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CORRUPTION AND INTERNATIONAL AID ALLOCATION: A COMPLEX DANCE

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This paper studies the relationship between donor governments' Official Development Assistance (ODA) decisions and corruption in recipient countries over the period 1999-2010. Previous studies found that donors do not penalize recipients on the basis of corruption. Using a rich panel data set, this paper estimates the effect of corruption on aid using donor-recipient fixed effects and disaggregating aid into sectors which may vary in sensitivity to corruption. Overall, there is a moderately significant, negative effect of corruption on aid. This relationship varies across sectors - corrupt recipients receive more humanitarian assistance and less production sector and social infrastructure aid.

Keywords: Official Development Assistance, Bilateral Aid Allocation, Corruption
JEL classification: F350

1. INTRODUCTION

Over the past two decades, foreign aid donations have climbed to record levels. Real dollar amounts of bilateral Official Development Assistance (ODA) have tripled, gaining international attention. Though the true relationship between aid and growth remains controversial, development economists have identified hindrances to effectiveness. For instance, aid may be viewed as a new "free" resource, spurring internal conflict over its possession (Moyo, 2009). Following similar logic, the potential to exploit this new resource creates a high incentive for the formation of bureaucracy. Meanwhile, recipient incentives to promote reform may be adversely affected by moral hazard whereby doing so could compromise future aid flows (Svensson, 2000). Other growth limiting byproducts of modern aid include Dutch disease, increased debt burdens and the diversion of the recipient government's attention away from its people and

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towards appeasement of donor countries (Moynihan, 2009).

The limiting factor to aid effectiveness studied in this paper is poor governance. Although present in many forms, economists primarily look at poor governance in the form of corruption. Corrupt practices in aid allocation often depreciate the portion of total aid reaching intended recipients or used for intended purposes. A corrupt government may retain part or all of an aid flow for private gain. Alternatively, unnecessary amounts of aid may be confiscated via bureaucratic allocation channels to "cover costs" of distribution. Worse still, political favoritism may come into play whereby a government administers all, or a greater portion of aid to its supporters. Recently, former Presidents of both Zambia and Malawi have been charged with embezzling millions of dollars of public funds during their terms in the late 1990s and early 2000s (Kapembwa, 2013; RTT News, 2011). In the relatively extreme case of Somalia, protests have broken out over the corruption in food aid allocation (Shabelle Media Network, 2011).

Monitoring may appear to be the obvious donor solution to these scenarios. However, a monitoring strategy can be very expensive, providing a disincentive to allocate aid to countries where it is deemed necessary. Smaller donor countries, or those investing relatively little in a given recipient may not find this venture worthwhile. Despite contention in the aid effectiveness debate and the clear centrality of recipient corruption to aid effectiveness, we do not have unbiased estimates of its effect on donor aid allocation decisions.

The diverse and expansive scope of factors influencing modern aid allocation necessitates an empirical examination of this question. Fortunately, rich and comprehensive data has been maintained, enabling such an approach. The OECD maintains data on bilateral aid in aggregate, as well as at the sector level. In the past, economists have made overly simplifying assumptions, compromising their conclusions. Fatally, they assume corruption's interaction with aid does not vary across sectors. The analyses presented in this paper invalidate this assumption, and provide valuable new insight. An extensive review of the literature bares one other manuscript attempting a similar sector level analysis. However, author Sarah Bermeo critically failed to control for endogeneity in her model. This study produces improved estimates of the true relationship between corruption and ODA allocation, allowing for variation by distinct sectors of aid as well as by donor country, while controlling for endogeneity between aid and corruption using fixed effects econometric analysis. Specifically, this study estimates the effect of a recipient's World Bank Control of Corruption score on 1999-2010 aggregate and disaggregated bilateral ODA allocation decisions of 23 developed donor countries amongst 180 recipients, controlling for recipient need and donor interest variables. Results show that overall, countries with higher levels of corruption receive less Official Development Assistance. Disaggregating ODA, more corrupt countries receive less production sector and social infrastructure aid, but more humanitarian assistance. Further, high levels of corruption are associated with recipients receiving a higher percentage of their total ODA as humanitarian assistance from a given

country in a given year.

2. AID AND CORRUPTION

2.1. Literature

The emergence of good governance, which corruption seeks to measure, in the aid allocation conversation represented a disruption to the dualistic, donor interest and recipient need framework of the 20th century. Motivation for this addition may be attributed to the controversial work of Burnside and Dollar in the late 1990s. Instrumental to the aid-growth nexus literature, the paper used measures of budget surplus, inflation and openness to form a "policy" explanatory variable. While the authors echoed the common sentiment that overall, aid has little effect on growth, they concluded that good policy environments enable a more positive impact (Burnside and Dollar, 1997). Sensationalized by the media and reverberated throughout international policy organizations, the weight of this assertion came to a head in the World Bank's 1998 report stressing the possibility for enhanced efficacy of aid if resources were directed toward supportive, good policy environments (World Bank, 1998). Skepticism of the Burnside and Dollar results soon surfaced in the economics community, as Easterly found their results deteriorated under simple robustness checks (Easterly, 2003).

Despite the manifest failings of Burnside and Dollar's work, good governance received continued international focus as a predictor of aid effectiveness. The United States Millennium Challenge Account and "The White Paper on Irish Aid" of 2006, for example, each pledged funding prioritization of soundly governed countries (Government of Ireland, 2006; Nowels, 2003). Though the relationship between aid and growth falls outside the scope of the present study, the fervent debate surrounding the role of good governance and its policy implications motivate such empirical analysis. OECD countries and the multilateral institutions they allocate funds to tout the importance of governance measures in allocation decisions, but comprehensive empirical analysis is necessary to discern pretense from reality.

While economist Eric Neumayer expanded and solidified the argument for including comprehensive governance measures in explaining donor aid allocations, his 2003 pooled OLS analysis painted an incomplete picture clouded by endogeneity. Looking solely at aggregate aid data, Neumayer's methods yielded mixed results across donors and measures of governance. Low corruption, one of those measures, was largely insignificant in the context of the study (Neumayer, 2003). Throughout the decade, evidence for the impact of governance measures on aggregate aid decisions in a self-proclaimed, highly sensitive policy community remained inconclusive. Alesina and Dollar found that while democracy and democratization were significantly rewarded with increased bilateral aid allocations, civil liberties and rule of law were not (Alesina

and Dollar, 2000). Meanwhile, two prominent studies found that human rights abuses were not punished by bilateral donors (Tijen and Moskowitz, 2009; Lebovic, 2009). More specifically aligned to this paper, Alesina and Weder found no evidence that corrupt governments received less aid at the aggregate level using seven indicators of corruption from six different sources (Alesina and Weder, 2002).

Sarah Bermeo made the first attempt to examine allocation decisions at the sector level. A more complete picture of the Corruption-ODA allocation nexus emerged, allowing estimates to vary by distinct aid sectors. However, these estimates used pooled OLS and tobit regressions to relieve endogeneity. Results were framed as a concession to corruption signaling both need and capacity to effectively exploit aid inflows, leaving the pure relationship between corruption and allocation decisions elusive (Bermeo, 2006).

Concern arises out of the expectation of correlation between a corruption variable and omitted recipient need variables. Given the innumerable factors comprising recipient need, it is unreasonable to expect any limited collection of variables will fully describe it. Running fixed effects regressions teases the recipient need signal out of corruption measures, presumably leaving only the capacity to fairly distribute and effectively absorb foreign aid flows. This issue is discussed in more detail in the methodology section. Through enhanced techniques, this study measures the true effect of corruption on aggregate aid flows, disaggregated aid flows by sector, and relative portions allocated to each sector in a modern context. To the best of my knowledge, this study is the first to produce sector specific estimates free from endogeneity, leaving us with a sharp and complete picture of how donors use recipient corruption signals in their aid allocation decisions.

2.2. A Disaggregated Model

To provide better insight to the need for disaggregation of ODA in studying aid and corruption, consider the donor, recipient aid relationship in a game theoretical context where donor *i* and recipient *j* represent players in a repeated game. A donor government's utility may be modeled as a function of altruistic measures of return on investment, comprised of immediate relief from inhumane circumstances and long-run growth in recipient countries, political interest outcomes, and transaction costs. A recipient government's utility may be modeled as a function of personal gain for those in power, including aid flows' ability to keep a party in power and personal income, as well as societal gains. Each donor's set of actions includes how much to allocate to a recipient, and in what form. Each recipient's set of actions includes decisions about distributing aid received and related behaviors.

Adhering to this framework, donor countries may use their perceptions of corruption level in a recipient country to gauge the return on investment to aid infusions. Simply aggregating all types of aid and examining the effect of corruption on total ODA allocation does not fully describe the relationship of interest. Since no player can

achieve higher utility payoffs by unilaterally deviating from the Nash Equilibrium outcome, it can be inferred that donor countries will use all tools at their disposal to maximize their utility given that recipients will maximize their utility in all subsequent moves. Given the higher transaction costs and lower prioritization of societal gains presumably associated with more corrupt recipients, lower levels of total ODA may be allocated to such recipients. However, limiting perceptions regarding corruption to influencing ODA only at the aggregate level is insufficient.

Proposing a causal relationship exists between recipient corruption and higher weight placed on personal gain relative societal gain, donor governments may use sector allocation to dampen the adverse impact of such prioritization on the return on investment portion of their utility function. Considering sectors geared towards development, a substitution effect emerges whereby donors allocate more aid to less corrupt recipients, realizing that a higher portion of their donation will reach intended recipients and have the intended compounding effects. This policy of maximizing donor utility attributable to inspiring long-term growth across a donor's entire recipient portfolio would produce a negative relationship between corruption and aid allocation in these sectors. However, humanitarian aid may not see this effect. Denying development assistance on the basis of poor governance seems logical, whereas denying humanitarian assistance, such as food aid, seems cruel. In fact, in severe humanitarian crises, the opposite may occur. Donors may deduce that countries with high levels of corruption deliver lower portions of aid to intended recipients and have diminished capacity to use the income effectively, inspiring them to allocate more aid with the hopes that adequate funding reaches the people in need. Such a policy would maximize a donor's utility function, given the anticipated subsequent actions of recipients, through its impact on amelioration of human deficiencies. Therefore a nonexistent or even positive relationship between corruption and aid allocation may exist in the humanitarian sector. A full, pure picture of the relationship between recipient corruption and donor aid allocation must be achieved through sector specific analysis, with consideration for the endogeneity of corruption and an understanding of the donor interest and receipt need factors' influence in the donor decision making process.

3. EMPIRICAL RESULTS

3.1. Methodology

This study measures the effects of donor interest, recipient need and corruption on aid allocation decisions at the donor, recipient, year level. Controls have been selected in line with previous studies, while corruption is the sole variable of interest. Separate sets of regressions are run for dependent variables: total aid, sector specific aid, and sector specific aid as a percentage of total aid from a given donor to a given recipient in a given year. The sectors reported are humanitarian aid, economic infrastructure and services,

social infrastructure and services, production sector aid, commodity and general budget assistance, and action related to debt. Each set of regressions includes pooled OLS and fixed effects regressions with standard errors clustered at the donor level.

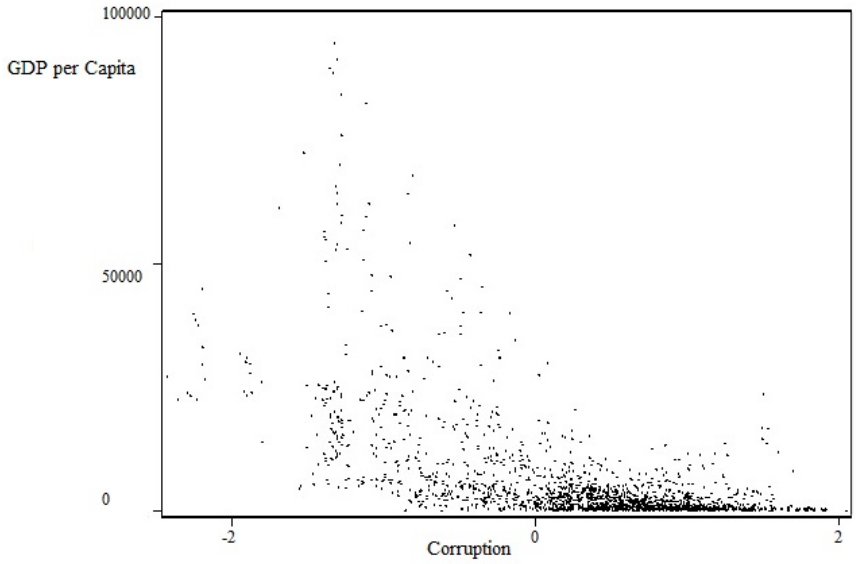
I begin by estimating a standard pooled OLS equation:

$$ODA_{ijt} = \theta + \alpha r_{ijt} + \beta t_{jt} + \lambda w_{it} + \delta x_{ij} + \Psi y_i + \xi z_t + c_{it} + u_i + \varepsilon_{ijt},$$

i : recipient, j: donor, t: time,
θ : Constant,
r_{ijt} : Percent Imports, U.S. Military Interest,
t_{jt} : Donor GDP,
w_{it} : Refugees, Natural Disasters, Civil War, Population, Democracy, Corruption, Recipient GDP,
x_{ij} : Colony, UN Voting Similarity,
y_i : Energy, Region,
z_t : Year,
c_{it}, u_i : Omitted recipient need variables,
ε_{ijt} : Composite error term.

In addition to aggregate regressions, separate pooled OLS and fixed effects regressions are run for each donor and estimates on the corruption variable are reported. In each regression, all time variant explanatory variables are lagged by one year. Given that the dependent variables represent donor commitments, using lagged independent variables most accurately reflects the decision making environment of donors. The logs of population, recipient GDP, donor GDP, refugee, natural disaster, U.S. military interest, and aid (with the exception of sector percentages) variables are taken to follow convention, and variables with zeroes are summed with one first.

While recipient need variables align with previous works, it is unlikely that this specification captures all aspects of recipient need holding explanatory power for ODA allocation decisions. As such, omitted recipient need variables represented by c_{it} and u_i in the above equation bias pooled OLS estimates. Using random effects regression analysis may yield improved estimates by correcting for omitted, individual random effects. Unfortunately, while random effects allows for estimation of time-invariant factors, intuition supports bias derived from the relationship between corruption and omitted recipient need variables. To corroborate suspicions of the presence of an underlying need signal in the corruption variable, it is correlated with GDP per capita, a historical indicator of recipient need, in Figure 1. Since corruption varies very little within country over the period of this study, it can be reasonably concluded that the recipient need factors picked up in the corruption variable are time invariant.



Source: Author's calculations from data defined in Section 3.1.

Figure 1. GDP per Capita vs. Corruption

Returning to the above equation, a correlation between unobserved u_i and observed w_{it} can be inferred, effectively violating the random effects assumption $E(X_{ijt}|u_i) = 0$ where X_{ijt} represents all explanatory variables. Fixed effects relaxes this assumption, requiring only that $E(\varepsilon_{ijt}|X_{ijt}, u_i) = 0$. There is no apparent violation of this condition. Hausman tests comparing fixed effects estimates to OLS and random effects estimates from total ODA regressions lend validity to the selection of fixed effects (Table 1 and Table A2). By using fixed effects, unbiased estimates are achieved and recipient need signals are teased out of the corruption variable, isolating the desired good governance signal.

Lagging the explanatory variables and employing fixed effects circumvents the complication of using instrumental variables to solve the endogeneity problem. In the past, economists have raised concerns about the potential feedback effect that past aid flows could have on future recipient income and trade variables. It has been argued that this combined with the possibility of future levels of aid being correlated with past levels of aid in a donor, recipient pair warranted use of instruments. Given the lagged structure of equations, feedback from aid one year prior on explanatory variables in the following year's aid regression would infer a contemporaneous, positive effect of aid on income. Since foreign aid is not included in GDP calculations, this would imply immediate compounding of the economic effects of aid flows, which is contended even given appropriate reaction time. If the conversation moves to a feedback effect of aid flows

more than one year back, then it can be inferred that the donor has a history of giving a particular level of aid to a given recipient, which would be effectively controlled for by fixed effects.

Table 1. Hausman Test (Fixed Effects v. OLS): Total ODA

Explanatory Variable	Fixed Effects	Pooled OLS	Difference	S.E.	W	P<
Refugees	0.0317	0.0209	0.0108	0.0075	1.4337	0.2500
Natural Disasters	0.0017	0.0082	-0.0065	0.0011	-5.7104	0.0250
Civil War	0.0498	0.0259	0.0239	0.0298	0.8013	0.5000
Population	0.5684	0.2262	0.3423	0.2574	1.3299	0.2500
Democracy	0.1023	0.1080	-0.0057	0.0205	-0.2760	0.7500
Corruption	-0.0585	0.0957	-0.1541	0.0451	-3.4212	0.1000
Recipient GDP	-0.0672	-0.2568	0.1897	0.0452	4.1960	0.0500
Percent Imports	-0.6682	2.5084	-3.1766	1.1449	-2.7745	0.1000
U.S. Military Interest	2.3090	1.3789	0.9301	0.2943	3.1600	0.1000
Donor GDP	-0.0161	0.5409	-0.5570	0.0333	-16.7279	0.0050
2001	0.0336	0.0676	-0.0340	0.0113	-3.0135	0.1000
2003	0.0923	0.1352	-0.0430	0.0196	-2.1871	0.2500
2004	0.1092	0.1208	-0.0116	0.0250	-0.4641	0.5000
2005	0.2115	0.2128	-0.0013	0.0316	-0.0406	0.9000
2006	0.2169	0.2835	-0.0666	0.0382	-1.7449	0.2500
2007	0.1952	0.3325	-0.1373	0.0458	-2.9991	0.1000
2008	0.2602	0.4250	-0.1648	0.0535	-3.0814	0.1000
2009	0.2511	0.4745	-0.2235	0.068	-3.6171	0.1000
2010	0.2473	0.4931	-0.2458	0.0637	-3.8565	0.0500

Source: Author's calculations from data defined in Section 3.1.

Notes: P-value thresholds: 0.7500, 0.5000, 0.2500, 0.1000, 0.0500, 0.0250, 0.0100, 0.0050. Test: Ho: Difference in coefficients not systematic, $\chi^2(18) = 620.59$, Prob > $\chi^2 = 0.000$.

3.2. Data Description

To achieve a clear picture of the relationship between recipient corruption and donor aid allocation, this study requires rich foreign aid data in a donor, recipient, year format, a comprehensive and time-variant measure of corruption, as well as an illuminating set of donor interest and recipient need variables. ODA, defined as "official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 percent" serves as this study's dependent variable (OECD, 2003). By convention, ODA flows comprise contributions by donor government agencies at all development levels to developing countries (bilateral) and to multilateral

institutions. Data used are commitments, not actual disbursements, and are in 2010 constant USD. The data spans 23 donor countries and 180 recipient countries from 1999-2010.

Table 2. Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Total ODA	66,240	14.872	111.895	0	10,835.460
Humanitarian	66,240	1.081	14.978	0	2,010.827
Economic	66,240	2.792	39.918	0	4,065.455
Social	66,240	5.381	41.257	0	3,918.562
Production	66,240	1.113	13.105	0	1,056.305
Commodity	66,240	1.014	16.726	0	1,700.173
Debt	66,240	2.247	49.506	0	5,185.363
Refugees	43,033	157,082	423,735	0	4,744,098
Natural Disasters	60,720	1,375,470	13,800,000	0	342,000,000
Civil War	66,171	0.137	0.344	0	1.000
Population	65,872	28,800,000	126,000,000	1,466	1,330,000,000
Democracy	55,568	4.113	1.859	1.000	7.000
Energy	66,240	0.128	0.334	0	1.000
Corruption	44,528	0.306	0.791	-2.418	2.057
Recipient GDP	61,525	5,917	10,344	81.556	94,498
Percent Imports	46,590	0.006	0.025	0	0.470
U.S. Military Interest	66,240	0.005	0.038	0	0.575
Donor GDP	66,240	63,991	65,279	15,329.340	529,189
Colony	64,496	0.032	0.176	0	1.000
UN Voting Similarity	54,464	0.461	0.193	-0.461	0.974

Source: Author's calculations from data defined in Section 3.1.

Notes: Recipient and Donor GDP represent GDP per capita. ODA is expressed in USD millions per year.

Donor interest, recipient need, good governance and donor resource factors are used to explain aggregate and disaggregated ODA receipts. Good governance is represented by the paper's variable of interest, corruption. The corruption variable exhibits substantial variation across recipients, and though variations within recipient across time are much less pronounced, they do add value to the analysis. Nigeria for example, for whom the world has a rather tainted image, garnered scores ranging from 0.81 to 1.33 on a scale of -2.5 (least corrupt) to 2.5 (most corrupt) over the years of this study. Year dummies and donor GDP are included to capture donor resources and other influential factors unrelated to individual recipient characteristics. Donor interest variables include measures of democracy, U.S. military interest, colonial history, UN Voting Similarity and regional dummies. Recipient need variables include measures of refugee populations,

natural disasters, civil war, population, and recipient GDP. An energy richness variable is included and likely picks up both recipient need and donor interest signals. For summary statistics, see Table 2. For complete explanations of variables and the forms used in regression analysis, see the Appendix.

3.3. Estimation Results

Table 3 reports the first set of regressions examining total ODA from all 23 donor countries to all 180 recipient countries. Fixed effects results show that higher levels of corruption are significantly punished by donors. A one standard deviation increase in the recipient corruption variable is associated with 0.033 standard deviation decrease in total ODA allocated by all donors. This is in contrast to OLS estimates (Appendix), which have the opposite sign. Fixed effects results also show support for both selfish and altruistic influences, revealing that sheltering a greater number of refugees, being in a civil war, having a larger population, being more democratic, and receiving a greater share of the United States' military assistance yielded positive returns to the amount of total ODA a developing country receives in a given year. These results agree with previous works, lending validity to the model. Meanwhile, recipients with greater GDP per capita receive lower levels of total ODA. All of these explanatory variables are independently significant holding all else constant. Natural disaster occurrences, the percent of a donor country's imports produced by a given recipient, and donor GDP all come up insignificant. Differences amongst donors in relative significance of recipient need and donor interest variables may be attributed to differing intrinsic motivations. Previous studies have classified different donors as primarily altruistic, strategic, or efficiency driven (Berthélemy, 2006; Isopi and Mattesini, 2008).

Table 3 disaggregates ODA into six sectors and employs fixed effects techniques to examine sector specific aid decisions of donors in total. Results show a negative return to higher levels of corruption on level of production sector and social infrastructure ODA allocated by donors as a whole, and a positive effect on humanitarian aid. More specifically, a one standard deviation increase in the recipient corruption variable is associated with a 0.053 standard deviation decrease in production sector ODA, a 0.055 standard deviation decrease in social infrastructure ODA and a .033 standard deviation increase in humanitarian ODA. This corroborates use of corruption as an indicator of recipients' capacity to use aid effectively towards the long-term betterment of the target population. We may attribute these revealed preferences to the production and social infrastructure sectors being more oriented toward long-term projects and growth, and thus more heavily reliant on donor institutions and government involvement as compared with commodity, humanitarian and debt relief. Humanitarian aid, geared toward satisfying the most basically human and immediate needs, logically is not discriminated against on the basis of corruption. In fact, corruption is complemented with higher portions of humanitarian aid as a percentage of total aid received. This suggests that donors may realize the lower capacity of corrupt governments to

effectively absorb and fairly distribute aid, and overcompensate in this sector, ceteris paribus.

Table 3. Fixed Effects Regressions: Disaggregated ODA

Explanatory Variable	Total	Humanitarian	Economic	Social	Production	Commodity	Debt
Refugees	0.0317***	0.0366***	0.0028	0.0130***	0.0018	0.0036	0.0086***
	[0.0053]	[0.0097]	[0.0038]	[0.0042]	[0.0032]	[0.0026]	[0.0027]
Natural	0.0017	0.0020**	0.0008	-0.0005	-0.0001	0.0005	0.0002
Disasters	[0.0012]	[0.0009]	[0.0008]	[0.0011]	[0.0006]	[0.0007]	[0.0008]
Civil War	0.0498**	0.1334***	-0.0132	0.0031	0.0042	-0.0259	-0.0188
	[0.0213]	[0.0247]	[0.237]	[0.0187]	[0.0184]	[0.0160]	[0.0245]
Population	0.5684*	04248**	0.1698	0.6772**	0.4206**	0.4906**	-0.3863**
	[0.2855]	[0.1530]	[0.2115]	[0.2431]	[0.1791]	[0.2374]	[0.1841]
Democracy	0.1023***	-0.0110	0.0523***	0.0821***	0.0350**	0.0185**	0.0474***
	[0.0159]	[0.0074]	[0.0162]	[0.0821]	[0.0130]	[0.0086]	[0.0108]
Corruption	-0.0585**	0.0238**	-0.0326	-0.0755***	-0.0401**	-0.0042	0.0240
	[0.0282]	[0.0106]	[0.0209]	[0.0252]	[0.0158]	[0.0195]	[0.0196]
Recipient	-0.0672*	-0.2150***	0.0130	-0.0094	0.0088	-0.0867***	0.0322***
GDP	[0.0355]	[0.0308]	[0.0153]	[0.0293]	[0.0152]	[0.0305]	[0.0114]
Percent	-0.6682	1.0113**	-1.9750*	-0.0650	-1.4956*	-0.1690	-0.3090
Imports	[0.7130]	[0.4793]	[0.9659]	[0.7434]	[0.8248]	[0.4617]	[0.2515]
U.S. Military	2.3090***	0.9553***	0.6104*	1.9590***	0.8913***	0.3222	1.4459***
Interest	[0.4282]	[0.2867]	[0.3418]	[0.3850]	[0.3046]	[0.2294]	[0.3822]
Donor	-0.01621	0.0726**	-0.0121	-0.0596	-0.0161	-0.0506**	0.1020
GDP	[0.0624]	[0.0288]	[0.0444]	[0.0438]	[0.0307]	[0.0205]	[0.0712]
R-Squared	0.1140	0.0873	0.0356	0.0849	0.0466	0.0116	0.0022
No. of Ob.	25838	25838	25838	25838	25838	25838	25838

Source: Author's calculations from data defined in Section 3.1.

Notes: Year and constant estimates not reported. * = Significant at the 10% level, ** = Significant at the 5% level, *** = Significant at the 1% level. Brackets contain robust standard errors.

Table 4 disaggregates ODA into six sectors and employs fixed effects techniques to examine portions of total aid received by a given recipient from a given donor allocable to each of the six sectors of aid. Results show more corrupt recipients receive greater portions of their aid as humanitarian assistance. Moreover, a one standard deviation increase in the recipient corruption variable is associated with a 0.068 standard deviation increase in the portion of aid received as humanitarian assistance.

Table 4. Fixed Effects Regressions: Disaggregated ODA (% of Total)

Explanatory Variable	Total	% Humanitarian	% Economic	% Social	% Production	% Commodity	% Debt
Refugees	0.0317***	0.0099***	-0.0019	-0.0068***	-0.0014	0.0005	0.0018**
	[0.0053]	[0.0020]	[0.0017]	[0.0024]	[0.0010]	[0.0007]	[0.0009]
Natural	0.0017	0.0008*	0.0001	-0.0013**	0.0001	0.0003	0.0000
Disasters	[0.0012]	[0.0004]	[0.0003]	[0.0006]	[0.0003]	[0.0002]	[0.0003]
Civil War	0.0498**	0.0551***	-0.0008	-0.0150	-0.0068	-0.0001	-0.0126***
	[0.0213]	[0.0095]	[0.0037]	[0.0099]	[0.0055]	[0.0037]	[0.0038]
Population	0.5684*	0.0015	0.0092	0.2278**	0.0383	0.0157	-0.1601**
	[0.2885]	[0.0705]	[0.0558]	[0.0918]	[0.0527]	[0.0371]	[0.0738]
Democracy	0.1023***	-0.046**	0.0094**	-0.0014	-0.0025	0.0038	0.0109***
	[0.0159]	[0.0054]	[0.0034]	[0.0053]	[0.0035]	[0.0031]	[0.0021]
Corruption	-0.0585**	0.0238***	-0.008	-0.0046	-0.0031	-0.0010	0.0037
	[0.0282]	[0.0238]	[0.0117]	[0.0130]	[0.0081]	[0.0048]	[0.0040]
Recipient	-0.0672*	-0.0675***	0.0082	0.0625***	0.0109	-0.0369**	0.0203***
GDP	[0.0355]	[0.0098]	[0.0054]	[0.0184]	[0.0109]	[0.0134]	[0.0040]
Percent	-0.6682	0.5409**	-0.3923	0.0908	-0.1230	0.0728	-0.1480
Imports	[0.7130]	[0.2036]	[0.2513]	[0.3753]	[0.1532]	[0.0981]	[0.0059]
U.S. Military	2.3090***	-0.2431***	-0.1090**	0.0280	0.0679*	0.0164	0.3722***
Interest	[0.4282]	[0.0801]	[0.0499]	[0.1134]	[0.0385]	[0.0330]	[0.0982]
Donor	-0.0161	0.0213	0.0032	0.0266	-0.0188*	-0.0154**	0.0263
GDP	[0.0624]	[0.0135]	[0.0065]	[0.0313]	[0.0091]	[0.0067]	[0.0215]
R-Squared	0.1140	0.0794	0.0045	0.0012	0.0010	0.0153	0.0001
No. of Ob.	25838	18083	18083	18083	18083	18083	18083

Source: Author's calculations from data defined in Section 3.1.

Notes: Year and constant estimates not reported. * = Significant at the 10% level, ** = Significant at the 5% level, *** = Significant at the 1% level. Brackets contain robust standard errors.

This study allows for relationships between dependent variables total ODA, sector ODA, and sector percentages and explanatory variables to vary by donor using pooled OLS and fixed effects estimation methods. Only the coefficients on the variable of interest, corruption, are reported in Table 5. Unfortunately, the standard errors suffer given the small number of observations in each regression. Fixed effects regressions show that Denmark, Greece, Ireland, Japan and Sweden punish corruption with lower levels of total aid. Meanwhile, New Zealand and the UK give more total ODA to recipients with higher levels of corruption. The corruption measure has no effect on Australia, Austria, Belgium, Canada, Finland, France, Germany, Italy, Korea, Luxembourg, the Netherlands, Norway, Portugal, Spain, Switzerland, and the U.S. In disaggregating ODA I infer that economic infrastructure, social infrastructure, and production sector aid are geared toward longer term growth and hence rely more on the

capacity of recipient governments, while humanitarian aid, commodity aid and debt relief are more short-term oriented. Humanitarian aid may present a special case in that poor institutions and low capacity for ODA absorption may incentivize higher levels of aid to provide necessary relief from inhumane circumstance. Following these guidelines, there is at least partial support for use of corruption as a signal for capacity in allocation decisions by Belgium, Ireland, Japan, The Netherlands, Portugal, Sweden, The UK and The U.S in Table 5. I concede that these guidelines are overly general. Differing interpretations, as well as donor sensitivity towards corruption may explain other differences across donors. Previous research has speculated on the impact of donor corruption on this sensitivity (Schudel, 2008).

4. CONCLUSION

This study has expanded upon the current body of aid allocation literature by reaffirming the influence of recipient need and donor interest across the period 1999-2010, and clarifying the effect of corruption. This work uses fixed effects techniques to narrow the interpretation of corruption in aid allocation decisions from signaling both recipient need and capacity to effectively absorb aid to just the latter. Fixed effects results show that in total, donors punish high corruption with lower levels of total ODA. Disaggregating ODA into the OECD's defined sectors, results show support for the hypothesis that donors use corruption perceptions differently in allocating different types of aid. On the whole, donors give more corrupt recipients more humanitarian assistance, and less production sector and social infrastructure aid. Further, corrupt recipients receive a higher percentage of their total aid as humanitarian aid. This paper proposes that donors perceive production sector and social infrastructure aid as geared toward longer term growth, relying more heavily on recipient government interference and quality institutions. Therefore, they use corruption as a signal of the recipients' capacity to compound the benefits of such aid. In contrast, humanitarian aid is geared towards the immediate amelioration of suffering derived from unmet human needs. Anticipating the ineffectual administration of resources in corrupt countries, donor governments may actually compensate, awarding higher levels of humanitarian assistance to more corrupt recipients. Understanding how different donors interpret and use the corruption signal gets murky. While it is clear from analysis that there are significant differences across donors, it is difficult to draw clear conclusions and this area warrants further investigation. An important consequence of this study is the substantiation of the argument that donors emphasize immediate relief in donations to more corrupt countries, forgoing investments in long-term growth and potentially perpetuating a vicious cycle of aid dependence. The exploration of the means toward an aid environment of enhanced efficacy and morality is poignantly left for future research.

Table 5. Fixed Effects Regressions by Donor Country

Dependent Variable	Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Japan
Total	-0.0449	0.0487	0.0027	-0.0826	-0.2794**	-0.0747	-0.0375	-0.110	-0.0971*	-0.15615**	0.0446	-0.2819*
	[0.0772]	[0.1026]	[0.1049]	[0.1225]	[0.1256]	[0.0728]	[0.1303]	[0.1155]	[0.0590]	[0.0610]	[0.1304]	[0.1625]
Humanitarian	0.0992	0.0274	-0.0118	0.0081	-0.0026	-0.0071	0.0458	0.0949	0.0047	-0.0520	0.0416	0.0051
	[0.0033]	[0.0394]	[0.0601]	[0.0850]	[0.0581]	[0.0485]	[0.0795]	[0.0824]	[0.0300]	[0.0505]	[0.0633]	[0.1060]
Economic	-0.0021	-0.0189	0.0643	0.0667	0.0463	-0.0198	-0.1026	-0.1078	0.0013	0.0070	0.0531	-0.0749
	[0.0505]	[0.0294]	[0.0836]	[0.0745]	[0.0905]	[0.0479]	[0.1337]	[0.1500]	[0.0173]	[0.0153]	[0.0704]	[0.1858]
Social	-0.0765	-0.0530	-0.2192***	-0.0498	-0.1724	-0.0990	-0.0303	-0.0471	-0.1124**	-0.1381***	0.0289	-0.3367**
	[0.0717]	[0.0470]	[0.0754]	[0.1186]	[0.1061]	[0.0628]	[0.0810]	[0.0990]	[0.0504]	[0.0482]	[0.0788]	[0.1401]
Production	0.0321	-0.0108	-0.0969	-0.0751	-0.1049	-0.0222	0.0807	0.0113	-0.0201	-0.0524*	0.0119	-0.1401
	[0.0531]	[0.0240]	[0.0612]	[0.1003]	[0.0764]	[0.0548]	[0.0948]	[0.0880]	[0.0185]	[0.0278]	[0.6292]	[0.1197]
Commodity	0.0733	-0.0119	0.0910**	-0.1086	0.0198	-0.0280	0.0035	-0.0729	0.0021	0.0155	-0.0646	-0.2380*
	[0.0573]	[0.0153]	[0.0408]	[0.0699]	[0.0540]	[0.0355]	[0.0985]	[0.0827]	[0.0063]	[0.0283]	[0.0632]	[0.1259]
Debt	0.0417	0.0551	0.1661*	0.0361	-0.0382	0.0291	0.0832	0.0105			0.0016	0.3291*
	[0.0075]	[0.0911]	[0.0972]	[0.0812]	[0.0531]	[0.0278]	[0.1511]	[0.1526]			[0.1249]	[0.1689]
%Humanitarian	0.0285	0.0159	-0.0116	-0.0099	0.0427	0.0423	0.0109	0.0194	-0.0090	0.0579	0.0174	0.0466**
	[0.0557]	[0.0303]	[0.0428]	[0.0365]	[0.0606]	[0.0448]	[0.0161]	[0.0208]	[0.0684]	[0.0571]	[0.0316]	[0.0213]
%Economic	0.0252	0.0029	0.0886*	0.0131	0.0504	-0.0121	-0.0309	-0.0202	0.0140	0.0106	0.0071	0.0183
	[0.0352]	[0.0202]	[0.0464]	[0.0272]	[0.0601]	[0.0276]	[0.0230]	[0.0271]	[0.0179]	[0.0207]	[0.0218]	[0.0375]
% Social	-0.0826	-0.0342	-0.1151*	0.0071	0.0210	-0.0719	0.0014	0.0412	0.0315	-0.0663	-0.0907	-0.0475
	[0.0915]	[0.0582]	[0.0671]	[0.0571]	[0.1108]	[0.0660]	[0.0395]	[0.0411]	[0.0837]	[0.0679]	[0.0613]	[0.0420]
% Production	0.0827	0.0286	0.0265	0.0263	-0.1134	0.0089	0.0170	-0.0076	-0.0503*	0.0145	0.0709*	-0.0154
	[0.0525]	[0.0216]	[0.0365]	[0.0392]	[0.0728]	[0.0394]	[0.0138]	[0.0169]	[0.0270]	[0.0290]	[0.0354]	[0.0307]
%Commodity	-0.0456	-0.0077	0.0158	0.0116	0.0334	-0.0026	-0.0088	-0.0099	0.0173	0.2043**	0.0104	-0.0292
	[0.0359]	[0.0144]	[0.0114]	[0.0137]	[0.0260]	[0.0112]	[0.0178]	[0.0132]	[0.0322]	[0.0099]	[0.0321]	[0.0262]
% Debt	-0.0014	0.0251	0.0348	0.0072	-0.0248	0.0119	0.0155	-0.0049			-0.0088	0.0324
	[0.0249]	[0.0326]	[0.0318]	[0.0228]	[0.0361]	[0.0118]	[0.0317]	[0.0260]			[0.0389]	[0.0288]

Table 5. Fixed Effects Regressions by Donor Country (continued)

Dependent Variable	Korea	Luxembourg	Netherlands	New Zealand	Norway	Portugal	Spain	Sweden	Switzerland	UK	US
Total	0.0481	-0.0327	-0.0871	0.1200**	-0.1602	-0.0438	0.0453	-0.2841**	0.0308	0.2405*	-0.1773
	[0.1260]	[0.0749]	[0.1195]	[0.0596]	[0.1108]	[0.0582]	[0.1189]	[0.1166]	[0.0987]	[0.1406]	[0.1254]
Humanitarian	0.0327	-0.0069	0.0605	0.0181	0.1191	-0.0030	0.0337	0.0972	0.0012	-0.0587	-0.0339
	[0.0355]	[0.0426]	[0.0833]	[0.0304]	[0.0844]	[0.0228]	[0.0900]	[0.0864]	[0.0676]	[0.0998]	[0.1422]
Economic	0.0440	0.0234	-0.2445***	-0.0850***	0.0271	-0.0225	0.0802	-0.2328***	0.0490	0.0082	-0.2049
	[0.0940]	[0.0197]	[0.0758]	[0.0211]	[0.0879]	[0.0310]	[0.1146]	[0.0768]	[0.0699]	[0.1147]	[0.1437]
Social	0.0883	-0.0993	0.0765	0.1151**	-0.1890**	-0.0189	-0.0137	-0.2467**	-0.0221	0.0722	-0.2447**
	[0.1024]	[0.0680]	[0.0992]	[0.0500]	[0.0914]	[0.0385]	[0.0863]	[0.1068]	[0.0773]	[0.1075]	[0.1166]
Production	0.1074*	-0.0522	-0.1127	-0.0159	-0.1424*	-0.0062	-0.0510	-0.0586	0.0070	-0.0140	-0.2048
	[0.0549]	[0.0354]	[0.0784]	[0.0251]	[0.0852]	[0.0108]	[0.0638]	[0.0696]	[0.0699]	[0.0972]	[0.1366]
Commodity	-0.0025	-0.0258	-0.0595	-0.0136***	-0.0060	-0.0140	0.0364	0.0421	-0.0287	0.2268**	0.1008
	[0.0023]	[0.0207]	[0.0984]	[0.0052]	[0.0712]	[0.0410]	[0.0720]	[0.0743]	[0.0473]	[0.1105]	[0.1406]
Debt	-0.0460***		0.0582	-0.0004	-0.0994**	-0.0073	-0.0001	-0.0583	-0.0427	0.0652	-0.1088
	[0.0138]		0.0904]	[0.0002]	[0.0476]	[0.0483]	[0.1140]	[0.0591]	[0.0650]	[0.1246]	[0.1232]
%Humanitarian	0.0186	-0.0279	0.0641	-0.0516	0.0490	0.1016*	0.0447	0.1010**	0.0234	-0.0493	-0.0177
	[0.0724]	[0.0848]	[0.0421]	[0.0802]	[0.0377]	[0.0609]	[0.0361]	[0.0507]	[0.0484]	[0.0453]	[0.0268]
%Economic	0.0011	-0.0130	-0.1484***	-0.0745***	0.0654*	0.0470	0.0145	-0.0913***	0.0562**	0.0571	-0.0243
	[0.1192]	[0.0283]	[0.0408]	[0.0162]	[0.0341]	[0.0394]	[0.0317]	[0.0310]	[0.0262]	[0.0383]	[0.0237]
% Social	0.0646	0.0070	0.1196*	0.0884	0.0457	-0.0660	0.0275	-0.0484	0.0216	0.0560	0.0034
	[0.1420]	[0.1088]	[0.0635]	[0.1077]	[0.0599]	[0.1008]	[0.0548]	[0.0623]	[0.0476]	[0.0642]	[0.0388]
%Production	-0.0489	-0.0532	-0.0593**	-0.0481	-0.0371	-0.0674**	-0.0142	0.0053	-0.0692**	0.0223	0.0053
	[0.0820]	[0.0380]	[0.0285]	[0.0468]	[0.0340]	[0.0304]	[0.0257]	[0.0245]	[0.0326]	[0.0337]	[0.0140]
%Commodity	-0.0272	-0.0558*	-0.0330	0.0127	0.0009	-0.0320	0.0069	0.0221	-0.0114	0.0195	0.0412
	[0.0342]	[0.0327]	[0.0260]	[0.0294]	[0.0137]	[0.0289]	[0.0145]	[0.0205]	[0.0129]	[0.0253]	[0.0257]
% Dept	-0.0514**		-0.0009	-0.00004*	-0.0165	0.0226	-0.0108	0.0215	-0.0073	-0.0280	-0.0082
	[0.0209]		[0.0297]	[0.0000]	[0.0160]	[0.0266]	[0.0302]	[0.0210]	[0.0228]	[0.0442]	[0.0165]

Source: Author's calculations from data defined in Section 3.1.

Notes: Uses explanatory variables specified in Tables 3 and 4, but only estimates on corruption variable reported. * = Significant at the 10% level, ** = Significant at the 5% level, *** = Significant at the 1% level. Brackets contain robust standard errors.

APPENDIX

Table A1. Variable Descriptions

Variable	Description	Source	Form
Total ODA	Official Development Assistance (ODA) is "official financing administered with the promotion of the economic development and welfare of developing countries as the main objective, and which are concessional in character with a grant element of at least 25 percent (using a fixed 10 percent rate of discount)." By convention, ODA flows comprise contributions by donor government agencies, at all levels, to developing countries (bilateral) and to multilateral institutions. Data used are commitments, not actual disbursements, and are in 2010 constant USD. The data spans 23 donor countries from 1999-2010.	OECD. StatExtracts	Log of the sum of total ODA in USD millions and 1
Humanitarian	Humanitarian aid is a sector of ODA representing emergency and disaster relief funds.	OECD. StatExtracts	Log of the sum of humanitarian sector ODA in USD millions and 1
Economic	Economic infrastructure and services is a sector of ODA representing assistance for networks, utilities, and services that facilitate economic activity. Examples include energy, transportation and communications.	OECD. StatExtracts	Log of the sum of economic sector ODA in USD millions and 1
Social	Social infrastructure and services is a sector of ODA representing efforts to develop the human resource potential and ameliorate poor living conditions in aid recipient countries. Areas covered include education, health and population, water supply, and sanitation and sewage.	OECD. StatExtracts	Log of the sum of social sector ODA in USD millions and 1
Production	Production is a sector of ODA representing contributions to all directly productive sectors including: Agriculture, fishing, forestry, mining, construction, trade and tourism.	OECD. StatExtracts	Log of the sum of production sector ODA in USD millions and 1

Commodity	ODA representing commodity aid / general program assistance.	OECD. StatExtracts	Log of the sum of commodity ODA in USD millions and 1
Debt	Action relating to debt: debt forgiveness, rescheduling, refinancing, etc.	OECD. StatExtracts	Log of the sum of debt relief ODA in USD millions and 1
Sector Percentages	% Humanitarian, % Economic, % Social, % Production, % Commodity and % Debt represent sector allocations as a percentage of total ODA received by one recipient from one donor. These 6 categories are mutually exclusive and comprise just over 90% of total ODA allocated across all donors and recipients in this study.	OECD. StatExtracts	% of aid allocated in a given year by one donor to one recipient falling under a given ODA sector
Refugees	This paper uses the "Total Population of Concern" in recipient country in a given year, which includes the refugee population, asylum seekers, IDPs protected/assisted by UNCHR, stateless individuals and others of concern to the UNCHR.	The United Nations High Commissioner for Refugees (UNCHR)	One year lag of the log of the sum of total population of concern and 1
Natural Disasters	This study uses annual data on the "Total Affected" by disasters in the potential recipient country during each year of this study. "Total Affected" includes all persons injured, left homeless, or requiring other immediate assistance as a result of a natural disaster. The natural disasters reported on include droughts, earthquakes, epidemics, extreme temperatures, floods, insect infestations, mass movements (dry), mass movements (wet), storms, volcanoes, and wildfires.	EM-DAT, The International Disaster Database	One year lag of the log of the sum of total population affected and 1
Civil War	I use the Battle Related Deaths Dataset to create a binary variable for each year equaling 1 if the country was hosting an internal armed conflict, internationalized or not. Internal armed conflict is defined as conflict between the government of a state and one or more internal opposition groups, which results in at least 25 battle-deaths. Battles in which other states enter are not omitted, as long as requirements are met.	Battle Related Deaths dataset (version 5) derived from The UCDP/ PRIO Armed Conflict 4	One year lag of binary civil war variable

Population	Recipient population.	The national account data file for Penn World Tables 7.1. I fill in a small number of missing entries using recent census data or the CIA Factbook estimates for that country's population in all years of this study.	One year lag of population
Democracy	To capture democracy, I create a composite function of Freedom House's Political Rights and Civil Liberties indices, averaging the two for a given recipient in each year of this study. Freedom house defines political rights as "enabling people to participate freely in the political process, including the right to vote freely for distinct alternatives in legitimate elections, compete for public office, join political parties and organizations, and elect representatives who have a decisive impact on public policies and are accountable to the electorate." Civil liberties are defined as "allowing for the freedoms of expression and belief, associational and organizational rights, rule of law, and personal autonomy without interference from the state." Freedom house rates both aspects on a 1 to 7 scale, with 1 indicating maximum freedom/political rights (i.e., democracy). In the interest of simplifying interpretations, I subtract the average from 8, effectively inverting Freedom House's scale. This way, there is a natural interpretation of higher numbers of the "democracy" variable coinciding with more democratic nations.	Freedom House	One year lag of the democracy composite index
Energy	To determine which countries are energy rich, I use data from the World Development Indicator of energy production (kt. of oil equivalent). A country is considered energy rich if it's energy production from 1995-2010 is at least 1% of the total energy production during this period for all recipient countries in the	The World Bank World Development Indicators	Binary

	study for which data is available. Note that "energy production" refers to forms of primary energy (petroleum, natural gas, solid fuels, combustible renewables and waste) and primary electricity, all converted to oil equivalents.		
Corruption	The Worldwide Governance Indicators include six measures of good governance put together by the World Bank. The data are available for every country for 1996, 1998, 2000 and 2002-2010. The specific measure I use is the control of corruption defined as "capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests." The data varies from -2.5 to 2.5 and is centered on 0 in each year (i.e., the World average is 0 for each year). -2.5 is considered to be highly corrupt, while 2.5 would be not corrupt at all. I invert this scale to make for more naturally logical interpretation (i.e., higher numbers correspond with higher levels of corruption). The WGI data is aggregated from surveys of households and firms (e.g., Afrobarometer surveys, Gallup World Poll, and Global Competitiveness Report survey), various NGOs (e.g., Global Integrity, Freedom House, Reporters without borders), commercial business info providers (e.g., Economist Intelligence Unit, Global Insight, Political Risk Services), and public sector orgs (e.g., CPIA assessments of World Bank and regional development banks, the EBRD Transition Report, French Ministry of Finance Institutional Profiles Database). A complete list of what sources contribute to the corruption control measure can be found here: http://info.worldbank.org/governance/wgi/pdf/cc.pdf	The World Bank Worldwide Governance Indicators	One year lag of control of corruption variable
Recipient GDP	Recipient GDP per capita. Recipients report their GDP to the UN, and data is estimated when unavailable. GDP per capita are then converted to USD using appropriate annual monthly average or annual end-of-month quotations of exchange rates. Alterations are made by UN staff where a country's GDP is skewed by fluctuations in exchange rates and inaccurately depicts the economic situation in that country. I use the UN's GDP per capita in current prices, converted using current exchange rates to USD, and convert these numbers into constant 2010 USD using the database's implicit price deflators in USD report.	The United Nations Statistics Division's National Accounts Main Aggregates database	One year lag of the log of GDP per capita

Percent Imports	I use the United Nations Commodity Trade Statistics Database (UN COMTRADE) to compose a trade variable. All commodity values are converted from national currency into US dollars using exchange rates supplied by the reporter countries or derived from monthly market rates and volume of trade. I use the data for total value of bilateral trade by year, which includes the Broad Economic Categories (BEC) "food and beverages," "industrial supplies not elsewhere specified," "fuels and lubricants," "capital goods (except transport equipment), and parts and accessories thereof," "transport equipment and parts and accessories thereof," "consumer goods not elsewhere specified," and "goods not elsewhere specified." From this data I construct the variable PIM, which represents the percent of a donor country's imports that come from a given recipient country in each year of this study.	UN COMTRADE	One year lag of the percent of a donor country's imports that come from a given recipient country in each year of this study
U.S. Military Interest	My data is derived from the U.S. Overseas Loans and Grants (Greenbook). I use data on obligations and loan authorizations classified as U.S. Military Assistance in constant 2010 U.S. Dollars, 7/1/1945-9/30/2010. Any country which has received cumulative economic or military assistance over $500,000 since 1945 and is considered an "Independent State" by the U.S. Department of State merits an individual country reporting. The small portion of recipient countries in this study which are not individually reported on have been assigned a value of 0 for all periods in the study. From this data, I have created a variable 'MIL' for each recipient country, which represents U.S. military aid received as a percentage of total U.S. military aid reported in each year of the study.	The U.S. Overseas Loans and Grants (Greenbook)	One year lag of portion of total U.S. military received by a given recipient
Donor GDP	Donor GDP per capita. Donors report their GDP to the UN, and data is estimated when unavailable. GDP per capita are then converted to USD using appropriate annual monthly average or annual end-of-month quotations of exchange rates. Alterations are made by UN staff where a country's GDP is skewed by fluctuations in exchange rates and inaccurately depicts the economic situation in that country. This paper uses the UN's GDP per capita in current prices,	The United Nations Statistics Division's National Accounts Main Aggregates database	One year lag of the log of GDP per capita

	converted using current exchange rates to USD, and convert these numbers into constant 2010 USD using the database's implicit price deflators in USD report.		
Region	Recipient Regional Classifications: East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa.	World Bank country classifications with missing values filled in by the author	Region dummy variables
Year	Years 1999-2010.		Year dummy Variables
Colony	Binary variable equal to one if a recipient has been colonized by a donor since 1900, or is currently a territory of a donor or in free association with it.	*The Pattern of Aid Giving: The Impact of Good Governance on Development Assistance* (Neumayer, 2003)	Binary
UN Voting Similarity	Eric Neumayer's variable describing similarity of UN voting behavior in a recipient-donor pair in the year 2000. The variable ranges from -1 (complete dissimilarity) to 1 (complete similarity). For the donors Greece and Korea, which Neumayer did not create individual variables for, his variable for recipient UN voting similarity with western countries is used.	*The Pattern of Aid Giving: The Impact of Good Governance on Development Assistance* (Neumayer, 2003)	2000 UN voting similarity

Table A2. Hausman Test (Fixed Effects v. Random Effects): Total ODA

Explanatory Variable	Fixed Effects	Random Effects	Difference	S.E.	W	P<
Refugees	0.0317	0.0298	0.0020	0.0018	1.0861	0.5000
Natural Disasters	0.0017	0.0024	-0.0007	0.0002	-3.8316	0.1000
Civil War	0.0498	0.0442	0.0055	0.0047	1.1679	0.5000
Population	0.5684	0.2788	0.2896	0.1274	2.2739	0.2500
Democracy	0.1023	0.0989	0.0035	0.0055	0.6315	0.5000
Corruption	-0.0585	0.0031	-0.0616	0.0118	-5.2355	0.0250
Recipient GDP	-0.0672	-0.1611	0.0939	0.0154	6.0902	0.0250
Percent Imports	-0.6682	-0.0149	-0.6534	0.3134	-2.0847	0.2500
U.S. Military Interest	2.3090	2.3330	-0.0240	0.0511	-0.4695	0.5000
Donor GDP	-0.0161	0.0680	-0.0841	0.0067	-12.5051	0.0050
2001	0.0336	0.0536	-0.0200	02.0048	-4.1365	0.0050
2003	0.0923	0.1227	-0.0305	0.0092	-3.2960	0.1000
2004	0.1092	0.1461	-0.0369	0.0119	-3.1079	0.1000
2005	0.2115	0.2598	-0.0483	0.0146	-3.3114	0.1000
2006	0.2169	0.2873	-0.0704	0.0173	-4.0604	0.0500
2007	0.1952	0.2888	-0.0936	0.0205	-4.5628	0.0500
2008	0.2602	0.3721	-0.1119	0.0237	-4.7287	0.0500
2009	0.2511	0.3870	-0.1360	0.0270	-5.03836	0.0250
2010	0.2473	0.3857	-0.1384	0.0284	-4.8704	0.0500

Source: Author's calculations from data defined in Section 3.1.

Notes: P-value thresholds: 0.7500, 0.5000, 0.2500, 0.1000, 0.0500, 0.0250, 0.0100, 0.0050. Test: Ho: Difference in coefficients not systematic, $\chi^2(18) = 620.59$, Prob > $\chi^2 = 0.000$.

Table A3. Pooled OLS Regressions: Disaggregated ODA

Explanatory Variable	Total	Humanitarian	Economic	Social	Production	Commodity	Debt
Refugees	0.0209***	0.0235***	-0.0017	0.0109**	-0.0020	-0.0010	0.0037**
	[0.0056]	[0.0052]	[0.0018]	[0.0040]	[0.0023]	[0.0017]	[0.0015]
Natural	0.0082***	0.0041***	0.0016*	0.0060***	0.0025**	0.0009*	-0.0023*
Disasters	[0.0022]	[0.0009]	[0.0009]	[0.0019]	[0.0011]	[0.0005]	[0.0013]
Civil War	0.0259	0.3011***	-0.0582**	-0.0370	-0.0511**	-0.0209	-0.0769***
	[0.0421]	[0.0493]	[0.0260]	[0.0340]	[0.0208]	[0.0185]	[0.0251]
Population	0.2262***	-0.0051	0.0774***	0.1805***	0.0850***	0.0417**	0.0415***
	[0.0444]	[0.0056]	[0.0200]	[0.0383]	[0.0185]	[0.0154]	[0.0132]
Democracy	0.1080***	-0.0189**	0.0606***	0.0944***	0.0446***	0.0345***	0.0118**
	[0.0247]	[0.0070]	[0.0149]	[0.0222]	[0.0101]	[0.0115]	[0.0042]
Energy	-0.1893***	-0.0917***	-0.0347	-0.1321***	-0.0528**	-0.0978**	-0.0461*
	[0.0585]	[0.0265]	[0.0327]	[0.0456]	[0.0253]	[0.0356]	[0.0226]
Corruption	0.0957***	0.0460***	0.0211	0.0562*	-0.0055	-0.0261***	0.0564***
	[0.0321]	[0.0107]	[0.0149]	[0.0271]	[0.0135]	[0.0088]	[0.0129]
Recipient	-0.2568***	-0.0616***	-0.0674***	-0.1685***	-0.0809***	-0.0723***	-0.0196***
GDP	[0.0370]	[0.0113]	[0.0166]	[0.0217]	[0.0152]	[0.0202]	[0.0069]
Percent	2.5084***	0.0390	1.5148**	2.1963***	1.1722**	-0.4390	-0.6768**
Imports	[0.6655]	[0.0113]	[0.6216]	[0.7173]	[0.04673]	[0.3399]	[0.2538]

U.S. Military	1.3789***	0.8075***	0.2666	0.7608***	0.5773**	-0.0909	1.2809***
Interest	[0.3039]	[0.1641]	[0.2915]	[0.2622]	[0.2705]	[0.1154]	[0.3765]
Donor	0.5409**	0.1546***	0.1129	0.3752**	0.0817	0.0355	0.1204*
GDP	[0.2151]	[0.0526]	[0.0945]	[0.1772]	[0.0734]	[0.0390]	[0.0679]
Colony	1.7998***	0.2005	0.5272***	1.5755***	0.4988**	0.4139***	0.7002*
	[0.3855]	[0.1345]	[0.0934]	[0.3619]	[0.1996]	[0.0773]	[0.3417]
UN Voting	-1.5013	-0.5385	-0.5645*	-1.2378	-0.4243	-0.6849*	-0.0810
Similarity	[0.9041]	[0.3240]	[0.3176]	[0.7646]	[0.2892]	[0.3569]	[0.0533]
R-Squared	0.2787	0.2052	0.1005	0.2417	0.1079	0.1011	0.0810
No. of Ob.	25838	25838	25838	25838	25838	25838	25838

Source: Author's calculations from data defined in Section 3.1.
Notes: Region dummy, year and constant estimates not reported. * = Significant at the 10% level, ** = Significant at the 5% level, *** = Significant at the 1% level. Brackets contain robust standard errors.

Table A4. Pooled OLS Regressions: Disaggregated ODA (% of Total)

Explanatory Variable	Total	% Humanitarian	% Economic	% Social	% Production	% Commodity	% Debt
Refugees	0.0209***	0.0088***	-0.0013*	-0.0020	-0.0027***	-0.0010*	0.0001
	[0.0056]	[0.0015]	[0.0007]	[0.0015]	[0.0009]	[0.0005]	[0.0005]
Natural	0.0082***	0.0021***	-0.0002	-0.0014**	0.0001	0.0004**	-0.0008
Disasters	[0.0022]	[0.0006]	[0.0003]	[0.0007]	[0.0003]	[0.0002]	[0.0004]
Civil War	0.0259	0.1133***	-0.0145***	-0.0464***	-0.0151***	-0.0030	-0.0181***
	[0.0421]	[0.0145]	[0.0044]	[0.0125]	[0.0045]	[0.0030]	[0.0044]
Population	0.2262***	-0.0217***	0.0074****	0.0125	0.0039	-0.0004	0.0065***
	[0.0444]	[0.0031]	[0.0020]	[0.0082]	[0.0025]	[0.0021]	[0.0019]
Democracy	0.1080***	-0.0162***	0.0083***	0.0030	0.0008	0.0040**	0.0042***
	[0.0247]	[0.0033]	[0.0018]	[0.0045]	[0.0018]	[0.0016]	[0.0015]
Energy	-0.1893***	-0.0044	-0.0161**	0.0249	-0.0009	-0.0073	-0.0187***
	[0.0585]	[0.0082]	[0.0069]	[0.0154]	[0.0064]	[0.0048]	[0.0063]
Corruption	0.0957***	0.0232***	-0.0073	-0.0088	-0.0178***	-0.0025	0.0221***
	[0.0321]	[0.0067]	[0.0056]	[0.0082]	[0.0039]	[0.0026]	[0.0047]
Recipient	-0.2568***	-0.0247***	-0.0009	0.0278***	-0.0025	-0.0163***	-0.0004
GDP	[0.0370]	[0.0038]	[0.0023]	[0.0077]	[0.0050]	[0.0036]	[0.0028]
Percent	2.5084***	0.0236	0.0603	-0.2166*	0.0838	0.0548*	-0.0215
Imports	[0.6655]	[0.0727]	[0.0991]	[0.1230]	[0.0705]	[0.0270]	[0.1069]
U.S. Military	1.3789***	-0.2275***	-0.0134	-0.1362	0.1026**	-0.0423**	0.4220***
Interest	[0.3039]	[0.0797]	[0.0527]	[0.1201]	[0.0381]	[0.0199]	[0.0179]
Donor	0.5409**	0.0393	-0.0104	-0.0188	-0.0223*	-0.0060	0.0191
GDP	[0.2151]	[0.0336]	[0.0173]	[0.0408]	[0.0116]	[0.0055]	[0.0241]
Colony	1.7998***	-0.0731	0.0093	0.0466*	-0.0090	0.0223**	0.0646**
	[0.3855]	[0.0432]	[0.0072]	[0.0260]	[0.0137]	[0.0086]	[0.0170]
UN Voting	-1.5013	0.0080	-0.0363**	0.0694	0.0190	-0.0766**	0.0006
Similarity	[0.9041]	[0.0374]	[0.0173]	[0.0531]	[0.0249]	[0.0287]	[0.0170]
R-Squared	0.2787	0.1209	0.0296	0.0445	0.0228	0.0532	0.0561
No. of Ob.	25838	18083	18083	18083	18083	18083	18083

Source: Author's calculations from data defined in Section 3.1.
Notes: See Table A3.

Table A5. Pooled OLS Regressions by Donor Country

Dependent Variable	Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Japan
Total	0.2939***	0.0168	0.1018*	0.0655	0.0208	-0.0396	0.2057***	0.1007	0.0537	-0.0738	0.1174*	0.2185***
	[0.0562]	[0.0535]	[0.0610]	[0.0667]	[0.0711]	[0.0508]	[0.0711]	[0.0697]	[0.0339]	[0.0466]	[0.0691]	[0.0811]
Humanitarian	0.1608***	0.0194	0.0706***	0.0525	0.0582**	0.0448*	0.0676**	0.0545	0.0085	0.0555**	0.0672**	0.1116**
	[0.0057]	[0.0162]	[0.0270]	[0.0382]	[0.0258]	[0.0246]	[0.0315]	[0.0405]	[0.0117]	[0.0245]	[0.0672]	[0.0448]
Economic	0.1050***	-0.0094	0.0944***	0.0471	0.0271	-0.0003	-0.0083	-0.0980	0.0163*	-0.0270***	0.0223	0.2349***
	[0.0299]	[0.0121]	[0.0356]	[0.0324]	[0.0379]	[0.0201]	[0.0589]	[0.0695]	[0.0090]	[0.0086]	[0.0312]	[0.0833]
Social	0.2652***	-0.0310	-0.0409	0.0174	0.0044	-0.0536	0.0464	0.0645	0.0465	-0.0840**	-0.0099	0.1361**
	[0.0495]	[0.0354]	[0.0488]	[0.0632]	[0.0565]	[0.0407]	[0.0514]	[0.0605]	[0.0295	[0.0413]	[0.0473]	[0.0664]
Production	0.1309***	-0.0418***	-0.0136	-0.0599	-0.0310	-0.0051	-0.0451	-0.0549	0.0442	-0.0633***	0.0250	0.0580
	[0.0299]	[0.0140]	[0.0321]	[0.0443]	[0.0374]	[0.0251]	[0.0443]	[0.0446]	[0.0079]	[0.0174]	[0.0296]	[0.0580]
Commodity	0.0611**	-0.0124**	0.0183	-0.0317	-0.0032	-0.0144	0.0145	-0.0823**	-0.007	-0.0512***	-0.0495*	-0.0371
	[0.0258]	[0.0063]	[0.0171]	[0.0302]	[0.0218]	[0.0175]	[0.0436]	[0.0363]	[0.0024]	[0.0184]	[0.0261]	[0.0594]
Debt	0.0010	0.0479	0.1448***	0.0770**	0.0329	0.0019	0.1328*	0.1145*			0.1380***	0.1815**
	[0.0010]	[0.0383]	[0.0406]	[0.0352]	[0.0217]	[0.0107]	[0.0729]	[0.0671]			[0.0507]	[0.0721]
%Humanitarian	-0.0583**	0.0086	0.0169	0.0223	0.0362	0.0329	0.0051	0.0150	0.0441*	0.0975***	0.0149	0.0208**
	[0.0249]	[0.0127]	[0.0179]	[0.0157]	[0.0285]	[0.0228]	[0.0069]	[0.0104]	[0.0258]	[0.0276]	[0.0133]	[0.0091]
% Economic	-0.0132	-0.0148*	0.0633***	-0.0057	0.0222	0.0146	-0.0017	-0.0358***	-0.0017	-0.0076	0.0000	-0.0027
	[0.0023]	[0.0084]	[0.0198]	[0.0109]	[0.0250]	[0.0129]	[0.0100]	[0.0125]	[0.0062]	[0.0084]	[0.0093]	[0.0162]
% Social	-0.0323	-0.0472*	-0.0360	-0.0235	-0.0032	0.0664**	-0.0551***	0.0123	-0.0725**	0.0028	-0.0547**	-0.0170
	[0.0405]	[0.0259]	[0.0282]	[0.0248]	[0.0485]	[0.0313]	[0.0184]	[0.0196]	[0.0358]	[0.0305]	[0.0270]	[0.0182]
%Production	-0.0191	-0.0086	-0.0457***	-0.0423**	-0.0176	-0.0362**	-0.0018	-0.0141*	-0.0165*	-0.307**	0.0086	-0.0135
	[0.0245]	[0.0095]	[0.0155]	[0.0166]	[0.0297]	[0.0169]	[0.0064]	[0.0083]	[0.0095]	[0.0132]	[0.0155]	[0.0140]
%Commodity	-0.0088	-0.0056	0.0013	0.0005	0.0025	-0.0005	0.0203**	-0.0110*	-0.0004	-0.0079*	0.0020	-0.0155
	[0.0156]	[0.0062]	[0.0046]	[0.0059]	[0.0101]	[0.0053]	[0.0080]	[0.0057]	[0.0117]	[0.0044]	[0.0140]	[0.0116]
% Debt	-0.0409***	0.0177	0.0588***	0.0211**	0.0370**	0.0041	0.0608***	0.0325***			0.0520***	0.0239*
	[0.0146]	[0.0139]	[0.0135]	[0.0101]	[0.0187]	[0.0047]	[0.0160]	[0.0119]			[0.0165]	[0.0129]

Table A5. Pooled OLS Regressions by Donor Country (continued)

Dependent Variable	Korea	Luxembourg	Netherlands	New Zealand	Norway	Portugal	Spain	Sweden	Switzerland	UK	US
Total	0.1893***	-0.1207**	-0.0551	0.1314***	-0.0367	0.0008	0.2619***	-0.0350	-0.0746	0.3899***	0.2763***
	[0.0538]	[0.0525]	[0.0769]	[0.0319]	[0.0367]	[0.0262]	[0.0775]	[0.0730]	[0.0579]	[0.0768]	[0.0889]
Humanitarian	0.0370**	0.0033	-0.0234	0.0408***	0.0341	0.0145	0.0856**	0.1211***	-0.0656**	0.1371***	0.0358
	[0.0146]	[0.1734]	[0.0430]	[0.0127]	[0.0420]	[0.0089]	[0.0390]	[0.0415]	[0.0330]	[0.0480]	[0.0727]
Economic	0.0857**	-0.0098	-0.0625*	-0.0129	-0.0456	-0.0098	-0.0019	-0.0636*	-0.0018	0.1220**	0.1042
	[0.0390]	[0.0078]	[0.0332]	[0.0107]	[0.0405]	[0.0116]	[0.0496]	[0.0356]	[0.0299]	[0.0504]	[0.0733]
Social	0.1429***	-0.0961**	-0.0385	0.1072***	-0.0038	0.0037	0.1996***	-0.0369	-0.0505	0.3191***	0.2487***
	[0.0333]	[0.0434]	[0.0680]	[0.0264]	[0.0606]	[0.0182]	[0.0606]	[0.0641]	[0.0435]	[0.0667]	[0.0907]
Production	0.0810***	-0.0452***	-0.0677*	0.0285***	-0.1104***	-0.0024	0.0066	-0.0581*	-0.0096	0.0935**	0.0702
	[0.0224]	[0.01453]	[0.0360]	[0.0108]	[0.0385]	[0.0040]	[0.0379]	[0.0311]	[0.0335]	[0.0432]	[0.0697]
Commodity	0.0000	-0.0068	-0.1087**	0.0001	-0.0179	-0.0231	-0.0022	-0.0897***	-0.0313	0.0113	-0.0732
	[0.0009]	[0.0077]	[0.0466]	[0.0021]	[0.0292]	[0.0164]	[0.0290]	[0.0327]	[0.0195]	[0.0514]	[0.0746]
Debt	-0.0078		0.0592*	0.0000	-0.0059	-0.0085	0.0869*	0.0012	0.0465*	0.0363	0.0802
	[0.0054]		[0.0359]	[0.0001]	[0.0177]	[0.0173]	[0.0467]	[0.0241]	[0.0258]	[0.0530]	[0.0499]
%Humanitarian	0.0058	0.1109***	0.0402**	0.0853***	0.0341*	0.0475**	0.0288*	0.1160***	-0.0304	-0.0061	-0.0117
	[0.0058]	[0.0377]	[0.0202]	[0.0304]	[0.0179]	[0.0230]	[0.0152]	[0.0263]	[0.0267]	[0.0224]	[0.0138]
% Economic	-0.0165	-0.0180*	-0.0380*	-0.0151**	-0.0228	0.0140	-0.0037	-0.0366***	0.0062	-0.0143	-0.0391***
	[0.0326]	[0.0096]	[0.0203]	[0.0060]	[0.0150]	[0.0145]	[0.0130]	[0.0136]	[0.0114]	[0.0179]	[0.0109]
% Social	0.0282	-0.0749*	-0.0089	0.0484	0.0705***	-0.0335	0.0137	0.0092	-0.0144	0.0408	-0.0065
	[0.0403]	[0.0422]	[0.0298]	[0.0439]	[0.0264]	[0.0434]	[0.0230]	[0.0284]	[0.0218]	[0.0308]	[0.0204]
%Production	0.0003	-0.0359**	-0.0545***	0.0134	-0.0375***	-0.0150	-0.0379***	-0.0159	-0.0162	-0.0136	0.0046
	[0.0235]	[0.0151]	[0.0125]	[0.0172]	[0.0145]	[0.0122]	[0.0108]	[0.0105]	[0.0140]	[0.0154]	[0.0063]
%Commodity	0.0085	-0.0100	-0.0328**	0.0070	-0.0004	-0.0038	0.0006	-0.0158	-0.0063	-0.0072	0.0100
	[0.0100]	[0.0128]	[0.0130]	[0.0118]	[0.0061]	[0.0103]	[0.0057]	[0.0097]	[0.0056]	[0.0120]	[0.0126]
% Dept	-0.0064		0.03925***	0.0000	0.0057	0.0006	0.0126	0.0098	0.0269***	0.0300	0.0106
	[0.0053]		[0.0136]	[0.0000]	[0.0069]	[0.0089]	[0.0124]	[0.0101]	[0.0102]	[0.0215]	[0.0072]

Source: Author's calculations from data defined in Section 3.1.

Notes: Uses explanatory variables specified in Tables A3 and A4, but only estimates on corruption variable reported. * = Significant at the 10% level, ** = Significant at the 5% level, *** = Significant at the 1% level. Brackets contain robust standard errors.

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