# REVEALED PREFERENCES IN UNITED STATES BILATERAL AID

## 1960-2000

Master of Arts in Law and Diplomacy Thesis

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# Introduction

Critics of US foreign aid policy have a long list of complaints. The US gives a smaller share of GDP to official development assistance than do its allies in Europe. Aid spending is inefficient because the US earmarks so much of its aid for specific purposes. US foreign aid funds embezzlement and corruption. Official development assistance is a tool for the State Department to enforce its political agenda on recipient countries and the international financial institutions. Military and economic assistance was lavished on tyrants during the Cold War, so long as they held the line against communism. US private overseas charities suffer from floods of in-kind gifts when natural disasters strike, and droughts when the developing world is off the front page.

Surprisingly, little quantitative analysis has been done on historic US foreign aid expenditures. The dearth of research is not for a lack of data. The US Agency for International Development (USAID) publishes at its website annual and historic data on foreign aid expenditures. Recently, a number of public and scholarly debates have re-opened questions of priorities and methodology, notably Jeff Sachs' recent paper for the UN Millennium Development Project, Bono's tour of Africa with Paul O'Neill, the challenge papers of the Copenhagen Consensus, and episodic controversies over reconstruction efforts in Iraq. Analysis of US priorities and programs, however, should start with an evaluation of just what the US does fund.

This paper proposes and evaluates determinants of US bilateral foreign aid. An earlier cross-country comparison of donors (Alesina and Dollar, 1998) suggested two determinants that offer limited explanatory power as determinants of bilateral aid flows: colonial relationships and political ties. As the US has no colonial relationships, the

former makes no prediction of US bilateral aid spending. The latter is measured by proxy

in Alesina and Dollar's work, through the correlation of UN votes between donor and

recipient. As they acknowledge, this measure potentially suffers from reverse causality

(Alesina and Dollar, 1998).

I offer four hypotheses for determinants of US bilateral aid spending:

1. Trade ties with the recipient country.
2. Operations of the US military,
3. Political events in the recipient country, and
4. Economic events in the recipient country,

In order to test these hypotheses, I use data from the USAID Green Book, which

specifies types of spending including military and economic assistance, and modalities of

spending including loans and grants (USAID 2002). The Green Book data are the

dependent variables in cross-sectional regressions on indicators of governments' political

leanings and democratic performance, indicators of economic health, the presence of a

named US military operation, and indicators of economic relationships with the US.

Indicators of governments' political leanings come from the World Bank's Database of

Political Institutions. Democratic performance comes from the Polity variable in the

Polity IV dataset from the University of Maryland's Integrated Network for Societal

Conflict Research. Indicators of economic health are found in the Penn World Table,

from the University of Pennsylvania's Center for International Comparisons. The list of

named US military operations comes from Global Security, a Washington think tank. The

closeness of economic ties with the US is measured with the IMF's Direction of Trade

Statistics historic series. The specific composition of the variables and controls is listed

below in the section "Data."

The regressions in Tables 1 to 4 assess the revealed preferences of the US foreign aid programs in aggregate. Washington allocates bilateral aid to countries that are trading partners, that are poorer, that are secular, and that have strong nationalist executive parties. US bilateral aid rises in response to adverse economic shocks. US bilateral aid falls in real per capita terms over time. Economic assistance, and specifically USAID spending, is highest when centrists and nationalists control the executive branch. Economic assistance shies away from countries with major religious parties. Contrary to popular opinion, Washington (on an intercontinental, decades-long scale) does not lavish aid on right-wing governments, nor does it systematically undermine the left.

## Development spending: allocation and effectiveness

There is a lively and current debate on the effectiveness of aid flows. Recent papers have established or questioned empirical evidence of growth spurred by aid flows, including Burnside and Dollar (2004), Easterly, Levine and Roodman (2003), Burnside and Dollar (2000), Sachs (2004), Collier and Dollar (2001), Dalgaard and Hansen (2001) and Hansen and Tarp (2001). In seeking to answer whether aid can be shown empirically to create growth, economists have focused on whether aid flows are used for investment, and whether such investment is productive. To date, there is no consensus on how aid operates, but the literature includes Cassella and Eichengreen (1994), Schmidt (1992), Mosley (1987), and Lancaster (1982). This paper has little to say about the happier topic, "How does development assistance benefit the recipient country?" and concentrates instead on the dour, "Which countries are likely to receive official development assistance?"

Alesina and Dollar (1998) wrote the most effective treatment to date of the subject of aid allocation. In their cross-country comparison of donors, they argue that colonial ties and alignment of political interests determine aid. They propose that the aid from the former colonial power should fall over time, and use the time since independence as a proxy for colonial ties. They then take the correlation of votes at the UN as proxy for political alignment of the donor and recipient countries. Both relationships are significant, but neither is a satisfactory determinant of US bilateral aid flows. The US has never formally held colonies that were subsequently liberated. The correlation of UN votes is a poor proxy for political alignment, and one which might suffer from serious omitted variables bias. Alesina and Dollar's model does not control explicitly for trade relationships, institutional rigidities, commonality of institutions, language, history, or geopolitical interest.

Trumbull and Wall (1994) use a panel dataset to identify criteria by which donors allocate aid. They find strong evidence that donors allocate assistance not merely to poor countries, but to those whose performance lags on human development indicators, notably infant mortality. Trumbull and Wall also find evidence that, at least in Africa, donor countries are more generous toward countries with strong human rights records.

Other papers on the allocation of development assistance are listed here. Arslanalp and Henry (2004) compare the relative merits of debt forgiveness and development assistance. Devarajan (2002) models the fungibility of aid and the political economy of recipient governments' policy agendas in the context of bilateral assistance. Collier and Dollar (2002) propose a poverty-efficient model of aid allocation. OECD (2000) is a cross-country comparison of the geographic distribution of aid flows. Alesina

and Weder (1999) reach the disappointing conclusion that cleaning up corruption has no discernible effect on aid allocation. De Silva (2002) examines the allocation of Canadian bilateral aid. Boone (1995) models the use of nonmilitary assistance by recipient governments. Pasquarello (1988) looks for the effect of the recipient's human rights record on US bilateral aid in Africa. The OECD publishes an annual report on the donors' allocation of bilateral aid flows to recipient countries (OECD).

## Model

There are essentially two models proposed in the four hypotheses in the introduction. Equation (1) describes the economic hypotheses, and equation (2) describes the political preferences hypotheses.

(1)     $\ln (A_{US}/P_R) = \beta_0 + \beta_1 \ln(T_{US}/Y_R) + \beta_2 \ln(Y_R/P_R) + \beta_3 D_{USMO}$

where  $A_{US}$ is US bilateral aid,

$P_R$ is the population of the recipient country,

$T_{US}$ is trade with the US,

$Y_R$ is recipient GDP, and

$D_{USMO}$ is a dummy variable for US military operations.

The regressions below estimate equation (1) both with and without controls for recipient country population, log of US exports to the recipient country, log of US imports from the recipient country, and dummy variables for South Africa and Western Europe.

(2)     $\ln (A_{US}/P_R) = \beta_0 + \beta_1 (Pol) + \beta_1 (Cen) + \beta_2 (RCL) + \beta_3 (Nat) + \beta_4 (Rel) + \beta_5 (Rur)$

where  Pol is an index variable for the democratic character of a country,

ranging from -10=autocratic to 10=democratic

Cen is a dummy variable for a centrist political party,

RCL is an index variable for the political bent of a political party,

ranging from 1= right-wing, to 0=centrist, to -1=left-wing

Nat is a dummy variable for a nationalist political party,

Rur is a dummy variable for a rural political party, and

Rel is a dummy variable for a religious political party.

The regressions below estimate equation (2) separately and together for each of the major political parties in government: executive party, majority party, and opposition party.[1] Tables 1 to 4 present separate cross-sectional regressions of aid on economic variables and on political variables, followed by fixed-effects and cross-sectional regressions of aid on a combination of political and economic determinants.

## Agency

There is serious question as to the coherence of the government of the United States as a funding agent. If it can be considered a single entity, it is certainly not a unitary actor. Authority over authorization of expenditures, appropriation of funds, programming, monitoring, and evaluation is highly compartmentalized. The types of aid flows described in this paper are appropriated to different departments in the executive by a series of committees of both houses of the US Congress. Each of these departments has its own mandate, and internal conflicts about mission and methodology to boot.

The analysis offered here neglects the competing policy agendas in Washington, and the competing priorities of the different arms of the federal government. There are good reasons to suspect, for example, that the Department of State and the Department of

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[1] There are no observations for rural executive parties, so Stata drops the variable *execrural* from the regression on executive parties.

Defense could be engaged in a Stackelberg game.[2] The high politics of national security are said to dominate the low politics of economic interest. As such, the development assistance priorities of USAID may pertain to a policy environment determined by the military priorities of the Department of Defense. Devarajan, Levine, and Roodman (1999) propose a political economy framework to model the competing preferences of the donor government and the recipient, but they do not question the donor government as a rational entity. My analysis seeks to establish *ex post* the preferences of the US government as a monolithic funding source.

## Data

The dependent variables in all of the regressions are taken from the United States Agency for International Development Green Book (USAID 2002). The Green Book documents US federal spending on foreign assistance since 1945. Total US expenditures are broken down by type of spending, by year, and by geographic location of spending.

For simplicity, I have restricted my attention to four categories of spending:

1. all military and economic assistance, including loans and grants,
2. all economic assistance, including loans and grants,
3. all USAID spending, including loans and grants, and
4. food grants.

All military and economic assistance is the largest measure possible of US expenditures on a country, concerning strictly bilateral assistance programs. This is not, however, an exhaustive measure of the US official presence in a foreign country. The Green Book does not calculate the share of multilateral programs that are ultimately received by a

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[2] I am grateful to Professor Matt Kahn of the Fletcher School for this point.

given country. Rather, it keeps separate regional accounts for programs that are disbursed across two or more countries, and a "World, not specified" account for programs that encompass two or more regions. Only Canada does not belong to a USAID region, and the history of bilateral military and economic assistance to Canada is so small as to be insignificant. The list of regions is

1.  Middle East and North Africa,
2.  Sub-Saharan Africa,
3.  Latin America and the Caribbean,
4.  Asia,
5.  Oceania,
6.  Eurasia,
7.  Western Europe, and
8.  Eastern Europe.

It would be improper to assign any share of regional or international development assistance flows to a particular country, given serious uncertainties as to the proportions of such aid that might have been spent on a given country. Rather than assign a share of regional and worldwide flows to countries based on population, GDP, or shares of nation-specific aid flows, I have left nationally non-specific aid flows out of my analysis.

The figure for economic assistance is a better measure of the total US bilateral presence in a country. Economic assistance attempts to encompass all non-military foreign assistance, of which I am only concerned with direct bilateral flows. Economic assistance can be further decomposed into number of categories, including USAID spending, food aid, and other economic assistance.

USAID spending, which can be decomposed into loans and grants, includes spending from the following list of programs:

1. Child Survival and Health Fund,

2. Development Assistance,

3. Assistance to Eastern Europe and the Baltic States,

4. Assistance to the Independent States of the Former Soviet Union,

5. Transition Initiatives, International Assistance Program,

6. International Disaster Assistance,

7. International Organizations and Programs,

8. Development Fund for Africa,

9. Central America and the Caribbean Disaster Recovery Fund,

10. Operating Expense, General

11. Operating Expense, Inspector General,

12. Foreign Service Retirement and Disability Fund,

13. Working Capital Fund,

14. Security Support Assistance and Economic Support Fund,

15. Department of State Oceans and Science Initiative,

16. Department of State Democracy and Human Rights, and

17. Department of State Initiatives.

A number of programs, predominantly from the 1940s and 1950s, are underrepresented in the reported statistics on bilateral assistance. Reporting methodology at the time only noted aggregate totals for programs, rather than nation-specific expenditures.

USAID spending does not capture a large share of non-military development assistance to which the federal government has longstanding commitments. These categories include food aid (described in the following paragraph) and "other" assistance programs. Other programs include international financial institutions, Peace Corps, narcotics control, and a number of programs run by the Department of the Interior, the Department of State, the Department of the Treasury, the Department of Health and Human Services, the Department of Agriculture, the Trade and Development Agency, the

African Development Foundation, the Inter-American Development Foundation, and a number of other special federal programs no longer in operation.

Food aid can also be decomposed into loans and grants, though the overwhelming majority of food aid is given as grants. I chose food aid as a measure of the least political sort of assistance. Whereas USAID spending is widely thought to reflect the political machinations of the federal government in foreign countries, food aid is designed to protect those in the greatest and most urgent need from suffering humanitarian disasters. If indeed, as I hypothesize, USAID spending reflects the political influence of the State department, any political preference effect should diminish or disappear in the expenditures on food aid.

USAID Green Book data are reported in historic dollars. I used data from the Bureau of Economic Analysis (BEA) to convert these figures into constant USD 2000. Rather than a consumer price index, I chose to use the BEA's GDP annual deflator for federal expenditures. The advantage of the federal GDP deflator is that it reflects changes in the prices facing federal agencies, weighted to include expenditures by a wide range of federal agencies.

It would be possible to make an argument for an alternative methodology for comparing expenditures. As the bulk of bilateral economic assistance is spent locally, it would be interesting to weight non-military expenditures by the value of local (i.e., recipient country) currency at purchasing power parity (PPP). This approach is neither practical given the size of the sample, nor sufficiently superior to the GDP deflator to merit its implementation.

The independent variables come from a variety of sources. Baseline data on national accounts and population for all countries are reported in the Penn World Table, henceforth PWT (Heston et al, 2002). The PWT reports GDP per capita in chain-weighted 1996 dollars at PPP. (The PWT also measures annual GDP at PPP as a share of US GDP, but this requires an extra step of calculation to arrive at a final figure for recipient country GDP.) In order to calculate GDP of the recipient country, I multiplied the GDP per capita by population. There is a discrepancy between the units used to measure the national accounts of the recipient country and the US federal budgets; but for log-log linear multivariate regression, this should not render the regression inaccurate. Reporting foreign GDP in chained 1996 dollars understates foreign GDP by 6.6%, according to the BEA US national GDP deflator series.

The Polity IV dataset from the University of Maryland's Center for International Development and Conflict Management (CIDCM) reports an index variable "Polity" that ranges from -10, autocratic, to +10, democratic (Marshall and Jaggers, 2002). Polity is a highly complex index variable that converts a number of political factors into a single integer. This variable is used essentially as reported by the CIDCM. Polity IV has the advantage of historic scope: it reports data back to the beginning of the 19C.

Finer data on the political life of the recipient country are reported from the World Bank's Database of Political Institutions (Beck et al, 2001). The DPI measures a number of political aspects of the main branches of the recipient country, namely the executive, the majority parties in the parliament, and the opposition parties. I have created, an index variable (-1, 0, +1) for the left/center/right leaning of each branch (executive, largest majority party, and largest opposition party). I have also included dummy variables for

nationalism, ruralism, and religiosity of each branch (executive, majority, opposition) as reported by the DPI. Though the DPI allows much finer analysis than does the Polity IV's monolithic Polity indicator, DPI data are limited to a twenty-year period from 1975-1995.

The International Monetary Fund's Direction of Trade Statistics indicate the volume of trade relationships among partner countries (IMF, 2003). US trade statistics reported to the IMF are denominated in US historic dollars. Due to the degree to which real exchange rates affect import and export volumes, I elected not to use the same GDP deflator that I selected for the dependent variable (i.e., the GDP deflator for federal expenditures). Instead, I used the BEA GDP deflators for imports and exports, respectively, for the volumes of US imports and US exports. The resulting measures of real US trade flows are therefore denominated in USD2000, the same unit of measure as for bilateral aid flows.

None of the variables listed above, individually, captures the degree of trade dependence of a recipient country on the US economy. I propose that the recipient country's trade dependence on the US is a determinant of foreign aid, captured in the variable *tradeshare*. *Tradeshare* is calculated as the share of total trade with the US (exports plus imports) in the recipient country's GDP. It seems reasonable from common sense that we might expect political ties between countries to be determined in part by size of the aid flows. From the US perspective, comparison of the absolute size of trade flows is sufficient to evaluate their importance for the US economy. For the partner countries, however, trade flows need to be scaled to the GDP of the recipient country. As discussed above, this factor has been insufficiently explored in the literature on determinants of cross-country aid. More to the point, it could explain the curious success

of Alesina and Dollar's variables (correlation of UN votes and temporal proximity of the

colonial era) in predicting bilateral aid.

There is a problem with this variable for which I have not been able to find an

instrument. Aid tying and in-kind development assistance distort recipient countries'

spending and increase the welfare of the donor country (Kemp and Kojima, 1985). These

practices ensure that the recipient's volume of trade with *any* donor country will rise with

bilateral aid. Rather than a determinant of bilateral assistance, therefore, US exports to

recipient countries could appear to be determined *by* the level of bilateral assistance. The

same should not be true of US imports unless some feature of aid tying lowers transaction

costs or builds trade networks for US importers at the same time. I have tried to control

for this effect by including "US exports" separately dependent variables in each

regression that includes "US trade share of recipient GDP."

One more independent variable that has interested me is the presence of a US

military operation in the recipient country. It seems reasonable to expect that bilateral

official assistance will rise when the US military operates in the recipient country. (It is

not clear at first glance whether the rise in bilateral assistance might be correlated with

prior US bilateral assistance, with the cost of the military operation in the recipient

country, with the outcome of the operation in the recipient country, or with none of the

above.) The principal problem with this variable is definitional. Should we measure only

countries where US soldiers are permanently stationed? Only countries where soldiers

and civilians receive hazard pay from the US government? Only countries in which

named US operations were conducted? Generally, the federal budget is a poor source for

geographically disaggregated data on military expenditures by country of operation.

There are a limited number of conflicts (less than 20) for which good data on cost is readily available. It is possible to obtain good information about troop strength in US military bases over time; but necessarily such a measure will neglect the operations of US soldiers in countries where permanent bases have not been built. It is considerably more difficult to obtain comprehensive estimates of troops committed to particular overseas operations since 1945. The simplest way to describe the operation of the US military was to include a dummy variable that is equal to one only when the US military conducted a named operation within the sovereign territory of a foreign country. The non-profit organization Global Security has a list of overseas operations available from its website (Global Security, 2005). The inclusion criterion for that list is the naming of the operation, which has several advantages: (1) a threshold of operation size and organization, (2) geographic specificity, and (3) the possibility of obtaining estimates from GAO or other federal agencies for the total cost of such operations.

There are many more ways to create a threshold for US military involvement in the recipient country. The Congressional Research Service published a report in 2002 that details hundreds of "instances of use of United States armed forces abroad" since the turn of the 19th century (Grimmett 2002). While this list is instructive, it lacks a clear inclusion criterion or threshold. As a result, its primary utility for this paper is as a list by which to check the Global Security list of conflicts.

# Regressions

This paper estimates four sets of regressions. The regressions are summarized into three tables. Each table contains a number of distinct model specifications. Table 1 presents cross-sectional OLS regressions that investigate the trade relationships of the

United States and the effect of its military operations. Table 2 investigates the relationship between a country's internal politics, as expressed in its party system, again through cross-sectional OLS regressions. Table 3 compares US economic interests, US military activity, and local political parties in fixed effects regressions. Table 4 combines political and economic determinants of aid into a single series of cross-sectional regressions.

In Table 1, I present logarithmic regressions of aid on the following variables: trade with the US as a share of GDP, recipient GDP per capita, US exports, US imports, US military operations, population, and regional dummy variables for Western Europe and sub-Saharan Africa. Each of the four aid variables is regressed separately. I have calculated aid flows in per capita terms. For other research questions, it might in principle be better to calculate aid flows as a share of GDP, to reflect aid "density" within a country. Here, however, the comparison is between GDP per capita and the level of US bilateral assistance per capita.

In Table 2, I test for revealed preferences of the US government concerning the political life of the recipient country. The levels of aid per capita, again in logarithmic terms, are regressed on the index variable *polity* from the Polity IV dataset, and on a number of index and indicator variables from the Database of Political Institutions from the World Bank. The regressions test the hypotheses that the US government lavishes aid on centrist, secular, and non-nationalist governments. The major political parties of the recipient country (executive party, majority government party, and majority opposition party) are examined in separate regressions, and then together. The simplest is a univariate OLS regression of the aid variables on *polity* from the Polity IV dataset. For

each of the main governing parties, aid is regressed on an index variable to capture the right/left political leaning of the party, and a series of indicator variables for religiosity, nationalism, centrism, and rural bias. Last, the aid variables are regressed on all of the DPI political variables together.

Until this point, I have described only OLS cross-sectional regressions. The OLS regression models help us compare across countries and estimate the effect of the level of a given variable, such as GDP per capita, on bilateral aid flows. These results help us answer questions such as, "Does the US tend to give more money to rich countries or to poor countries?" Fixed effects regressions, on the other hand, help us compare a country's state in one year to its mean for the period. A fixed effects regression could indicate, for example, whether bilateral aid rises or falls when GDP per capita is above the mean period value of GDP per capita *for that recipient*. These results help us answer questions such as, "Does the US tend to give more money to countries when they face economic shocks?"

Table 3 presents fixed-effects regressions of aid on political and economic variables. These regressions test the sensitivity of aid to changes in trade with the US, to exogenous economic shocks in the recipient country, to short-term operations of the US military (as opposed to decades-long operations), and to changes in the political life of a country. Depending on the composition of trade with the US, there reasons to suspect that *tradeshare* might rise or fall with a rise or a fall in recipient GDP. The deviation from country mean values of GDP per capita, and total US exports to a country, however, should indicate years when countries are experiencing economic shocks, either positive or negative.

Table 4 presents a final cross-sectional regression of each of the four types of aid flows on *tradeshare*, GDP per capita, and the DPI political parties variables.

# Findings

## *Tradeshare*

The variable tradeshare should have the greatest effect on US bilateral aid flows in the cross-sectional regressions, not the fixed-effects regression. Determinations of geostrategic alliances happen over the course of decades, not in response to annual announcements of economic figures. With a larger dataset, we might even expect a stronger effect with a finite distributed lag model, in the first five or six lags. I do not check for finite distributed lag effects in this paper.

In the cross-sectional regressions, I find that *tradeshare* is a powerful determinant of US bilateral aid spending, but not robust to all specifications of the model. It performs better when controlling for GDP per capita and total trade flows to the US. As we would expect, its effect is strongest on economic assistance, and weakest on food grants. The size of the effect is hard to estimate, given that the coefficient on *tradeshare* varies widely among different specifications of the model.

The most troubling aspect of the *tradeshare* variable is that the sign changes in the final column. While it would be unsurprising to observe the t-statistic fall in a model so specified, the significant negative *tradeshare* elasticity of aid is surprising. Under the heading Population and GDP below, I explain how this might be a result of recipient country trade barriers.

## GDP per capita

As we would expect, there is an effect of GDP per capita on total bilateral US economic assistance. Generally speaking, poorer countries receive a greater per-capita total annual flow of bilateral aid from the United States. In particular, the fixed effects regression in Table 3 shows that countries are more likely to receive aid when they suffer economic shocks, i.e., when their GDP per capita falls below the period mean value.

Depending on the specification of the model, it is possible to show an effect where richer countries, after controlling for the volume of trade with the United States and special geopolitical relationships (such as the transatlantic alliance), appear to win *more* bilateral assistance as national income rises. This effect has three possible explanations, of which the first and simplest is that bilateral aid wins a greater bang for the buck in richer countries. Where GDP is low, frictions on investment are high, allocation of capital is poor, and infrastructure is poor, all of which may limit the benefits of a marginal dollar of aid. The second explanation has to do with the allocation of bilateral vs. multilateral aid. In USAID reporting, aid is only bilateral when it is spent entirely in a single recipient country. When program aid is spent in more than one country, it is allocated to the region (e.g., Middle East and North Africa). If it transcends a USAID regional allocation, it then falls into the category "World, not specified." If institutional factors lead US foreign assistance to prefer a bilateral aid model for richer countries and a multilateral aid model for poor countries, then the inevitable omission of multilateral aid flows from the dependent variable will bias the regression coefficients in favor of spending on large countries. The third explanation has to do with rates of growth of population, GDP, and US foreign aid spending, and will be explored shortly.

## United States military operations

Military operations have only a marginally significant impact on the overall level of bilateral assistance to countries. Anecdotal evidence suggests that USAID spending is higher in reconstruction efforts than elsewhere. Here in particular, a finite distributed lag model would be more appropriate to the model of causality. Assuming that reconstruction necessarily follows military operations, in those cases where bilateral US assistance pays for reconstruction, the OLS suffers from reverse causality. Rather than the effect of US military operations on bilateral aid, it will tend to indicate the marginal change to expectation of US military intervention, given the knowledge of the level of bilateral aid per capita. The fixed effects regression is little better. It is reasonable to assume that bilateral assistance programs are slower to appropriate, slower to deploy, and longer in duration than their military counterparts. The fixed-effects regression coefficients, however, only account for the level of bilateral aid per capita in those years where military operations took place.

## United States exports

The variable US exports picks up two principal economic effects, and is not a useful measure on its own merits. It is included in some OLS regressions to test the robustness of the *tradeshare* variable to decomposition. US exports should have a positive coefficient, particularly in the fixed-effects regression, because of the practices of aid tying and in-kind development assistance. The greater the proportion of aid which is tied (i.e., earmarked) or provided in-kind, the greater the economic distortion in the recipient's allocation of that money. Aid tying is thought to improve the welfare of the donor country and to limit the economic efficiency of development assistance spending

(Kemp and Kojima, 1985). Aid tying is binding when it constrains recipients' purchases, i.e., when the minimum purchase in the tying regulation exceeds the recipient's optimal consumption of a good or service. We should necessarily expect a positive coefficient on the US exports variable, because US exports will rise when US aid is tied or provided in kind, and to the extent that the tying restriction is "binding" on the agencies receiving the assistance.

In a number of related regressions of aid variables on both *tradeshare* and population, the inclusion of the US exports variable was sufficient to change the sign of the coefficient on *tradeshare*. This occurrence suggests that aid tying accounts for part of the success of the *tradeshare* variable in aid regressions.

The exports variable also reflects absorption in the recipient country's economy, subject to the fluctuation of the real exchange rate. Insofar as the recipient's demand and terms of trade allow it to purchase US exports, the coefficient on exports will reflect exogenous shocks to demand for US exports. This effect would suggest a negative coefficient for US exports.

Perhaps most important, there are a great many poor countries that receive bilateral assistance and relatively few well-off countries. In order to achieve the same development tasks at purchasing power parity, spending will have to be significantly higher in wealthy countries than in poor countries. Where US exports to the recipient are highest, aid will necessarily be higher. This is not important because it skews the estimate of the export elasticity of US bilateral aid, but rather because US exports are included as a robustness check on the variable *tradeshare*.

## United States imports

The coefficients on US imports are uniformly negative, which is intuitive. US imports reflect world demand for the recipient's exports. When export volumes rise, the recipient should be earning foreign exchange on world markets and less in need of bilateral assistance. To the extent that US imports are reflective of US absorption and real exchange rates, it also makes sense to assume that real US foreign assistance spending falls when domestic absorption is lowest and when the currency is weakest.

## Polity

The variable *polity* from the Polity IV dataset has the advantage of historic reach. It has a minuscule effect on bilateral aid flows when included in the regressions from Table 1. In Table 2, it performs entirely inconclusively on its own, and adds nothing to the results included from the DPI variables. To the extent that *polity* accurately reflects the democratic character of the recipient countries, the US government historically gave little weight to democracy in aid allocation.

## Political parties

The regressions examining the effects of recipient countries' political parties on US bilateral aid spending are highly inconclusive. Four principal effects jump out: (1) a mild preference for right-wing governments over left-wing, (2) an aversion to any large religious parties, (3) a preference for nationalist executive parties, and (4) an aversion to governments facing centrist opposition. US government preferences on nationalism, centrist governments, and large rural parties are indeterminate.

Centrism preferences of the US government are the most troubling of these confusions. A US government seeking to ensure stability might be expected to promote centrist governments; but we see conflicting effects here. USAID spending rises in countries with centrist executives, but falls sharply in countries where the majority party in government is centrist. The unexpected sign of the coefficient on centrist majority parties reverses itself (though the t-statistic drops to 1.34) in a regression restricted to countries of below-median GDP per capita. Restricting the regression to countries of 25th percentile to 75th percentile, however, has no such effect: the coefficient has a negative sign and a t-statistic above 2.

All of the preceding calls into question the idea that the political leanings (i.e., right, center, or left) of the recipient government are, in fact drivers of aid levels. Reverse causality, in particular, seems a thorny problem. It is counterintuitive that the political bents of the major parties are independent of the economic conditions facing a country. Centrism is a status quo bias. Countries that enjoy power and wealth in the status quo will be more likely to have sizeable and influential centrist parties. High-income countries, countries with greater social capital, and countries for other reasons less in need of US bilateral aid will be more likely to have centrist leadership. A regression of GDP on the presence of centrist majority and opposition parties has negative coefficients for each of the above, with very large t-statistics. Panel dataset analysis would be a more appropriate way to check for the effect of political parties on the level of aid received by a given country.

The fixed effects regression suggests that US government preferences may be expressed most clearly via USAID spending. Whereas economic shocks seem to have a

greater impact on total economic assistance, political shocks made a bit more of a difference to USAID spending than to the other categories of bilateral assistance. In particular, the data indicate a strong preference to spend additional money when the executive is unusually centrist, and when the government majority party is unusually far to the right.

## Population and GDP

Because the aid flows are calculated in per capita terms, it is reasonable to expect that population will have a negative coefficient in the aid regressions. Another explanation is not mutually exclusive of that first one. Even if the US distributes aid such that it is in fact perfectly scaled with population across countries (a uniform density of aid per capita), OLS can still calculate a negative estimate for the coefficient on population. If the rate of population growth exceeds the rate of growth of real US bilateral aid flows over time, then the OLS population coefficient will be negative.

A univariate regression of aid on population returns a very wide (negative) range of elasticities of aid density to population, depending on the year in which the regression is run and the type of aid flows in the regressand. The same is true of bivariate specifications including only the regressors ln(population) and ln(GDP per capita), and also of the coefficients on population in the more complex specifications. These regressions suggest that either small countries really do obtain greater aid flows than larger countries, or that growth of real bilateral aid flows has not kept pace with population growth over time. The pro-small country bias has been documented in aid literature for decades (Dudley and Montmarquette 1976).

What is the intuition here? Why spend so much time on a variable that, to begin with, is in the denominator of the dependent variable? The purpose of including population as a regressor is to test the robustness of the *tradeshare* variable. Absent controls, *tradeshare* could show a positive coefficient for any of three reasons: (1) the variable *tradeshare* turns out actually to be important, (2) the practice of aid tying exaggerates the effect of *tradeshare* through omitted variable bias, and (3) the effects of GDP shocks on aid flows exaggerate *tradeshare* through omitted variable bias.

In order to control for the country's GDP, ln(GDP per capita) is included as a regressor. This variable has the advantage of being calculated similarly to the aid variables, i.e., using natural logarithms of per capita levels. The drawback is that the per capita GDP, which may be reflective of living standards in a country, is not reflective of the country's ability to protect itself from economic shocks, to design and implement infrastructure and social programs, or to maintain a reasonable level of security from its neighbors. Smaller countries might require more aid simply because they are small. If this is the case, and GDP is present in the denominator of the *tradeshare* variable, then the inclusion of GDP per capita is insufficient. Mathematically, there are only two degrees of freedom for the three variables GDP, population, and GDP per capita, so Stata will only calculate the results with two of the three variables present. In order to control for GDP and GDP per capita in the effect of *tradeshare* on aid flows, it is sufficient to add the two variables GDP per capita and population.

Including all of the separate components of the *tradeshare* variable is not without costs. By controlling for the per capita GDP of the country, the size of its unidirectional US trade flows, and the total size of the economy, we have isolated the interaction of the

import and export figures with the GDP of the country. The negative sign of the OLS estimator, in this case, suggests that US bilateral aid goes primarily to those countries whose trade flows are a small share of the economy. Total trade as a share of the economy is a common proxy for openness to trade in national income accounts regressions. The US sends aid to countries that have low barriers to trade, not because Washington seeks to reward trade barriers, but rather because developing countries systematically erected trade barriers in the 1960s and 1970s to pursue import substitution industrialization.

## *Directions for further research*

The main question outstanding is an assessment of the degree to which real aid flows have fallen over time. The principal question clouding the results presented here is the degree to which historic trends are skewing the results of cross-sectional analysis. The omitted time trend variable could perturb the coefficients for *tradeshare* and population.

It would also be valuable to specify finite distributed lag models for a more thorough examination of the effect of US military operations on aid flows. For reasons described above, the annual periodicity of the datasets might not be sufficiently slow to pick up the effect of "last year's" military operation on "this year's" aid flows, though in practice the decision to implement bilateral assistance might hinge on the successful completion of a military mission in the recipient country.

Having established that *tradeshare* is a potent predictor of US bilateral aid flows, whatever the reasons may be, it would also be worth testing the *tradeshare* variable and the political variables from the DPI against the Dollar and Alesina dataset on correlation of UN votes among donor and recipient countries. For those countries that are listed as

recipients of US bilateral aid, it should be possible to see whether all three are still significant when included in the same regression.

The section titled "Agency" above lays out a question about competing preferences within the US foreign assistance community. Spending priorities are highly contentious in the foreign operations appropriations bill in the US Congress, and there are a number of different executive agencies whose spending is reflected in the aid levels reported here. More rigorous analysis of the political economy of aid programs based on departmental preferences or the platforms of the major US political parties could and should be undertaken.

Furthermore, it would be worth dividing the US military operations into Cold War and post-Cold War categories. The suggestion that aid flows would increase where the US military has operated might be counterintuitive for a Cold War-era Agency for International Development, but since 1990 the US military has been involved in an ever greater proportion of missions that have at least some humanitarian component. I suspect further that if WWII reconstruction efforts could be captured in the present dataset, the coefficient on US military operations would be both enormous and positive. Good data exist in Congressional Research Service and General Accounting Office reports on the cost of US peacekeeping operations since 1980 and the troop strength of US military operations 1982-1998 (CBO 1999).

The end of the Cold War was enough of a watershed event in US foreign policy that it might have had large repercussions for the allocation of bilateral assistance in US foreign policy. For instance, Washington's bias against autocratic regimes might be

stronger once the Cold War context was gone. It would be interesting to examine the

post-Cold War effect for all of the political preference variables featured in Table 2.

I was most disappointed in the research process by the dearth of good data on US

military expenditures. Given sufficient time and cooperation, it would be well worth

comparing US expenditures on the operations of military expeditionary forces with

expenditures on development assistance. Originally I had hoped to obtain such figures to

identify whether there is not, in fact, a median development assistance cost multiplier that

is a function of military assistance. If recent advances in measuring the marginal impact

of development assistance continue to improve, a greater goal may shortly be in sight.

Quantitative comparison of marginal expenditures in the heterodox worlds of national

security and international development would facilitate reasoned debate over national

strategy for the OECD countries.

## *Table 1*

Cross-sectional regression of aid on economic determinants.

| Real per capita economic and military spending, natural log | | | | | |
|---|---|---|---|---|---|
| ln(tradeshare) | 0.246 | 0.268 | 0.71 | 0.133 | -0.628 |
| | (9.19)** | (9.48)** | (13.01)** | (2.87)** | (3.41)** |
| ln(GDP/capita) | | -0.099 | 0.521 | -0.243 | -1.211 |
| | | (2.43)* | (6.19)** | (2.91)** | (5.88)** |
| ln(U.S. exports) | | | 0.237 | | 0.873 |
| | | | (4.68)** | | (7.91)** |
| ln(U.S. imports) | | | -0.648 | | 0.018 |
| | | | (15.77)** | | -0.21 |
| U.S. military operation | | | 0.247 | 0.322 | 0.272 |
| | | | -1.63 | (2.18)* | -1.88 |
| ln(population) | | | | -0.649 | -1.462 |
| | | | | (17.67)** | (7.90)** |
| Sub-saharan Africa | | | | -1.073 | -0.664 |
| | | | | (7.44)** | (4.40)** |
| Western Europe | | | | 2.258 | 2.053 |
| | | | | (7.97)** | (7.45)** |
| Constant | -2.914 | -1.882 | 0.273 | 4.087 | 5.977 |
| | (9.96)** | (3.64)** | -0.3 | (4.29)** | (6.04)** |
| Observations | 3874 | 3874 | 1475 | 1524 | 1475 |
| R-squared | 0.02 | 0.02 | 0.21 | 0.24 | 0.29 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| Real per capita economic spending, natural log | | | | | |
|---|---|---|---|---|---|
| ln(tradeshare) | 0.277 | 0.321 | 0.834 | 0.113 | -0.636 |
| | (10.51)** | (11.53)** | (16.18)** | (2.58)* | (3.72)** |
| ln(GDP/capita) | | -0.199 | 0.54 | -0.267 | -1.224 |
| | | (4.76)** | (6.87)** | (3.36)** | (6.40)** |
| ln(U.S. exports) | | | 0.145 | | 0.85 |
| | | | (3.11)** | | (8.32)** |
| ln(U.S. imports) | | | -0.67 | | 0.022 |
| | | | (17.55)** | | -0.27 |
| U.S. military operation | | | 0.215 | 0.251 | 0.204 |
| | | | -1.54 | -1.81 | -1.52 |
| ln(population) | | | | -0.731 | -1.54 |
| | | | | (20.22)** | (8.96)** |
| Sub-saharan Africa | | | | -1.026 | -0.644 |
| | | | | (7.59)** | (4.59)** |
| Western Europe | | | | 0.772 | 0.58 |
| | | | | (2.91)** | (2.27)* |
| Constant | -2.75 | -0.707 | 1.915 | 4.687 | 6.72 |
| | (9.52)** | -1.37 | (2.26)* | (5.18)** | (7.22)** |
| Observations | 3617 | 3617 | 1444 | 1493 | 1444 |
| R-squared | 0.03 | 0.04 | 0.26 | 0.26 | 0.32 |

Absolute value of t statistics in parentheses

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

| Real per capita USAID spending, natural log | | | | | |
|---|---|---|---|---|---|
| ln(tradeshare) | 0.476 | 0.438 | 0.697 | 0.168 | -0.281 |
| | (16.49)** | (14.46)** | (13.45)** | (3.74)** | -1.69 |
| ln(GDP/capita) | | 0.184 | 0.729 | 0.044 | -0.538 |
| | | (3.95)** | (9.30)** | -0.54 | (2.88)** |
| ln(U.S. exports) | | | 0.177 | | 0.603 |
| | | | (3.77)** | | (5.99)** |
| ln(U.S. imports) | | | -0.529 | | -0.091 |
| | | | (14.06)** | | -1.18 |
| U.S. military operation | | | 0.246 | 0.271 | 0.229 |
| | | | -1.79 | (1.97)* | -1.72 |
| ln(population) | | | | -0.539 | -1.009 |
| | | | | (14.07)** | (6.04)** |
| Sub-saharan Africa | | | | -1.063 | -0.844 |
| | | | | (7.76)** | (6.05)** |
| Western Europe | | | | 0.794 | 0.594 |
| | | | | (3.11)** | (2.42)* |
| Constant | -0.836 | -2.677 | -2.204 | 0.826 | 2.03 |
| | (2.63)** | (4.75)** | (2.59)** | -0.9 | (2.16)* |
| Observations | 2902 | 2902 | 1237 | 1285 | 1237 |
| R-squared | 0.09 | 0.09 | 0.26 | 0.26 | 0.31 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| Real per capita food grants, natural log | | | | | |
|---|---|---|---|---|---|
| ln(tradeshare) | 0.175 | 0.158 | 0.627 | 0.056 | -0.407 |
| | (6.46)** | (5.42)** | (12.94)** | -1.37 | (2.62)** |
| ln(GDP/capita) | | 0.076 | 0.403 | -0.361 | -0.908 |
| | | -1.52 | (5.34)** | (4.18)** | (5.14)** |
| ln(U.S. exports) | | | 0.036 | | 0.524 |
| | | | -0.88 | | (5.51)** |
| ln(U.S. imports) | | | -0.421 | | 0.041 |
| | | | (12.12)** | | -0.56 |
| U.S. military operation | | | 0.167 | 0.184 | 0.154 |
| | | | -1.35 | -1.54 | -1.29 |
| ln(population) | | | | -0.569 | -1.088 |
| | | | | (16.33)** | (6.91)** |
| Sub-saharan Africa | | | | -0.944 | -0.624 |
| | | | | (7.26)** | (4.51)** |
| Western Europe | | | | 0.143 | 0.053 |
| | | | | -0.51 | -0.19 |
| Constant | -5.267 | -6.029 | -1.555 | 1.728 | 2.619 |
| | (17.62)** | (10.35)** | -1.88 | -1.86 | (2.74)** |
| Observations | 2505 | 2505 | 1098 | 1137 | 1098 |
| R-squared | 0.02 | 0.02 | 0.2 | 0.23 | 0.26 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

## *Table 2*

Cross-sectional regression of aid on recipient country political party traits.

| Real per capita economic and military spending, natural log | | | | | |
|---|---|---|---|---|---|
| POLITY | 0.005 | | | | -0.013 |
| | -1.41 | | | | -1.38 |
| Centrist executive | | 0.347 | | | 0.146 |
| | | (5.93)** | | | -0.74 |
| Right/left executive | | 0.018 | | | 1.759 |
| | | -0.21 | | | (5.12)** |
| Religious executive | | -0.622 | | | -1.223 |
| | | (2.59)** | | | -1.86 |
| Nationalist executive | | 0.153 | | | 0.597 |
| | | -1.35 | | | -1.2 |
| Centrist majority | | | 0.448 | | 0.488 |
| | | | (7.38)** | | (2.37)* |
| Right/left majority | | | -0.273 | | -2.046 |
| | | | (2.84)** | | (6.10)** |
| Religious majority | | | -0.874 | | -0.863 |
| | | | (3.43)** | | -1.51 |
| Nationalist majority | | | 0.032 | | -0.352 |
| | | | -0.26 | | -0.73 |
| Rural majority | | | 0.058 | | -2.054 |
| | | | -0.12 | | -1.89 |
| Centrist opposition | | | | -0.041 | 0.191 |
| | | | | -0.58 | -1.56 |
| Right/left opposition | | | | -0.39 | -1.254 |
| | | | | (3.16)** | (5.76)** |
| Religious opposition | | | | -0.636 | 0.423 |
| | | | | (2.72)** | -1.07 |
| Nationalist opposition | | | | -0.407 | -0.129 |
| | | | | (2.26)* | -0.41 |
| Rural opposition | | | | -1.202 | -1.882 |
| | | | | -1.54 | -1.35 |
| Constant | -5.387 | -5.97 | -5.797 | -5.707 | -5.115 |
| | (98.25)** | (95.91)** | (89.93)** | (78.59)** | (34.26)** |
| Observations | 1788 | 2409 | 2102 | 1477 | 669 |
| R-squared | 0 | 0.02 | 0.03 | 0.02 | 0.14 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| Real per capita economic spending, natural log | | | | | |
|---|---|---|---|---|---|
| POLITY | 0 | | | | -0.016 |
| | -0.01 | | | | -1.74 |
| Centrist executive | | 0.219 | | | -0.134 |
| | | (3.82)** | | | -0.64 |
| Right/left executive | | -0.01 | | | 1.632 |
| | | -0.12 | | | (4.61)** |

| | | | | | |
|---|---|---|---|---|---|
| Religious executive | -0.726 | | | | -1.139 |
| | (3.22)** | | | | -1.72 |
| Nationalist executive | 0.224 | | | | 0.703 |
| | (2.08)* | | | | -1.43 |
| Centrist majority | | | 0.294 | | 0.521 |
| | | | (4.94)** | | (2.42)* |
| Right/left majority | | | -0.336 | | -1.863 |
| | | | (3.63)** | | (5.43)** |
| Religious majority | | | -0.858 | | -0.447 |
| | | | (3.53)** | | -0.76 |
| Nationalist majority | | | 0.13 | | -0.375 |
| | | | -1.12 | | -0.78 |
| Rural majority | | | -0.259 | | -3.102 |
| | | | -0.56 | | (2.28)* |
| Centrist opposition | | | | 0.072 | 0.116 |
| | | | | -1.02 | -0.94 |
| Right/left opposition | | | | -0.239 | -0.958 |
| | | | | (1.98)* | (4.37)** |
| Religious opposition | | | | -0.872 | 0.07 |
| | | | | (3.91)** | -0.18 |
| Nationalist opposition | | | | -0.131 | 0.193 |
| | | | | -0.74 | -0.62 |
| Rural opposition | | | | -0.981 | -0.743 |
| | | | | -1.25 | -0.45 |
| Constant | -5.732 | -6.046 | -5.868 | -5.855 | -5.564 |
| | (104.77)** | (99.08)** | (92.30)** | (80.85)** | (36.75)** |
| Observations | 1694 | 2247 | 1945 | 1340 | 626 |
| R-squared | 0 | 0.01 | 0.02 | 0.02 | 0.11 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| Real per capita USAID spending, natural log | | | | | |
|---|---|---|---|---|---|
| POLITY | 0.007 | | | | -0.007 |
| | (2.00)* | | | | -0.63 |
| Centrist executive | | 0.381 | | | 0.579 |
| | | (6.08)** | | | (2.37)* |
| Right/left executive | | -0.211 | | | 1.483 |
| | | (2.35)* | | | (3.38)** |
| Religious executive | | -1.119 | | | -3.058 |
| | | (4.36)** | | | (4.09)** |
| Nationalist executive | | 0.219 | | | 0.667 |
| | | -1.89 | | | -1.21 |
| Centrist majority | | | 0.416 | | 0.03 |
| | | | (6.58)** | | -0.12 |
| Right/left majority | | | -0.436 | | -1.46 |
| | | | (4.40)** | | (3.40)** |
| Religious majority | | | -1.102 | | 0.454 |
| | | | (4.09)** | | -0.66 |

|  |  |  |  |  |  |
|---|---|---|---|---|---|
| Nationalist majority |  |  |  | 0.3 (2.35)* | -0.336 -0.62 |
| Rural majority |  |  |  | -0.16 -0.34 | -5.012 (2.23)* |
| Centrist opposition |  |  |  | 0.222 (2.85)** | 0.335 (2.37)* |
| Right/left opposition |  |  |  | -0.345 (2.53)* | -0.969 (3.82)** |
| Religious opposition |  |  |  | -1.108 (4.54)** | -0.377 -0.93 |
| Nationalist opposition |  |  |  | -0.237 -1.2 | -0.136 -0.4 |
| Rural opposition |  |  |  | -0.56 -0.67 | -1.889 -1.18 |
| Constant | -5.866 (99.13)** | -6.132 (92.49)** | -5.995 (89.04)** | -5.843 (73.15)** | -5.404 (33.27)** |
| Observations | 1359 | 1798 | 1543 | 1048 | 472 |
| R-squared | 0 | 0.03 | 0.05 | 0.04 | 0.15 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| **Real per capita food grants, natural log** |  |  |  |  |  |
|---|---|---|---|---|---|
| POLITY | -0.007 (2.26)* |  |  |  | -0.01 -1.24 |
| Centrist executive |  | 0.149 (2.29)* |  |  | -0.578 -1.93 |
| Right/left executive |  | -0.282 (3.20)** |  |  | 1.874 (4.19)** |
| Religious executive |  | 0.118 -0.44 |  |  | 0.716 -0.95 |
| Nationalist executive |  | 0.447 (3.96)** |  |  | -0.315 -0.48 |
| Centrist majority |  |  | 0.261 (3.76)** |  | 0.67 (2.32)* |
| Right/left majority |  |  | -0.721 (7.25)** |  | -2.273 (5.17)** |
| Religious majority |  |  | -0.815 (2.96)** |  | -1.661 (2.79)** |
| Nationalist majority |  |  | 0.653 (5.12)** |  | 0.857 -1.31 |
| Rural majority |  |  | -0.571 -0.68 |  | 0 (.) |
| Centrist opposition |  |  |  | -0.213 (2.53)* | -0.163 -1.23 |
| Right/left opposition |  |  |  | 0.027 -0.2 | -0.185 -0.77 |
| Religious opposition |  |  |  | -1.324 (5.74)** | -0.332 -0.88 |

| | | | | | |
|---|---|---|---|---|---|
| Nationalist opposition | | | | 0.358 | 0.093 |
| | | | | -1.7 | -0.25 |
| Rural opposition | | | | -1.24 | -1.487 |
| | | | | -1.02 | -1.18 |
| Constant | -7.158 | -7.342 | -7.224 | -7.482 | -7.584 |
| | (138.66)** | (108.91)** | (101.47)** | (87.34)** | (49.07)** |
| Observations | 1139 | 1462 | 1217 | 734 | 327 |
| R-squared | 0 | 0.02 | 0.06 | 0.06 | 0.16 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

## *Table 3*

Fixed-effects regression of aid flows on selected determinants of aid.

| Real per capita economic and military spending, natural log | | |
|---|---|---|
| ln(tradeshare) | 0.276 | 0.437 |
| | (3.74)** | (5.04)** |
| ln(GDP/capita) | -1.644 | -1.555 |
| | (12.19)** | (9.09)** |
| ln(U.S. exports) | 0.111 | -0.098 |
| | (2.19)* | -1.62 |
| ln(U.S. imports) | -0.308 | -0.281 |
| | (7.32)** | (6.34)** |
| U.S. military operation | 0.048 | 0.071 |
| | -0.41 | -0.63 |
| Right/left executive party | 11.489 | 0.062 |
| | | -0.85 |
| Centrist executive party | | 0.118 |
| | | -1.13 |
| Right/left government party | | 0.095 |
| | | -1.25 |
| Centrist government party | | -0.077 |
| | | -0.73 |
| Right/left opposition party | | -0.059 |
| | | -1.1 |
| Centrist opposition party | | -0.079 |
| | | -1 |
| Constant | | 13.161 |
| | (13.86)** | (9.20)** |
| Observations | 3710 | 2300 |
| Number of ncountry | 148 | 134 |
| R-squared | 0.17 | 0.1 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| **Real per capita economic spending, natural log** | | |
|---|---|---|
| ln(tradeshare) | 0.235 | 0.23 |
| | (3.28)** | (2.95)** |
| ln(GDP/capita) | -1.551 | -1.354 |
| | (11.42)** | (8.63)** |
| ln(U.S. exports) | 0.156 | 0.01 |
| | (3.13)** | -0.19 |
| ln(U.S. imports) | -0.284 | -0.215 |
| | (6.96)** | (5.42)** |
| U.S. military operation | -0.029 | -0.013 |
| | -0.26 | -0.13 |
| Right/left executive party | 9.636 | 0.061 |
| | | -0.89 |
| Centrist executive party | | 0.146 |
| | | -1.53 |
| Right/left government party | | 0.043 |
| | | -0.61 |
| Centrist government party | | -0.262 |
| | | (2.71)** |
| Right/left opposition party | | 0.035 |
| | | -0.71 |
| Centrist opposition party | | 0.027 |
| | | -0.38 |
| Constant | | 8.206 |
| | (11.69)** | (6.26)** |
| Observations | 3454 | 2143 |
| Number of ncountry | 143 | 130 |
| R-squared | 0.15 | 0.09 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| **Real per capita USAID spending, natural log** | | |
|---|---|---|
| ln(tradeshare) | 0.225 | 0.08 |
| | (2.68)** | -0.83 |
| ln(GDP/capita) | -1.181 | -0.723 |
| | (7.23)** | (3.51)** |
| ln(U.S. exports) | -0.004 | -0.157 |
| | -0.06 | (2.31)* |
| ln(U.S. imports) | -0.166 | -0.11 |
| | (3.51)** | (2.31)* |
| U.S. military operation | 0.023 | 0.025 |
| | -0.18 | -0.2 |
| Right/left executive party | 6.452 | -0.086 |
| | | -0.98 |
| Centrist executive party | | 0.281 |
| | | (2.30)* |
| Right/left government party | | 0.204 |

|  |  |  |
|---|---|---|
|  |  | (2.28)* |
| Centrist government party |  | -0.102 |
|  |  | -0.83 |
| Right/left opposition party |  | 0.1 |
|  |  | -1.58 |
| Centrist opposition party |  | -0.086 |
|  |  | -0.96 |
| Constant |  | 1.533 |
|  | (6.61)** | -0.9 |
| Observations | 2773 | 1707 |
| Number of ncountry | 132 | 117 |
| R-squared | 0.08 | 0.04 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

| Real per capita food grants, natural log |  |  |
|---|---|---|
| ln(tradeshare) | 0.26 | 0.184 |
|  | (3.43)** | (2.02)* |
| ln(GDP/capita) | -1.673 | -1.288 |
|  | (10.78)** | (6.44)** |
| ln(U.S. exports) | 0.162 | 0.198 |
|  | (2.95)** | (2.90)** |
| ln(U.S. imports) | -0.216 | -0.139 |
|  | (5.07)** | (3.04)** |
| U.S. military operation | 0.078 | 0.174 |
|  | -0.71 | -1.48 |
| Right/left executive party | 8.636 | 0.131 |
|  |  | -1.33 |
| Centrist executive party |  | 0.292 |
|  |  | (2.25)* |
| Right/left government party |  | -0.173 |
|  |  | -1.72 |
| Centrist government party |  | -0.051 |
|  |  | -0.42 |
| Right/left opposition party |  | -0.05 |
|  |  | -0.67 |
| Centrist opposition party |  | 0.161 |
|  |  | -1.62 |
| Constant |  | 3.743 |
|  | (9.10)** | (2.26)* |
| Observations | 2370 | 1371 |
| Number of ncountry | 120 | 102 |
| R-squared | 0.14 | 0.08 |

Absolute value of t statistics in parentheses
* significant at 5%; ** significant at 1%

## *Table 4*

Cross-sectional regression of bilateral flows on selected determinants.

| | Real per capita economic and military spending | Real per capita economic spending | Real per capita USAID spending | Real per capita food grants |
|---|---|---|---|---|
| ln(tradeshare) | 0.299 | 0.415 | 0.545 | 0.263 |
| | (6.17)** | (8.59)** | (9.83)** | (4.47)** |
| ln(GDP/capita) | -0.739 | -0.786 | -0.153 | -0.684 |
| | (9.55)** | (9.88)** | -1.7 | (6.23)** |
| Centrist executive party | 0.836 | 0.683 | 0.496 | 0.814 |
| | (4.32)** | (3.69)** | (2.34)* | (3.68)** |
| Centrist majority | -1.199 | -1.104 | -0.747 | -1.371 |
| | (6.14)** | (5.94)** | (3.45)** | (6.12)** |
| Centrist opposition | -0.684 | -0.449 | -0.206 | -0.03 |
| | (5.34)** | (3.63)** | -1.45 | -0.22 |
| Right/left executive | 0.1 | -0.034 | 0.262 | -0.176 |
| | -0.74 | -0.26 | -1.7 | -1.04 |
| Right/left majority | 0.252 | 0.245 | -0.079 | 0.284 |
| | -1.9 | -1.87 | -0.52 | -1.71 |
| Right/left opposition | -0.045 | -0.022 | 0.038 | -0.285 |
| | -0.64 | -0.32 | -0.49 | (3.39)** |
| Religious executive | 0.038 | -0.229 | -1.198 | 1.354 |
| | -0.08 | -0.5 | (2.15)* | (2.37)* |
| Religious majority | -0.627 | -0.23 | -0.075 | -1.346 |
| | -1.43 | -0.54 | -0.15 | (2.93)** |
| Religious opposition | -0.477 | -0.672 | -0.804 | -0.937 |
| | (2.11)* | (3.15)** | (3.43)** | (4.21)** |
| Nationalist executive | 1.015 | 1.058 | 0.889 | 0.269 |
| | (3.70)** | (3.95)** | (2.54)* | -0.73 |
| Nationalist majority | -0.807 | -0.755 | -0.397 | 0.283 |
| | (3.02)** | (2.88)** | -1.14 | -0.76 |
| Nationalist opposition | -0.297 | -0.098 | -0.121 | 0.131 |
| | -1.64 | -0.55 | -0.61 | -0.61 |
| Constant | 3.818 | 5.228 | 1.281 | 0.878 |
| | (4.03)** | (5.45)** | -1.21 | -0.7 |
| Observations | 1453 | 1315 | 1026 | 717 |
| R-squared | 0.13 | 0.15 | 0.17 | 0.18 |

Absolute value of t statistics in parentheses

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

## *Table 5*

List of variables

| Variable name | Source | Units |
|---|---|---|
| Economic and military assistance per capita, natural log | USAID Green Book and the Penn World Table | dollars / capita (ln) |
| Economic assistance per capita, natural log | USAID Green Book and the Penn World Table | dollars / capita (ln) |
| USAID assistance per capita, natural log | USAID Green Book and the Penn World Table | dollars / capita (ln) |
| Food grants per capita, natural log | USAID Green Book and the Penn World Table | dollars / capita (ln) |
| Tradeshare, i.e., trade with the US as a share of GDP | IMF Direction of Trade Statistics and the Penn World Table | % |
| GDP per capita (chained dollars), natural log | Penn World Table | dollars / capita (ln) |
| US exports to the recipient country, natural log | IMF Direction of Trade Statistics | dollars (ln) |
| US imports from the recipient country, natural log | IMF Direction of Trade Statistics | dollars (ln) |
| Military operation of the US armed forces | Global Security | 1= yes |
| Western Europe | USAID Green Book | 1= yes |
| Sub-Saharan Africa | USAID Green Book | 1= yes |
| Polity | Polity IV dataset, CIDCM, University of Maryland | Index variable, integers: 10 (democratic) $\geq$ Polity $\geq$ -10 (autocratic) |
| Right/left executive party | Database of Political Institutions, World Bank | 1= right wing, 0= center, -1= left wing |
| Centrist executive party | Database of Political Institutions, World Bank | 1= yes |
| Religious executive party | Database of Political Institutions, World Bank | 1= yes |
| Nationalist executive party | Database of Political Institutions, World Bank | 1= yes |
| Right/left government majority party | Database of Political Institutions, World Bank | 1= right wing, 0= center, -1= left wing |
| Centrist government majorityparty | Database of Political Institutions, World Bank | 1= yes |
| Religious government majority party | Database of Political Institutions, World Bank | 1= yes |
| Nationalist government majority party | Database of Political Institutions, World Bank | 1= yes |
| Rural government majority party | Database of Political Institutions, World Bank | 1= yes |

| | | 1= right wing, 0= center, -1= left wing |
|---|---|---|
| Right/left opposition party | Database of Political Institutions, World Bank | |
| Centrist opposition party | Database of Political Institutions, World Bank | 1= yes |
| Religious opposition party | Database of Political Institutions, World Bank | 1= yes |
| Nationalist opposition party | Database of Political Institutions, World Bank | 1= yes |
| Rural opposition party | Database of Political Institutions, World Bank | 1= yes |

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