are strongly represented in the CRS data, whereas PLAID contains more data on multilateral donors. The results for the multilateral donors are mixed – most are negative, but they are also mostly insignificant statistically.

These findings are important, because they suggest that if one makes inferences from the models with aggregate aid flows, then the inferences are likely only valid for the bilateral aid flows and not the multilaterals. Finally, comparing the two different lagged periods, the results indicate a much stronger result when including the 6th through 10th years (see hollow white dots), suggesting that education aid takes time to have an effect on education outcomes.

Our results stand in contrast to the results of Dreher, Nunnenkamp, and Thiele (2006) who find a strong positive effect of aid on primary enrollment rates, but are more in line with those of Michaelowa and Weber (2006) who find a much more qualified relationship that is highly sensitive to model specification. Related, Clemens (2004) finds that aid-supported education policies are helpful only in limited ways compared to general economic development. Our modeling strategy

differs substantially from these studies; it is therefore too early to make definitive claims about comparability, but our basic results suggest caution about inferring that education aid helps education.

3.2 Democracy

Studies examining the effects of aid on democracy conceptualize democracy in one of two primary ways: some consider democracy to be primarily the larger product of a number of necessary and constituent parts, such as elections, civil society, and judicial development, whereas others consider the constituent parts to be important in and of themselves. The debate about how to conceptualize democracy is one of the most enduring, but perhaps least conclusive of those in political science. We cannot review this literature in any depth in the present paper, but note that both the aggregate and individualized conceptualizations are important to many scholars, although empirical analyses often grant greater attention to the aggregate perspective. Following the dominant trend in the literature, we also use an aggregate measure of democracy – the Polity IV index.

Scholars employ a number of aggregate democracy measures including Polity (Marshall, Jaggers, and Gurr 2005), Freedom House (2008), and Vanhanen (2003), but have only recently begun to examine the effects of aid on democracy. Existing literature devotes most attention to aggregate aid flows as a predictor of democracy (Knack 2004; Goldsmith 2001) or to related dependent variables, such as corruption (Alesina and Weder 2002). This is beginning to change as researchers separate out democracy aid from other types and also examine democracy and democratization outcomes more specifically (Scott and Steele 2005; Bermeo 2007; Finkel et al 2007). Finkel et al. (2007, 2008) have undertaken the most complete and sophisticated attempt to examine the influence of foreign aid on democracy. They use the Polity (Marshall, Jaggers, and Gurr 2005)

and Freedom House (2008) measures in their 2007 analysis and lower level factors in their wider report to USAID. There are very few other studies on this issue and none that compares with their complexity and scope. Finkel et al. examine the effects of US aid for democracy and governance (DG) provided through the Agency for International Development (USAID) from 1990-2004 to 165 recipient countries. They utilize a hierarchical growth model that first predicts the level of democracy in each country across time using important factors identified in the literature as important effects on democracy. They then add aid and related variables into the model to determine their effects beyond the level of democracy predicted by the baseline model.

While Finkel et al.'s study sets something of a gold standard for evaluating aid effectiveness, its weakness lies in its focus on USAID. The study has little to nothing to say about DG aid from other donors. The authors briefly include a variable for democracy funding from other states, but they do not report how they coded that variable and they do not focus on it in any detail. They also explicitly exclude multilateral development assistance. Coding issues here are complex, as we discuss below. If a strong and robust effect is found for US DG assistance, the question of whether other donors have a similar impact is an important one that deserves more attention. If other donors do not exercise similar influence, as Finkel et al. seem to find in their brief analysis, that is also an important finding that deserves further exploration. Why would only the United States have an impact on the development of democracy in recipient countries?

In what follows, we evaluate the effect of democracy aid from all sources – bilateral donors other than the U.S. as well as multilateral donors – on the aggregate level of democracy as defined by Polity. In contrast to the education sector, we only considered direct democracy aid: aid projects that explicitly reference democracy objectives. We also control for several factors including the effects of

time, GDP per capita, the size of the country's population, land area in square kilometers, ethnic fractionalization, and political violence in a country.

Figure 3 shows the results of 24 separate analyses of the effects of democracy aid on the level of democracy. Measures of democracy aid/GDP are reported in the top half and democracy aid per capita in the bottom half. (Note that the scales for democracy aid/GDP and democracy aid per capita are not comparable, but we can still evaluate the direction and statistical significance of both using this plot.) The results are striking. In nearly every case, there is a positive and statistically significant effect between aid and democracy.

Disaggregating by donor, it appears that multilateral aid correlates with democracy more strongly than bilateral aid using both the aid/GDP and aid per capita measures. There is also more variance associated with the multilateral donors as is evidenced by the large standard errors. Further, the results using the 6-year smoothed lags are consistently stronger than the 3-year lags, a result that applied in the education analyses as well, suggesting that the more aid that accumulates over time, the higher the level of democracy.

[FIGURE 3 ABOUT HERE]

Our results are not consistent with Knack (2004), Kalyvitis and Vlachaki (2008), Knack (2001), Brautigam and Knack (2004) or Djankov, et al (2006) who all find that democracy aid has either no relationship with democracy, or a negative relationship. Their results corroborate other findings in IR, especially that economic foreign aid empowers authoritarian leaders, rather than encourages democratization (Bueno de Mesquita et al, 2003).

The results are consistent with Goldsmith (2001) and Kalyvitis and Vlachaki (2007), however, who find a positive relationship between democracy aid and democratization. Our results are also consistent with Finkel et al (2007) who find that democracy assistance has a positive effect on democracy in recipient countries even accounting for a wide range of control variables and robustness checks. The cutoff date for the study turns out to be very important because of the 2003 invasion of Iraq. The effects of US democracy aid weaken significantly if Iraq is included because the United States spent huge amounts on democracy promotion in that country without any corresponding increase in democracy scores. Controlling for the Iraq effect, they specifically find that “the positive impact is such that \$10 million of USAID DG funding would produce an increase of more than one-quarter of a point (.29 units) on the 13-point Freedom House democracy index in a given year— or about a fivefold increase in the amount of democratic change that the average country would be expected to achieve, *ceteris paribus*, in any given year” (Finkel et al. 2008, 3). They find that the effects of such aid are immediate, occurring from one year to the next, and also cumulative, though with diminishing returns. That is, if the United States continues to invest \$10 million each year for several years, it will continue to have an effect on democracy in the recipient country, though each year the size of the effect decreases. Over five years, the effect of \$10 million each year results in an increase in the democracy score of over half a point.

Our analysis has only provided a first look at how democracy aid affects the level of democracy in a country, but we need to examine the relationship further. Finkel et al. deal with two related questions that we intend to address as well. First, what conditions influence aid effectiveness? They find that democracy assistance has a greater effect in countries with larger socioeconomic need, as measured by poverty, social division and human capital. Related, and somewhat contrary to conventional wisdom, democracy assistance also has a larger impact in failed states. At the same time, a democratic political culture in a recipient country significantly increases the impact of US

democracy aid. In particular, citizens who trust each other more, who are “psychologically engaged in politics,” and who are “less strongly nationalistic in their political orientations” create conditions in which democracy aid is effective. Where a country receives a large amount of military assistance, democracy aid is less effective and where US democracy assistance is unstable, varying a lot from year to year, aid is less effective. Second, is aid effective on the various specific components that contribute to democracy, such as free speech and free association? Finkel et al. find that aid specifically targeted to the subsectors of civil society, the media and elections have a direct positive effect on improvements in those subsectors.

One of the most difficult problems facing researchers is the endogeneity problem, which takes two forms in the aid-democracy context. It is possible that some underlying factor drives both democracy assistance and democracy improvement in developing countries. It is also possible that an increase in democracy scores abroad drives US democracy aid because the United States wishes to reap the benefits of supporting more democratic countries. Finkel et al. go to great lengths to deal with this problem and we will replicate their efforts. We will also use matching methods to address the causal effect more explicitly.

3.3 Human rights

Human rights can be conceptualized in several ways. One prominent approach is to categorize human rights into three subcategories: first, second, and third generation rights (Vasak 1977). First generation rights are civil and political liberties, including such indicators as the right to assemble into political parties, participate in fair elections, and exercise freedom of religion and speech. Second generation rights are socioeconomic rights: right to employment (and receipt of employee benefits), education, healthcare, and private property. Third generation rights are discussed less

often in the development aid and human rights literature, but include rights such as development, clean environment, and self-determination. Related primarily to the first generation of rights, but also to the other two, political scientists emphasize “physical integrity rights” which comprise an individual’s rights to be protected from the state. Common physical integrity indicators are extrajudicial killings, disappearances, political imprisonments, and torture.

In a general sense, scholars measure aid effectiveness by the degree to which aid affects any or all of these subcategories of human rights in developing countries. Scholars vary, however, in the weight they give to various indicators. For example, some scholars have measured aid effectiveness in a very narrow human rights context, examining the influence of structural adjustment programs and/or foreign direct investment on government respect for physical integrity rights (Pion-Berlin 1983; Regan 1995; Keith and Poe 2000; Abouharb and Cingranelli 2006). Other scholars have taken a more broad-based approach, testing the effect of numerous types of aid (economic, military, etc) on civil/political and socioeconomic rights (Meyer 1998; Richards, Gelleny, and Sacko 2001). As an expansion of their earlier research, Abouharb and Cingranelli published a book-length study in 2007 showing that aid can be simultaneously effective for one branch of human rights and disastrous for another. They show that structural adjustment exerts an adverse effect on physical integrity and socioeconomic right but exerts a positive effect on government respect for civil/political rights (4-5).

While the relative importance of various human rights indicators is disputed, scholars do agree that some human rights indicators are more directly or immediately influenced by aid than others. Poe and Tate (1994) explain, for example, that the abuse of physical integrity rights can be improved quickly: government leaders need to create public policy that forbids extrajudicial killing, torture, and other violations of physical integrity rights. Conversely, aid exerts an indirect or lagged effect on the broadening of civil/political rights (first generation) and socioeconomic liberties

(second generation). Because first generation rights, including physical integrity rights, are among the most important to people and among the easier rights to improve, we use a measure of physical integrity rights here.

In what follows, we evaluate the effect of human rights aid on the physical integrity rights of a country. Like the democracy sector, we only consider direct human rights aid: projects that explicitly reference human rights objectives. We also control for several factors including the effects of time, GDP per capita, the size of the country's population, land area in square kilometers, ethnic fractionalization, the level of democracy, and oil and gas production in a country.

Figure 4 shows the results of the human rights analyses with human rights aid/GDP results in the top half and human rights aid per capita in the bottom half. Note that the scales for human rights aid/GDP and human rights aid per capita are not comparable, but we can still evaluate the direction and statistical significance of both using this plot.

Considering aggregate human rights aid first, there appears to be a positive impact on respect for physical integrity rights. That is, the more overall aid that flows to a country, the less likely human rights abuses appear to be. This result holds when using a measure of human rights aid/GDP with a 3-year smoothed lag, but the result is no longer significant when using the 6-year lag. Comparing this to the aid per capita measure, there is again a strong positive relationship, suggesting a strong relationship between human rights aid and respect for physical integrity rights.

[FIGURE 4 ABOUT HERE]

In the remaining analyses, the estimated effects are consistently positive, but vary in their statistical significance. Using the aid/GDP measure, the bilateral and CRS data are positive and have a statistically significant relationship when aid is lagged only 3 years, whereas with the aid per capita

measure the results are strong in all cases but the bilateral 6-year smoothed lag. The results for PLAID and multilateral data are mixed. Using the aid/GDP measure, there does not appear to be a strong relationship. Using the aid per capita measure, the results are quite strong for the 6-year smoothed lag.

These findings offer important lessons about the need for disaggregation as they help narrow down which donors are most effective. These results are consistent with some of the literature, which contends that aid has a positive effect on the respect for human rights (Meyer 1998; Richards, Gelleny, Sacko 2001). But notably a number of others have found the lack of a relationship (Regan 1995) or a negative relationship (Keith and Poe 2000; Finkel et al 2007). In their recent study, Finkel et al (2007) find that aid specifically targeted to human rights, has a direct negative effect on human rights conditions in the recipient country. This is a significant finding that Finkel et al (2007) find to be robust despite repeated attempts to identify modeling problems that might produce that finding.

3.4 Terrorism

Aid's effect on terrorism is conceptualized several different ways. First, aid's effect is based on whether it decreases poverty, increasing employment opportunities and overall development, which might cause a resulting decline in terrorism. The second approach focuses on evaluating aid's effect on various educational indicators, such as literacy, conventional schools built, and attendance rates. The first two conceptualizations of effectiveness are problematic for reasons discussed below. The third approach addresses the direct link in aid and terrorism; if aid goes up terrorist activities should also increase.

According to Paul Pillar (2001), various antecedent conditions are germane to the emergence

of terrorists: the issues expressed directly by terrorists and their supporters/sympathizers –political repression, lack of self-determination, and the depravity of their rulers – as well as the living standards and socioeconomic prospects of the population. After the terrorist attacks of September 11, 2001, politicians, lobbyists and policy makers, including aid agencies such as the World Bank, have increasingly focused on increasing socioeconomic prospects to deter future terrorism (Graham 2002; Zoellick 2001). This has resulted in a significant increase in development aid to countries like Afghanistan and Iraq. Scholars have come to different conclusions about how foreign aid affects terrorism, however. Hence, according to these authors, the effectiveness of aid in the field of terrorism would be measured by economic growth, with an implicit assumption that there will be an accompanying decrease in the number of potential terrorist recruits and in the overall number of terrorist acts. Yet, almost no evidence exists to suggest that poor socioeconomic conditions have an impact on terrorism (Krueger and Maleckova 2003). On the contrary, some research has even showed a positive correlation between a high socioeconomic standing and participation in terrorism (Berrebi 2007; Stotsky 2008).

Scholars have also measured aid effectiveness in reducing terrorism by measuring the impact of aid on educational outcomes. Azam and Thelen (2008), for example, argue that terrorism is largely a function of the lack of education for young, desperate, and angry men that allows them to be brainwashed by terrorist groups into carrying out violent acts. If schools better trained potential recruits, they argue, terrorism would decrease. Hence, the measure of aid effectiveness on terrorism would be improved educational outputs, such as literacy rates, average years of school attended, increase in the number of conventional schools replacing traditional schools like the madrassas, where schools would expose their students to a wider array of educational material rather than radical or extremist propaganda. Yet arguments and empirical evidence suggest no relationship between education and terrorist outcomes, thus undermining the foundations of this logic (Krueger

and Maleckova 2003; Bueno de Mesquita 2005; Berrebi 2007).

Because scholars and policy makers are still debating what actually causes terrorism, measuring how its causes have decreased due to aid might be dubious. A final way to evaluate the effectiveness of aid emphasizes a direct test of whether aid ultimately helps reduce or eliminate terrorist attacks and groups. Little research has addressed the aid-terrorism connection directly. Azam and Delacroix (2006) find a positive relationship between aid and terrorism, although the relationship becomes negative using certain controls, whereas Azam and Thelen (2008)'s results reveal the opposite. One crucial complication, as with other aid effectiveness sectors, is the potential for endogeneity, which needs to be addressed more fully before any consensus can be reached.

The indicator most commonly used in the terrorism literature, therefore, is the number of terrorist events per country on a yearly basis (Krueger and Maleckova 2003; Li and Schaub 2004), which would be appropriate for studies of aid as well and is the route we follow in this paper. Measuring aid as a count of events is useful because terrorist events are usually reported on and counted. Some countries are better than others at reporting terrorism, however. And the raw numbers of events do not take into account the magnitude of each event, however; nor do they account for the overall strength of the terrorist groups within a country. Event counts are still the best measures, nonetheless, because data on the number of groups, recruitment levels, and public support are even more difficult to construct.

The most commonly used database of terrorist attacks is the International Terrorism: Attributes of Terrorist Events (ITERATE) database (Mickolus 2008). ITERATE is limited in several ways however; most notably, it contains information on transnational terrorist events only, when domestic terrorism occurs in the range of 6-8 times more often. Recently the Global Terrorism Database (GTD) was released, which has more comprehensive data on domestic and transnational

terrorism worldwide. Like ITERATE, the GTD is a database created from publicly available reports and combines both national and international sources to be as complete as possible.

We categorized conflict aid into direct and indirect types of aid. In the direct category, we include all projects that explicitly reference conflict prevention or reconstruction objectives, whereas in the indirect category we include codes from other sectors that have an impact on conflict, such as health and education. We also control for a variety of factors including the effects of time, GDP per capita, the size of the country's population, the land area of the country, and the level of democracy.

Figures 5 and 6 show the results for the estimated relationships between conflict aid and terrorism using aid/GDP and aid per capita measures respectively. The results of these analyses are quite mixed and do not tell a simple story. The strongest result from Figure 5 obtains when using the measure of direct CRS aid; higher levels of aid, it appears, are correlated with higher levels of terrorism. These findings are partially supported by the bilateral aid data, which also show a positive and statistically significant relationship (at the 0.1 level). Beyond these results, most of the remaining analyses are not statistically significant and vary between a positive and negative correlation. One notable exception is that indirect bilateral aid/GDP is negatively correlated with terrorism and the result is significant. These results are far from conclusive, but suggest both positive and negative consequences of aid.

[FIGURES 5 AND 6 ABOUT HERE]

Moving to the aid per capita measures in Figure 6, the CRS and bilateral measures are again statistically significant when using the 6-year lag, suggesting a potential long term effect of aid on terrorism. The relationship is positive, however, which indicates that higher levels of aid and terrorism are associated with each other. Interestingly, some of the PLAID-added conflict projects

are correlated with higher levels of terrorism. Moreover, the indirect conflict aid flows are positively and significantly related to higher levels of terrorism.

The overall result for direct aid is strongly positive, no doubt influenced by the PLAID-added projects. This underscores a recurrent theme that keeps appearing – the results of the aggregate analyses are often misleading, when compared with the disaggregated measures. In this case, if one were to rely on the aggregate analysis, then inferences about the data in the CRS might be incorrect and vice versa.

Our results are consistent with the initial analysis of a number of studies (Azam and Delacroix 2006; Azam and Thelen 2008; Rosendorff and Sandler 2004). But like the other sectors considered above, what this relationship means is unclear until we address the potential for endogeneity. It might be the case that conflict aid is being sent precisely to those countries suffering from high levels of terrorism.

3.5 Environment

Although a variety of incentives exist for granting foreign aid, an implicit or explicit goal in most cases is to increase economic output and decrease poverty in less developed countries. In the past, donors gave aid with little regard to any environmental effects – positive or negative – that it might produce. Today, with increased global concern for the environment, there is a much greater emphasis on the idea of aid that be environmentally friendly (Hicks et al 2007). Thus, aid increasingly has either a primary or secondary aim of improving the environment, or at the very least not harming the environment in the recipient country or beyond.²

² Financial flows that affect the environment are not restricted to development assistance – in fact, trade liberalization (or the lack thereof) may also have important effects on the environment (Copeland and Taylor 2000). Some have even

If the environment is a public good, arguably poorer countries will not provide the good as efficiently; aid's role is to increase the government's ability to raise standards and prevent degradation (Arvin, Dabir-Alai, and Lew 2006). A common strategy of improving the environment within a country involves giving aid on conditions that certain environmental policies are implemented or standards met – that is, donors use a strategy of carrots rather than sticks (Chao and Yu 1999). Tied environmental aid is considered effective when economic growth occurs and the recipient countries comply with the new policies or standards put forward by the donors.

Environmental outcomes of interest to scholars and practitioners include a variety of effects including deforestation, overfishing, and emissions. Most scholars focus on the importance of greenhouse gas (GHG reductions). Of these, the amount of CO₂ emissions is of particular concern and is the focus of our analysis in the current paper.

In contrast to the other development outcomes, we subdivide environmental aid one additional way. We code which sectors are likely to make the environment better vs. those which are likely to make the environment worse. Ideally we would do this on a project-by-project basis, like Hicks et al (2007) who coded carrying levels of clean and dirty projects, but for now we code clean and dirty aid at the sector level. Thus, we categorize the sectors by direct and indirect environmental aid as well as whether the sectors should be environmentally friendly or not. Control variables for the environment analysis include GDP per capita, the size of the population, the level of democracy, total land area, the amount of oil production, whether the state is new, and whether there is instability in the country.

We consider the environmental results in two sections: clean and dirty environmental projects. Figures 7 and 8 display the results for the clean environmental sectors using aid/GDP and aid per capita measures respectively. These first two sets of analyses offer somewhat contradictory

argued that cross-border pollution encourages financial transfers in order to reduce the pollution (Hatzipanayotou, Lahiri, Michael, 2002).

results. Using the aid/GDP measure, we find that almost all of the clean aid is correlated with higher CO₂ emissions. The result is especially strong for the multilateral donors added by PLAID. To be sure, the bilateral aid is also associated with higher CO₂ emissions, but the magnitude of the effect appears much smaller than for the multilateral donors. Thus, clean environmental aid does not appear to be very effective, but there is some question about what this relationship means. It is not implausible that clean aid is being sent to countries that have problems with high emissions.

[FIGURES 7 AND 8 ABOUT HERE]

Turning to the per capita measure of clean aid (Figure 8), the results are quite different. In these models, bilateral aid has a negative and statistically significant correlation with CO₂ emissions in the models with the 6-year lag. The results for multilateral aid are positive and statistically significant, on the other hand, suggesting yet again important differences between bilateral and multilateral aid effectiveness. Depending on the measure of aid, the results indicate cause for optimism and pessimism about environmental foreign aid. What about dirty aid?

Figures 9 and 10 illustrate the results for the dirty environmental sectors for aid/GDP and aid per capita respectively. Across all the different disaggregated categories for both measures, there is consistently a positive relationship between aid and higher CO₂ emissions. Compared to the category of clean aid, there are strong noticeable differences. Although clean aid is, in some cases, associated with more emissions, the relationship between dirty aid and emissions appears even stronger. These results offer strong evidence that non-environmentally friendly projects indeed have negative impacts on the environments and, therefore, need to be restructured.

[FIGURES 9 AND 10 ABOUT HERE]

These results are partially consistent with the results in Arvin, Dabir-Alai, and Lew (2006) who test whether aggregate foreign aid affects CO₂ emissions. They find that, on the whole, aid is

correlated with higher emissions, but refinements to their sample yield conditions under which aid is correlated with lower emissions. They only examine aggregate aid and few other scholars have examined the aid-environment relationship very systematically, suggesting the need for further work on the topic.

4. Discussion

We covered a lot of ground in just a few pages. Clearly these results offer only a first cut at identifying the effectiveness of aid across sectors. We emphasized differences in the measures of aid and found several interesting results. First, in many cases, disaggregating aid has meaningful substantive effects. Frequently the results using aggregate aid flows differed from the results with bilateral or multilateral donors, or using CRS vs. PLAID-added data. Second, aid appears to have a positive effect on democracy, human rights, and the environment under certain circumstances. Understanding these circumstances better will be an important step in figuring out whether aid is effective. Third, as might be expected given the focus of each database, the results for CRS and bilateral data were often similar, and the results for PLAID and multilateral data were also similar. Fourth, whether one uses a measure of sectoral aid/GDP vs. sectoral aid per capita appears to make a difference.

This brief analysis leaves open many unanswered questions, many of which we will pursue in the larger book project. First, we only examined one outcome measure for each development sector, whereas other outcomes are important to consider. For example, in the education sector a next important step needs to be examining the relationship between education aid and enrollments. In the conflict sector, we need to examine the effects of conflict aid on civil war onset or recurrence. Second, as there are likely important pre- and post-cold war effects in many sectors, we need to consider temporal disaggregation as well. Third, we did not address endogeneity in this analysis, but

are currently developing time-series cross-section matching techniques to give us better leverage over establishing causal effects. Fourth, in the introduction we introduced the beginnings of a theory about whether political structures have an impact on aid effectiveness – our next step is to develop and test that theory more explicitly.

References

- Abouharb, M. Rodwan, and Cingranelli, David (2007). *Human rights and structural adjustment*. Cambridge: Cambridge University Press.
- Abouharb, M. Rodwan, and Cingranelli, David (2006). The human rights effects of World Bank structural adjustment lending, 1981-2000. *International Studies Quarterly* 50 (2), 233-262.
- Alesina, Alberto, and Dollar, David (2000). Who gives foreign aid to whom and why. *Journal of Economic Growth* 5 (1), 33-63.
- Alesina, Alberto, and Weder, Beatrice (2002). Do corrupt governments receive less foreign aid? *The American Economic Review* 92 (4), 1126-1137.
- Arcand, Jean-Louis, and Chauvet, Lisa (1995). *Foreign aid, rent-seeking behavior, and civil war*. Unpublished: Universite d' Auvergne. CERDI-CNRS.
- Asiedu, Elizabeth, and Nandwa, Boaz (2007). On the impact of foreign aid in education on growth: How relevant is the heterogeneity of aid flows and the heterogeneity of aid recipients? *Review of World Economics* 143 (4), 631-649.
- Azam, Jean-Paul, and Delacroix, Alexandra (2006). Aid and the delegated fight against terrorism. *Review of Development Economics* 10 (2), 330-344.
- Barro, Robert, and Lee, Jong-Wha (2001). International data on educational attainment: Updates and implications. *Oxford Economic Papers* 53 (3), 541-563.
- Bermeo, Sarah (2007). Foreign Aid, foreign policy, and development sector allocation in bilateral aid. Paper presented at the *International Studies Association Annual Convention*. Chicago, Illinois.
- Berrebi, Claude (2007). Evidence about the link between education, poverty and terrorism among Palestinians. *Peace Economics, Peace Science and Public Policy* 13 (1), 1-35.
- Brautigam, Deborah, and Knack, Stephen (2004). Foreign aid, institutions, and governance in Sub-Saharan Africa. *Economic Development and Cultural Change* 52 (2), 255-285.
- Bueno de Mesquita, Bruce, Smith, Alastair, Morrow, James, and Siverson, Randolph (2003). *The Logic of Political Survival*. Cambridge, MA: MIT Press.
- Bueno de Mesquita, Ethan (2005). The quality of terror. *American Journal of Political Science* 49 (3), 515-530.
- Burnside, Craig, and Dollar, David (2000). Aid, policies, and growth. *American Economic Review* 90 (4), 847-868.
- Carey, John M., and Shugart, Matthew S. (1995). Incentives to cultivate a personal vote. *Electoral Studies* 14 (4), 417-439.

- Cassen, Robert (1986). *Does Aid Work?* Oxford: Clarendon Press.
- Chao, Chi Chur, and Yu, Eden H.S. (1999). Foreign aid, the environment, and welfare. *Journal of Development Economics* 59 (2), 553-564.
- Chauvet, Lisa and Patrick Guillaumont. 2003. Aid and growth revisited: Policy, economic vulnerability and political instability. Paper presented at the Annual Bank Conference on Development Economics, ABCDE-Europe, "Towards pro-poor policies", Oslo, June 24-26 2002.
- Cingranelli, David L., and Richards, David L. *Ciri Human Rights Data Project*. At <www.humanrightsdata.com>. Accessed July 2009.
- Clemens, Michael A., Radelet, Steven, and Bhavnani, Rikhil (2004). *Counting chickens when they hatch: The short-term effect of aid on growth*. Working Paper 44, Center for Global Development, Washington D.C.
- Cohen, Daniel, and Soto, Marcelo (2007). Growth and educational attainment: Good data, good results. *Journal of Economic Growth* 12 (1), 51-76.
- Collier, Paul (2007). *The bottom billion: Why the poorest countries are failing and what can be done about it*. Oxford, USA: Oxford University Press.
- Copeland, Brian A., and Taylor, M. Scott (1994). North-South trade and the environment. *Quarterly Journal of Economics* 109 (3), 755-787.
- Cordella, Tito, and Dell'Ariccia, Giovanni (2003). *Budget support versus project aid*. IMF Working Paper WP/03/88, International Monetary Fund, Washington D.C.
- Cordella, Tito, and Ulku, Hulya (2004). *Grants versus loans*. IMF Working Paper WP/04/161, International Monetary Fund, Washington D.C.
- Dreher, Axel, Nunnenkamp, Peter, and Thiele, Rainer (2008). Does aid for education educate children? Evidence from panel data. *The World Bank Economic Review* 22 (2), 291-314.
- Djankov, Simeon, Garcia-Montalvo, Jose, and Reynal-Querol, Martra (2006). *Does foreign aid help?* Working Paper. At <http://ssrn.com/abstract=896550>.
- Easterly, William (2007). *The white man's burden: Why the West's efforts to aid the rest have done so much ill and so little good*. New York, USA: Penguin Press.
- Easterly, William, Levine, Ross, and Roodman, David (2003). Can foreign aid buy growth? *Journal of Economic Perspectives* 17 (3), 23-48.
- Feyzioglu, Tarhan, Swaroop, Vinaya, and Zhu, Min (1998). A panel data analysis of the fungibility of foreign aid. *World Bank Economic Review* 12 (1), 29-58.

- Freedom House, *Freedom in the World Country Ratings, 1972 through 2004*. At <www.freedomhouse.org>. Accessed July 7, 2009.
- Gelman, Andrew, and Hill, Jennifer (2007). *Data analysis using regression and multilevel/hierarchical models*. Cambridge, UK: Cambridge University Press.
- Goldsmith, Arthur (2001). Donors, dictators and democrats in Africa. *Journal of Modern African Studies* 39 (3), 411-436.
- Graham, Carol (2002). Can foreign aid help stop terrorism? Not with magic bullets. *Brookings Institution*. At <http://www.brookings.edu/articles/2002/summer_terrorism_graham.aspx>.
- Ho, Daniel, Imai, Kosuke, King, Gary, and Stuart, Elizabeth (2007). Matching as nonparametric preprocessing for reducing model dependence in parametric causal inference. *Political Analysis* 15 (3), 199-236.
- Hatzipanayotou, Panos, Lahiri, Sajal, and Michael, Michael S. (2002). Can cross-border pollution reduce pollution? *Canadian Journal of Economics* 35 (4), 807-818.
- Kalyvitis, Sarantis, and Vlachaki, Irene (2007). *Democracy assistance and the democratization of recipients*. Working Paper. At <<http://ssrn.com/abstract=888262>>.
- Kalyvitis, Sarantis, and Vlachaki, Irene (2008). *More aid, less democracy? An empirical examination of the relationship between foreign aid and the democratization of recipients*. Working Paper. At <<http://ssrn.com/abstract=1002433>>.
- Keith, Linda, and Poe, Steven C. (2000). The United States, the IMF, and human rights. In David Forsythe (Ed.), *The United States and human rights* (pp. 273-299). Lincoln, NE: University of Nebraska Press.
- Kiewiet, D. Roderick, and McCubbins, Mathew D. (1991). *The logic of delegation: Congressional parties and the appropriations process*. Chicago, IL: University of Chicago Press.
- Knack, Stephen (2001). Aid dependence and the quality of governance: Cross-country empirical tests. *The Southern Economic Journal* 68 (2), 310-329.
- Knack, Stephen (2004). Does foreign aid promote democracy? *International Studies Quarterly* 48 (1): 251-266.
- Krueger, Alan B., and Maleckova, Jitka (2003). Education, poverty and terrorism: Is there a causal connection? *Journal of Economic Perspectives* 17 (4), 119-144.
- Kuziemko, Ilyana, and Werker, Eric (2006). How much is a seat on the Security Council worth? Foreign aid and bribery at the United Nations. *Journal of Political Economy* 114 (5), 905-930.

- Hicken, Allen, and Simmons, Joel W. (2008). The personal vote and the efficacy of education spending. *American Journal of Political Science* 52 (1), 109-124.
- Hicks, Robert L., Parks, Bradley C., Roberts, J. Timmons, and Tierney, Michael J. (2007). *Greening Aid?: Understanding the environmental impact of development assistance*. Oxford, NY: Oxford University Press.
- Isenman, Paul, and Ehrenpreis, Dag (2003). OECD DAC/Development Centre experts' seminar on aid effectiveness and selectivity: Integrating multiple objectives into aid allocations. *DAC Journal* 4 (3), 7-25.
- Lai, Brian, and Thyne, Clayton (2007). The effect of Civil War on education, 1980-1997. *Journal of Peace Research* 44 (3), 277-292.
- Li, Quan, and Schaub, Drew (2004). Economic globalization and transnational terrorism: A pooled time-series analysis. *Journal of Conflict Resolution* 48 (2), 230-258.
- Marshall, Monty G., Jaggers, Keith, and Gurr, Ted Robert. *Polity IV Project: Political regime characteristics and transitions, 1800–2003*. At <<http://www.cidcm.umd.edu/inscr/polity>>. Accessed July 2009.
- Meyer, William H. (1998). *Human rights and international political economy in third world nations: Multinational corporations, foreign aid, and repression*. Westport, CT: Praeger.
- Michaelowa, Katharina, and Weber, Anke (2006). Aid effectiveness in the education sector – a dynamic panel analysis. Working Paper, Hamburg Institute of International Economics, University of Zurich.
- Mickolus, Edward F., Sandler, Todd, Murdock, Jean M., and Flemming, Peter A. (2008). *International terrorism: Attributes of terrorist events (ITERATE), 1968-2007*. Dunn Loring, VA: Vinyard Software [Distributor].
- Miguel, Edward, and Kremer, Michael (2004). Worms: Identifying impacts on education and health in the presence of treatment externalities. *Econometrica* 72 (1), 159-217.
- Moyo, Dambisa (2009). *Dead Aid: Why aid is not working and how there is a better way for Africa*. Farrar, Straus and Giroux.
- Nielson, Daniel. 2003. "Supplying Trade Reform: Political Institutions and Trade Policy in Middle-Income Democracies." *American Journal of Political Science* 47, 3 (July): 470-91.
- Nielson, Daniel L., and Tierney, Michael J. (2003). Delegation to international organizations: Agency theory and World Bank environmental reform. *International Organization* 57 (2), 241-276.
- OECD Creditor Reporting System. *User's guide to the CRS aid activities database*. At <http://www.oecd.org/document/50/0,3343,en_2649_34447_14987506_1_1_1_1,00.html>. Accessed 20 August 2009.

- Pion-Berlin, David (1983). Political repression and economic doctrines. *Comparative Political Studies* 16 (1), 37-66.
- Poe, Steven C., and Tate, C. Neal (1994). Repression of physical integrity in the 1980s: A global analysis. *American Political Science Review* 88 (4), 853-872.
- Pritchett, Lant (2001). Where has all the education gone? *World Bank Economic Review* 15 (3), 367-391.
- Regan, Patrick (1995). U.S. economic aid and political repression: An empirical evaluation of U.S. foreign policy. *Political Research Quarterly* 48 (3), 613-628.
- Roberts, John (2003). *Poverty reduction outcomes in education and health: Public expenditure and aid*. ODI Working Paper 210, Overseas Development Institute, London.
- Roodman, D. 2007. The Anarchy of Numbers: Aid, Development, and Cross-Country Empirics. *World Bank Economic Review* 21, 2: 255-278.
- Rosendorff, B. Peter, and Sandler, Todd (2004). Too much of a good thing? The proactive response dilemma. *Journal of Conflict Resolution* 48 (5), 657-671.
- Rubin, Donald B. (1973). Matching to remove bias in observational studies. *Biometrics* 29 (1), 159–183.
- Sachs, Jeffrey (2006). *The end of poverty: economic possibilities for our time*. New York, NY: Penguin Press.
- Scott, James, and Steele, Carie (2005). Assisting democrats or resisting dictators? The nature and impact of democracy support by the United States National Endowment for Democracy, 1990-1999. *Democratization* 12 (4), 439–460.
- Sen, Amartya (2003). Human capital and human capability. In Sakiko Fukuda-Parr and A.K. Shiva Kumar (Eds.), *Readings in Human Development* (p. 35). Oxford, USA: Oxford University Press.
- Singer, Judith, and Willett, John (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. Oxford, NY: Oxford University Press.
- Stotsky, Steven (2008). Does foreign aid fuel Palestinian violence? *Middle East Quarterly* 15 (3), 23-30.
- Dreher, Axel, Nunnenkamp, Peter, and Thiele, Rainer (2006). *Sectoral aid priorities: Are donors really doing their best to achieve the Millennium Development Goals?* Working Paper 1266, Kiel Institute for the World Economy, Kiel.
- Vanhanen, Tatu (2007). *Measures of Democracy 1810–2002*. Tampere: Finnish Social Science Data Archive [distributor]. At <<http://www.fsd.uta.fi/english/data/catalogue/FSD1289>>. Accessed July 2009.

Vasak, Karel (1977). Human rights: A thirty-year struggle: The sustained efforts to give force of law to the Universal Declaration of Human Rights. *UNESCO Courier* 30 (11). Paris: United Nations Educational, Scientific, and Cultural Organization.

White, Howard (1998). *Aid and Macroeconomic Performance: Theory, Empirical Evidence and Four Country Studies*. Basingstoke, UK: Macmillan Press.

Williamson, Oliver E. (1973). 'Markets and hierarchies: some elementary considerations', *American Economic Review*, 63(2) May: 316-25.

Williamson, Oliver. 2002. The Theory of the Firm as Governance Structure: From Choice to Contract. *Journal of Economic Perspectives* 16(3): 171-195.

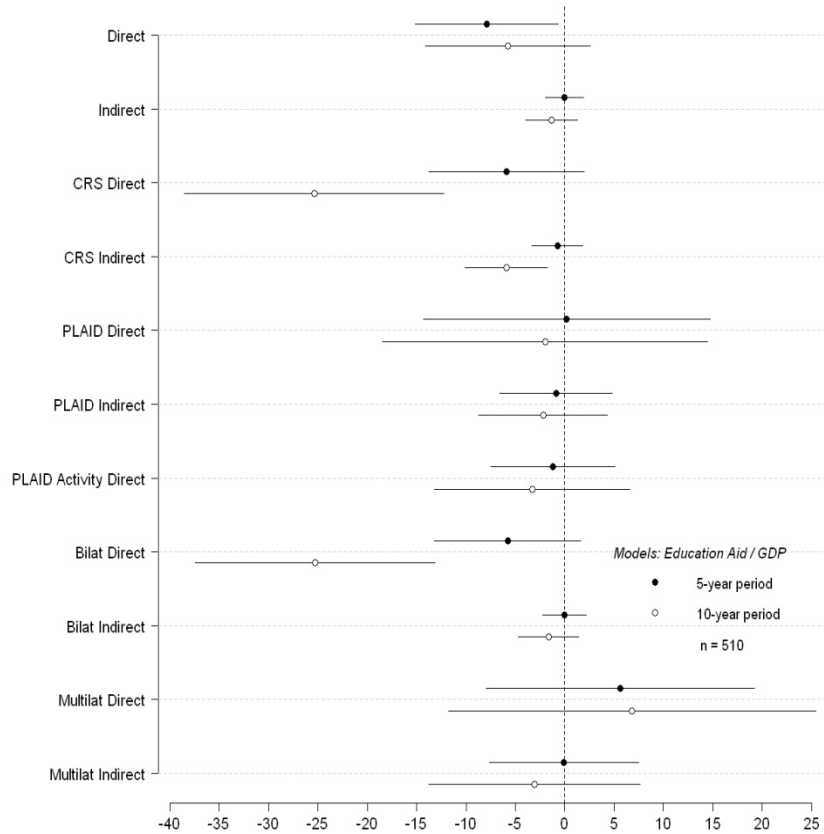


Figure 1: Different measures of education aid on the average years of schooling completed. Aid is measured as a ratio of education aid / GDP. Control variables include time, GDP per capita, the size of the country's population, and the level of democracy.

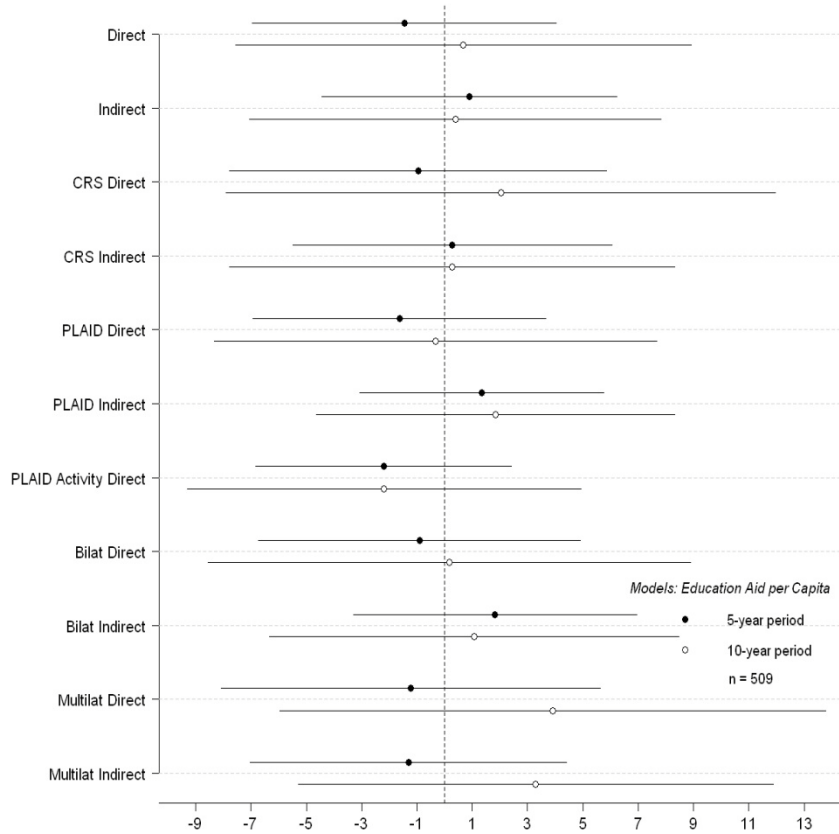


Figure 2: Different measures of education aid on the average years of schooling completed. Aid is measured as the natural log of education aid per capita. Note that both the coefficients and standard errors are extremely small; thus, we multiplied both the coefficients and standard errors by 100 for display purposes. Control variables include time, GDP per capita, the size of the country's population, and the level of democracy.

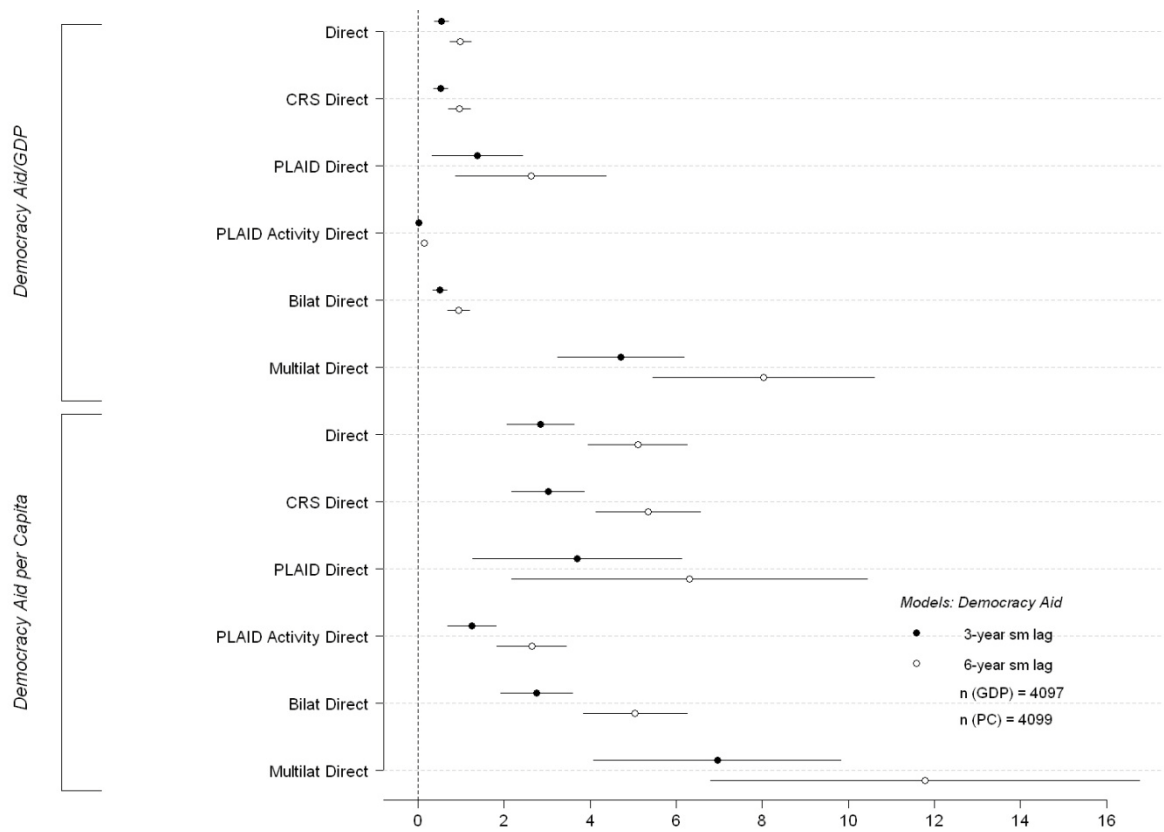


Figure 3: The effects of democracy aid on the level of democracy in countries, measured by the Polity scale. Aid is measured as a ratio of democracy aid / GDP and also the natural log of democracy aid per capita. Control variables include time, GDP per capita, the size of the country's population, land area in square kilometers, ethnic fractionalization, and political violence in a country. Note that for the measure of democracy aid / GDP, the coefficients are very large; thus, we divided both the coefficients and standard errors by 1,000 for display purposes. The scales for democracy aid/GDP and democracy aid per capita are not comparable, but we can still evaluate the direction and statistical significance of both using this plot.

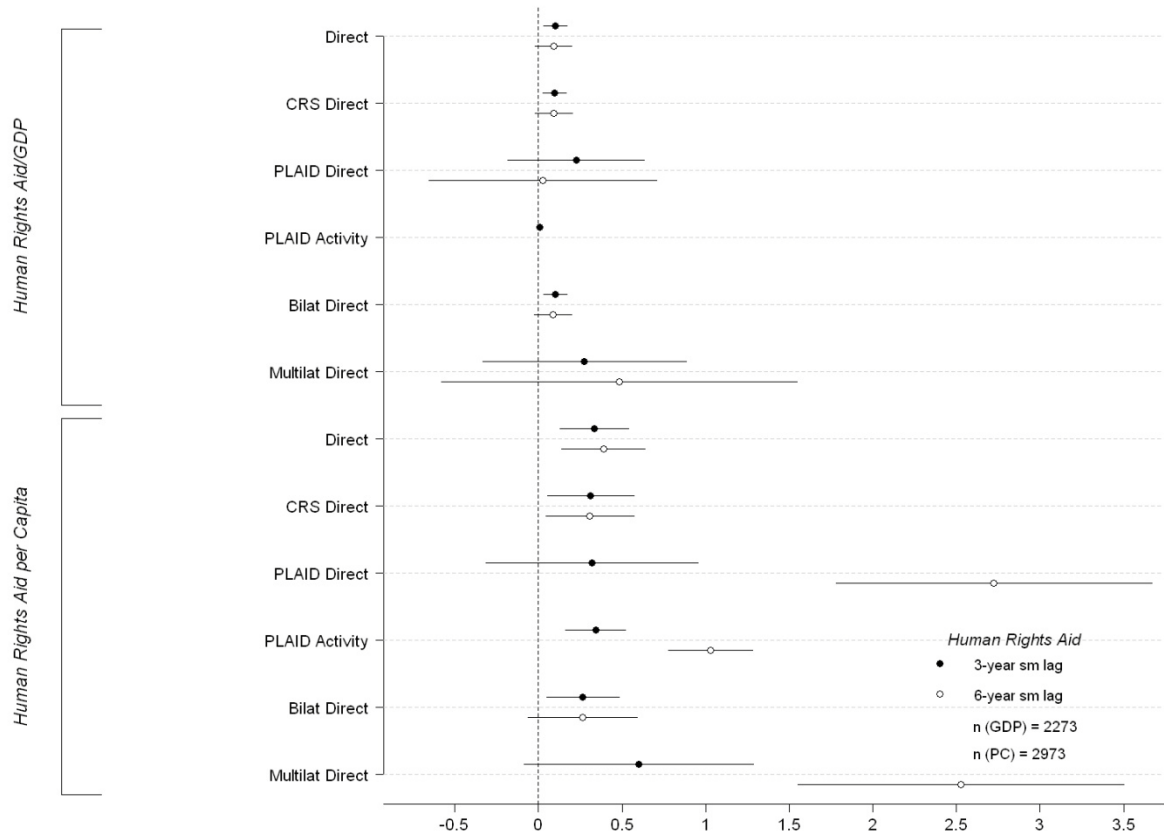


Figure 4: The effects of human rights aid on the level of human rights in countries, measured as physical integrity rights. Aid is measured as a ratio of human rights aid / GDP and also the natural log of human rights aid per capita. Control variables include time, GDP per capita, the size of the country's population, land area in square kilometers, ethnic fractionalization, the level of democracy, and oil and gas production in a country. Note that for the measure of democracy aid / GDP, the coefficients are very large; thus, we divided both the coefficients and standard errors by 1,000 for display purposes. The scales for human rights aid/GDP and human rights aid per capita are not comparable, but we can still evaluate the direction and statistical significance of both using this plot.

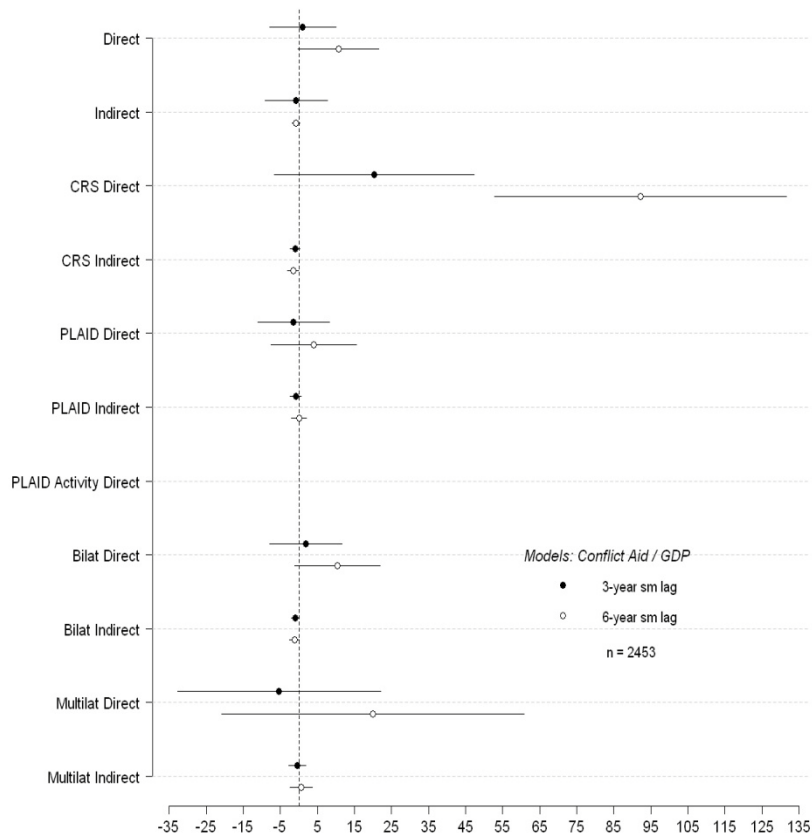


Figure 5: The effects of conflict aid on terrorism, measured as a count of terrorist events. Aid is measured as a ratio of conflict aid / GDP. Control variables include time, GDP per capita, the size of the country's population, the land area of the country, and the level of democracy. Note that the coefficients are very large; thus, we divided both the coefficients and standard errors by 100 for display purposes.

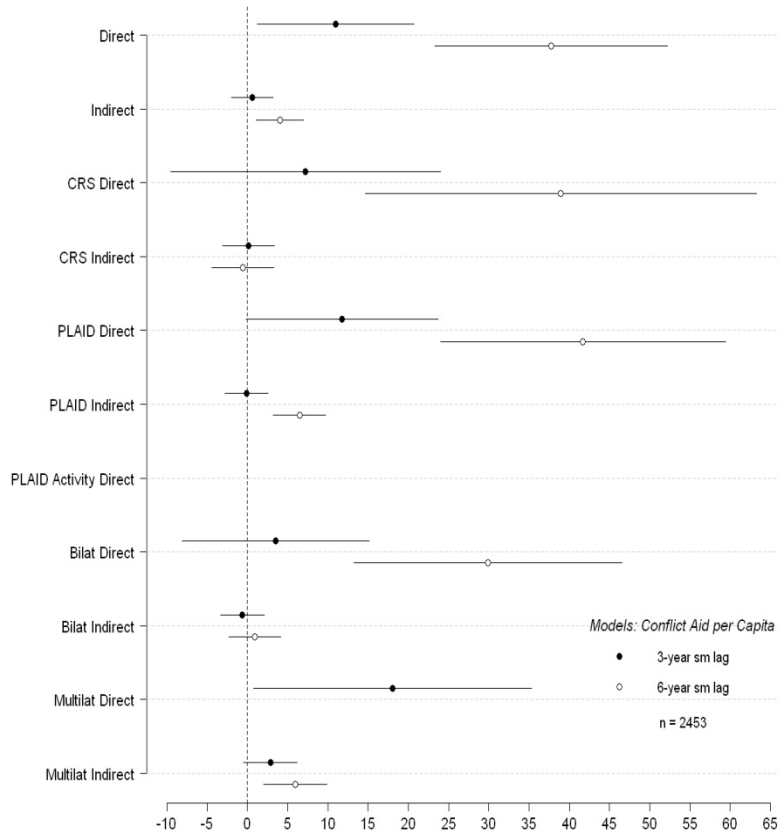


Figure 6: The effects of conflict aid on terrorism, measured as a count of terrorist events. Aid is measured as the natural log of conflict aid per capita. Control variables include time, GDP per capita, the size of the country's population, the land area of the country, and the level of democracy. Note that the coefficients are very large; thus, we divided both the coefficients and standard errors by 1,000 for display purposes.

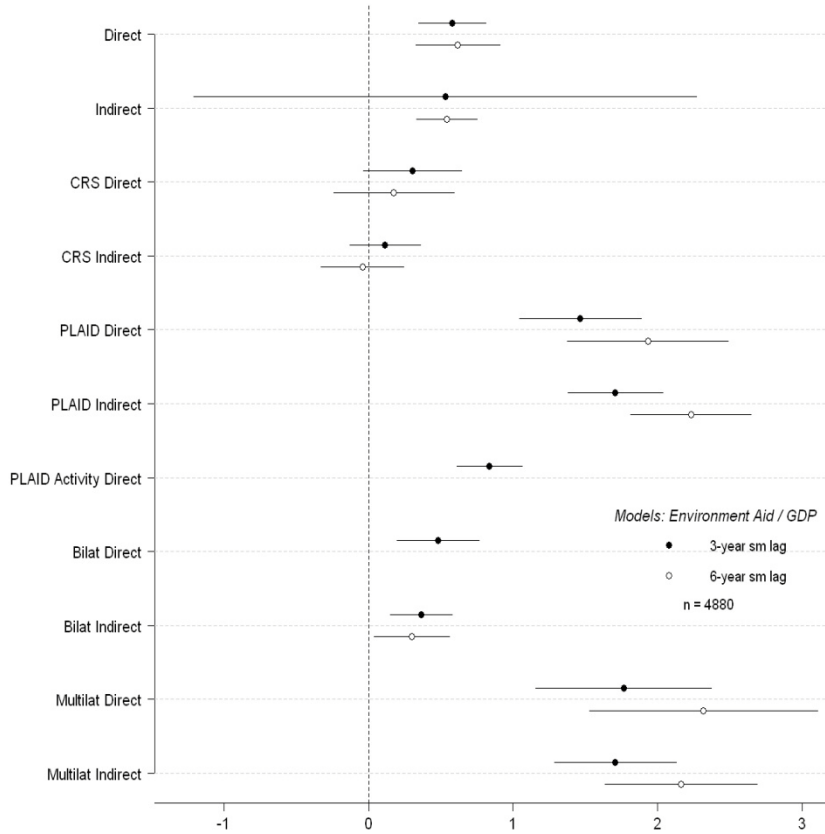


Figure 7: Different measures of *clean* environmental aid on the amount of CO₂ emissions per capita (logged). Aid is measured as a ratio of clean environmental aid / GDP. Control variables include GDP per capita, the size of the population, the level of democracy, total land area, the amount of oil production, whether the state is new, and whether there is instability in the country. Note that the coefficients are very large; thus, we divided both the coefficients and standard errors by 100 for display purposes.

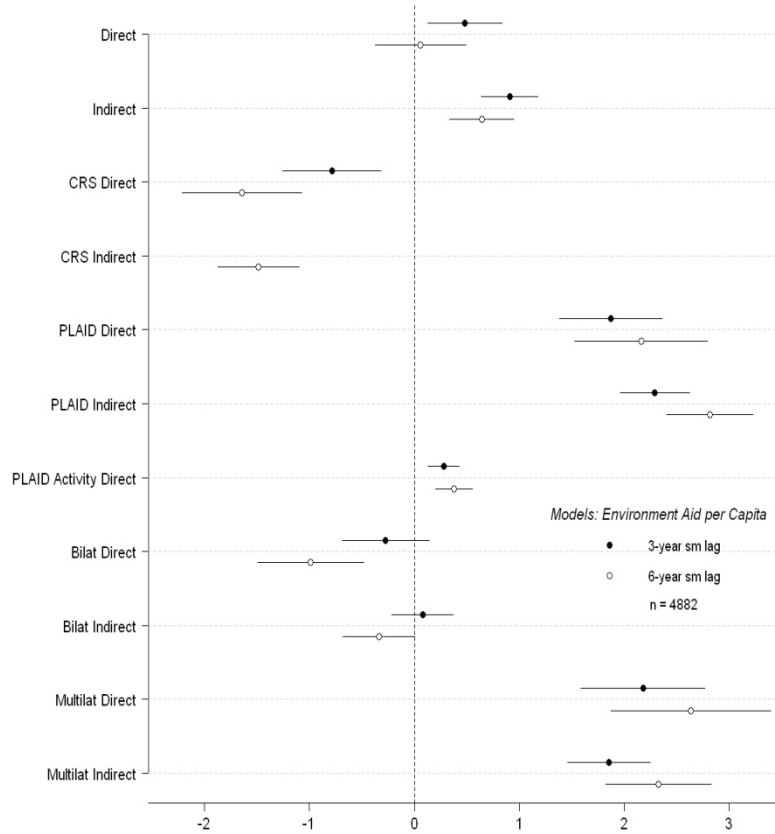


Figure 8: Different measures of *clean* environmental aid on the amount of CO₂ emissions per capita (logged). Aid is measured as the natural log of clean environmental aid per capita. Control variables include GDP per capita, the size of the population, the level of democracy, total land area, the amount of oil production, whether the state is new, and whether there is instability in the country.

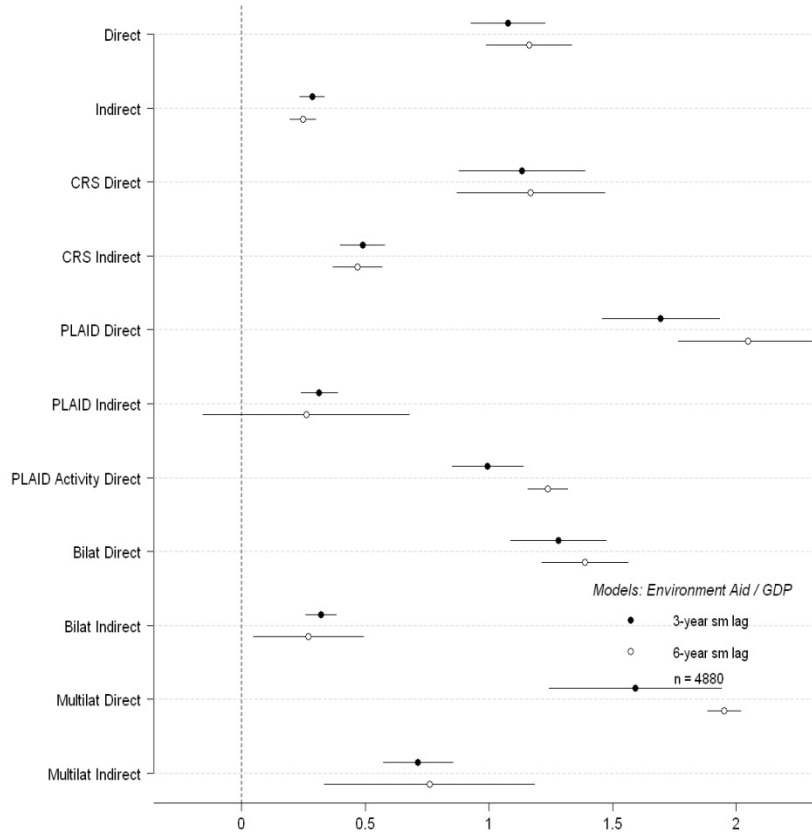


Figure 9: Different measures of *dirty* environmental aid on the amount of CO₂ emissions per capita (logged). Aid is measured as a ratio of clean environmental aid / GDP. Control variables include GDP per capita, the size of the population, the level of democracy, total land area, the amount of oil production, whether the state is new, and whether there is instability in the country. Note that the coefficients are very large; thus, we divided both the coefficients and standard errors by 100 for display purposes.

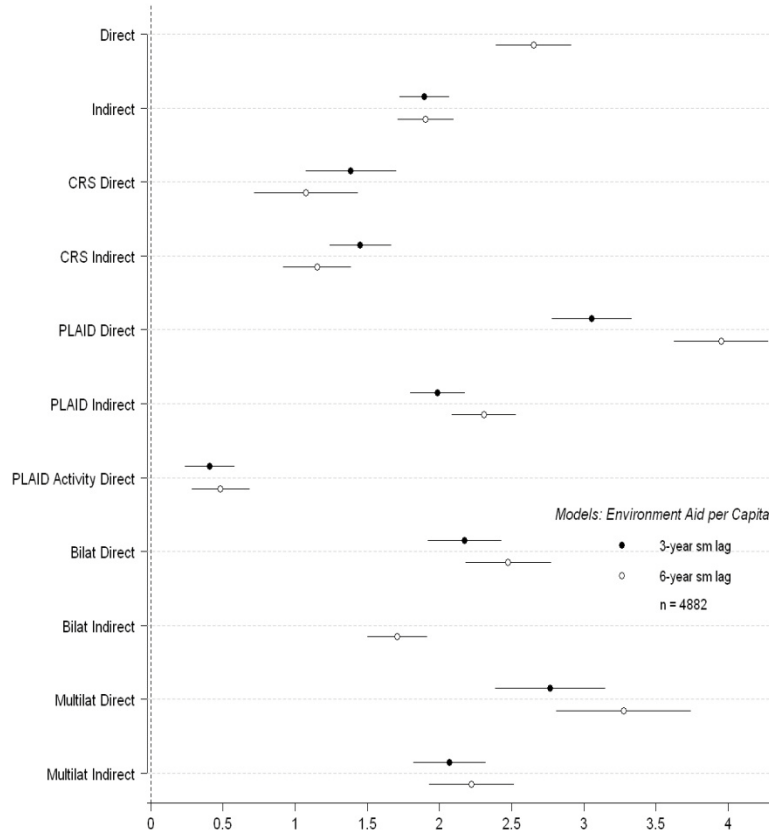


Figure 10: Different measures of *dirty* environmental aid on the amount of CO₂ emissions per capita (logged). Aid is measured as the natural log of environmental aid per capita. Control variables include GDP per capita, the size of the population, the level of democracy, total land area, the amount of oil production, whether the state is new, and whether there is instability in the country.

Appendix A

Covariate	Education Aid as a Percent of GDP (5 year sum)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Education Aid	-7.904635	3.69940	0.033	-15.15533	-0.65394
Year	0.05888	0.00349	< 0.001	0.05204	0.06572
GDP Per Capita (Log)	0.87210	0.07588	< 0.001	0.72339	1.02082
Population (Log)	0.25256	0.10265	0.014	0.05136	0.45375
Polity 2	0.01111	0.00588	0.059	-0.00042	0.02264
Polity 2, squared	-0.00057	0.00128	0.656	-0.00308	0.00194
Constant	-122.3059	6.01554	< 0.001	-134.0962	-110.5157
Variance components	Coefficient	S.E.		95 % C.I.	
In rate of change	0.00045				
In initial status	0.90521				
Covariance	0.70065				
Within-country	0.43188				
N=508; number of countries=92 p-values are one-tailed					

Covariate	Education Aid per Capita (5 year sum)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Education Aid	-5.75561	4.24907	0.176	-14.08363	2.57241
Year	0.06047	0.00505	< 0.001	0.050571	0.07037
GDP Per Capita (Log)	0.92405	0.08100	< 0.001	0.76529	1.08281
Population (Log)	0.20961	0.10544	0.047	0.00295	0.41627
Polity 2	0.00531	0.00520	0.307	-0.00488	0.01550
Polity 2, squared	0.00103	0.00118	0.379	-0.00127	0.00334
Constant	-125.2641	9.39520	< 0.001	-143.6783	-106.8498
Variance components	Coefficient	S.E.		95 % C.I.	
In rate of change	0.03735	0.00342		0.03122	0.04470
In initial status	74.47576	6.82728		62.22778	89.13446
Covariance	-0.99977	0.00006		-0.99987	-0.99960
Within-country	0.27694	0.01132		0.25561	0.30004
N=509; number of countries=92 p-values are one-tailed					

Table A.1: The effects of education aid on the average years of schooling completed. The first model reports the results based on the measure of education aid/GDP whereas the second model reports education aid per capita (log).

Covariate	Democracy Aid as a Percent of GDP (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Democracy Aid	538.14	82.15	< 0.001	377.13	699.16
Year	0.16403	0.02668	< 0.001	0.11175	0.21631
GDP Per Capita (Log)	-1.32348	0.29421	< 0.001	-1.90013	-0.74684
Population (Log)	-0.37879	0.43938	0.389	-1.23996	0.48238
Land Area (Sq. Km)	4.59E-07	3.32E-07	0.167	-1.92E-07	1.11E-06
Ethnic Fractionalization	-11.75119	2.34789	< 0.001	-16.35298	-7.14941
Violence	-0.00005	0.00003	0.088	-0.00011	7.44E-06
Constant	-305.1076	51.03277	< 0.001	-405.13	-205.0852
Variance components	Coefficient	S.E.		95 % C.I.	
In rate of change	0.26714	0.02039		0.23003	0.31025
In initial status	532.0716	40.58587		458.1855	617.8725
Covariance	-0.9999	0.00002		-0.99994	-0.99985
Within-country	3.06151	0.03549		2.99274	3.13187

N=4097; number of countries=145
p-values are one-tailed

Covariate	Democracy Aid per Capita (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Democracy Aid	2.84660	0.40102	< 0.001	2.06062	3.63259
Year	0.13700	0.02629	< 0.001	0.08548	0.18852
GDP Per Capita (Log)	-0.00307	0.00682	0.653	-0.01643	0.01030
Population (Log)	-0.13237	0.37936	0.727	-0.87590	0.61116
Land Area (Sq. Km)	2.62E-07	2.81E-07	0.35	-2.88E-07	8.12E-07
Ethnic Fractionalization	-7.76508	1.87127	< 0.001	-11.4327	-4.09746
Violence	-0.00004	2.93E-05	0.165	-0.00010	1.67E-05
Constant	-266.5714	50.97558	< 0.001	-366.4816	-166.6611
Variance components	Coefficient	S.E.		95 % C.I.	
In rate of change	0.26824	0.02051		0.23090	0.31161
In initial status	534.2475	40.85154		459.891	620.6262
Covariance	-0.99993	1.32E-05		-0.99995	-0.99990
Within-country	3.08397	0.03541		3.01534	3.15416

N=4099; number of countries=146
p-values are one-tailed

Table A.2: The effects of democracy aid on a recipient country's level of democracy. The first model reports the results based on the measure of democracy aid/GDP whereas the second model reports democracy aid per capita (log).

Covariate	Human Rights Aid as a Percent of GDP (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Human Rights Aid	99.51	35.45	0.005	30.04	168.99
Year	-0.04086	0.01337	0.002	-0.06706	-0.01465
GDP Per Capita (Log)	0.5359	0.08908	< 0.001	0.36132	0.71049
Population (Log)	-0.54291	0.09164	< 0.001	-0.72252	-0.3633
Land Area (Sq. Km)	3.38E-08	6.66E-08	0.612	9.67E-08	1.64E-07
Ethnic Fractionalization	0.6181	0.49172	0.209	-0.34565	1.58185
Polity2	0.0717	0.00921	< 0.001	0.05365	0.08976
Polity2 (squared)	0.00682	0.00206	0.001	0.00279	0.01086
Ros soil	0.00055	0.00466	0.906	-0.00858	0.00968
Constant	90.22744	26.48926	0.001	38.30944	142.1454
Variance components	Coefficient	S.E.		95 % C.I.	
In rate of change	0.13489	0.01		0.11663	0.15601
In initial status	268.7082	19.945		232.3272	310.7862
Covariance	-0.99999	2.49E-06		-0.99999	-0.99998
Within-country	1.0952	0.01737		1.06168	1.12977
N=2273; number of countries=140					
p-values are one-tailed					

Covariate	Human Rights Aid per Capita (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Human Rights Aid	0.33324	0.10484	0.001	0.12775	0.53873
Year	-0.03068	0.00460	< 0.001	-0.03969	-0.02166
GDP Per Capita (Log)	-0.00287	0.00262	0.273	-0.00802	0.00227
Population (Log)	-0.49576	0.08451	< 0.001	-0.66139	-0.33013
Land Area (Sq. Km)	2.49E-08	6.39E-08	0.697	-1.00E-07	1.50E-07
Polity2	0.08350	0.007	< 0.001	0.06978	0.09722
Polity2 (squared)	0.01171	0.00139	< 0.001	0.00899	0.01444
Ros soil	0.00166	0.00291	0.568	-0.00404	0.00736
Constant	73.13801	8.85447	< 0.001	55.78357	90.49245
Variance components	Coefficient	S.E.		95 % C.I.	
In rate of change	0.00043				
In initial status	0.87544				
Covariance	0.22753				
Within-country	1.28750				
N=2973; number of countries=145					
p-values are one-tailed					

Table A.3: The effects of human rights aid on the level of respect for physical integrity rights. The first model reports the results based on the measure of human rights aid/GDP whereas the second model reports human rights aid per capita (log).

Covariate		Conflict Aid as a Percent of GDP (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.		
Conflict Aid	101.19	456.1208	0.824	-792.7903	995.1703	
Year	1.04265	0.27063	< 0.001	0.51222	1.57308	
GDP Per Capita (Log)	-1.46356	1.85192	0.429	-5.09326	2.16614	
Population (Log)	1.43363	1.60514	0.372	-1.71238	4.57963	
Polity 2	-0.10457	0.26175	0.690	-0.61759	0.40846	
Polity 2 (squared)	-0.12416	5.22E-02	0.017	-0.22645	-0.02187	
Press Freedom	36.07133	6.04649	< 0.001	24.22044	47.92223	
Constant	-2064.27200	533.32310	< 0.001	-3109.56600	-1018.97800	
Variance components		Coefficient	S.E.	95 % C.I.		
In rate of change	2.60215	0.20418		2.23123	3.03475	
In initial status	5127.611	403.1837		4395.266	5981.981	
Covariance	-0.99999	2.24E-06		-1.00000	-0.99999	
Within-country	40.93941	0.61136		39.75852	42.15537	
N=2478; number of countries=120						
p-values are one-tailed						

Covariate		Conflict Aid per Capita (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.		
Conflict Aid	10.96862	4.96836	0.027	1.23082	20.70643	
Year	1.01580	0.26987	< 0.001	0.48686	1.54473	
GDP Per Capita (Log)	-1.16737	1.81263	0.520	-4.72006	2.38532	
Population (Log)	1.61926	1.59352	0.310	-1.50398	4.74250	
Polity 2	-0.13650	0.26144	0.602	-0.64892	0.37591	
Polity 2 (squared)	-0.12656	0.052032	0.015	-0.22854	-0.02458	
Press Freedom	36.06400	6.02374	< 0.001	24.25769	47.87032	
Constant	-2016.71300	531.94660	< 0.001	-3059.30900	-974.11670	
Variance components		Coefficient	S.E.	95 % C.I.		
In rate of change	2.59965	0.20321		2.23038	3.03007	
In initial status	5123.123	401.303		4393.986	5973.252	
Covariance	-0.99999	2.21E-06		-1.00000	-0.99999	
Within-country	40.90519	0.61072		39.72554	42.11986	
N=2479; number of countries=121						
p-values are one-tailed						

Table A.4: The effects of conflict prevention and reconstruction aid on the number of terrorist events per capita. The first model reports the results based on the measure of conflict aid/GDP whereas the second model reports conflict aid per capita (log).

Covariate	Environment Aid as a Percent of GDP (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Environment Aid	57.97	11.82	< 0.001	34.79	81.13
Year	0.35736	0.01475	< 0.001	0.32844	0.38627
GDP Per Capita (Log)	1.43081	0.11292	< 0.001	1.2095	1.65212
Population (Log)	0.42238	0.1082	< 0.001	0.21031	0.63446
Polity 2	-0.26022	0.01775	< 0.001	-0.29499	-0.22545
Polity 2 (squared)	0.02275	3.95E-03	< 0.001	0.01500	0.03049
Land Area (Sq. Km)	-3.56E-07	8.83E-08	< 0.001	-5.29E-07	-1.83E-07
Ros Soil	0.04625	0.00721	< 0.001	0.03212	0.06038
NW State	1.87935	0.86844	0.030	0.17725	3.58145
Instability	0.90220	0.22729	< 0.001	0.45672	1.34768
Constant	-709.99750	29.25266	< 0.001	-767.33170	-652.66330
Variance components					
	Coefficient	S.E.		95 % C.I.	
In rate of change	0.14317	0.01329		0.11935	0.17173
In initial status	285.3006	26.45234		237.8929	342.1558
Covariance	-0.99999	3.76E-06		-0.99999	-0.99998
Within-country	4.93062	0.05247		4.82885	5.03454
N=4880; number of countries=147					
p-values are one-tailed					

Covariate	Environment Aid per Capita (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.	
Environment Aid	0.48428	0.18108	0.007	0.12936	0.83920
Year	0.36537	0.01458	< 0.001	0.33680	0.39395
GDP Per Capita (Log)	0.00259	0.00867	0.765	-0.01440	0.01959
Population (Log)	0.31470	0.11996	0.009	0.07958	0.54982
Polity 2	-0.20104	0.01739	< 0.001	-0.23513	-0.16695
Polity 2 (squared)	0.04361	0.00372	< 0.001	0.03631	0.05091
Land Area (Sq. Km)	-3.16E-07	9.70E-08	0.001	-5.06E-07	-1.26E-07
Ros Soil	0.06037	0.00743	< 0.001	0.04581	0.07493
NW State	1.85079	0.88429	0.036	0.11762	3.58396
Instability	0.61865	0.22987	0.007	0.16811	1.06920
Constant	-715.11410	28.84862	< 0.001	-771.65630	-658.57180
Variance components					
	Coefficient	S.E.		95 % C.I.	
In rate of change	0.13681	0.013368		0.11296	0.16568
In initial status	272.5265	26.5987		225.077	329.9791
Covariance	-0.99998	5.46E-06		-0.99999	-0.99997
Within-country	5.00231	0.05301		4.89948	5.10729
N=4882; number of countries=148					
p-values are one-tailed					

Table A.5: The effects of clean environment aid on the amount of CO₂ emissions (in metric tons) per capita. The first model reports the results based on the measure of clean environment aid/GDP whereas the second model reports clean environment aid per capita (log). Note that this table reports the effects of projects classified as clean, or those designed explicitly to protect the environment.

Covariate		Environment Aid as a Percent of GDP (3 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.		
Environment Aid	107.6614	7.65151	< 0.001	92.66476	122.6581	
Year	0.35266	0.01392	< 0.001	0.32538	0.37994	
GDP Per Capita (Log)	1.73896	0.1148	< 0.001	1.51395	1.96396	
Population (Log)	0.53224	0.10953	< 0.001	0.31756	0.74692	
Polity 2	-0.23831	0.01764	< 0.001	-0.27288	-0.20373	
Polity 2 (squared)	0.01900	0.00390	< 0.001	0.01136	0.02664	
Land Area (Sq. Km)	-3.75E-07	8.87E-08	< 0.001	-5.49E-07	-2.01E-07	
Ros Soil	0.04632	0.00714	< 0.001	0.03234	0.06031	
NW State	2.45608	0.85538	0.004	0.77956	4.13260	
Instability	1.10297	0.22391	< 0.001	0.66411	1.54183	
Constant	-705.07500	27.56884	< 0.001	-759.10900	-651.04110	
Variance components		Coefficient	S.E.	95 % C.I.		
In rate of change	0.13224	0.01278		0.10942	0.15982	
In initial status	263.5945	25.44824		218.1518	318.5034	
Covariance	-0.99999	4.35E-06		-0.99999	-0.99997	
Within-country	4.84788	0.05138		4.74821	4.94964	
N=4880; number of countries=147						
p-values are one-tailed						

Covariate		Environment Aid per Capita (6 years smoothed)				
Fixed Effects	Coefficient	S.E.	P	95 % C.I.		
Environment Aid	2.65192	0.13250	< 0.001	2.39223	2.91161	
Year	0.33466	0.01426	< 0.001	0.30671	0.36261	
GDP Per Capita (Log)	0.00441	0.00876	0.615	-0.01276	0.02157	
Population (Log)	0.39190	0.16703	0.019	0.06453	0.71927	
Polity 2	-0.19434	0.01903	< 0.001	-0.23163	-0.15704	
Polity 2 (squared)	0.03480	0.00393	< 0.001	0.02708	0.04251	
Land Area (Sq. Km)	-2.43E-07	1.32E-07	0.064	-5.01E-07	1.46E-08	
Ros Soil	0.06355	0.00756	< 0.001	0.04873	0.07836	
NW State	3.21606	0.85144	< 0.001	1.54727	4.88485	
Instability	0.72619	0.22184	0.001	0.29140	1.16099	
Constant	-656.88230	27.98372	< 0.001	-711.72930	-602.03520	
Var. components		Coefficient	S.E.	95 % C.I.		
In rate of change	0.13207	0.01323		0.10853	0.16072	
In initial status	262.66290	26.34456		215.78680	319.72200	
Covariance	-0.99995	0.00001		-0.99997	-0.99992	
Within-country	4.76879	0.05060		4.67063	4.86901	
N=4882; number of countries=148						
p-values are one-tailed						

Table A.6: The effects of environment aid on the amount of emissions (in metric tons) per capita. The first model reports the results based on the measure of environment aid/GDP whereas the second model reports environment aid per capita (log). Note that this table reports the effects of projects classified as dirty, or those that, once implemented, should have a negative effect on the environment.