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International Development Aid Allocation Determinants

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Abstract

This paper investigates the factors explaining aid allocation by bilateral and multilateral donors. We use data for 146 aid recipient countries over the period 1990-2007 and employ Bayesian Averaging of Classical Estimates Approach (BACE) approach and find that both the recipient need and donor interest motives are `significant' determinants of bilateral and multilateral aid allocation process. Our results also indicate that the measures for recipient need and donor interests vary from bilateral to multilateral donors. For example, with respect to the recipient need, we find that while income per capita matters in the allocation of multilateral aid, for bilateral donors the size of population, as an indicator of recipient need, is a key element in the allocation process. Similar findings also hold for democracy/governance indicators.

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1. Introduction

Foreign aid continues to be a controversial and vibrant topic among academics, politicians and development practitioners. The general literature looking at this issue is divided into two main strands. First, there are studies that look at the effectiveness of development aid on the recipient economy. Recent studies looking at this issue include Burnside and Dollar (2000), Hansen and Tarp (2000 and 2001), Dalgaard and Hansen (2001), Clemens et al. (2004), Dalgaard et al. (2004), Easterly et al. (2004), Ouattara and Strobl (2008), and Rajan and Subramanian (2008). Second, the aid literature is also concerned with the motives behind aid allocation. Indeed, studying the objectives behind aid allocation process is important for our understanding of how aid works. If aid is given for purposes other than developmental (for example, for the sake of the donor's interest) then it might not be surprising to find that aid is not effective in promoting growth and reducing poverty in the recipient economy.

In this context, a pertinent question often asked in the literature is whether aid allocation is based solely on donors' self-interests or the recipient needs. While some studies have documented the donor's interest motive (see McKinley and Little 1978 and 1979; Maizels and Nissanke 1984; Gounder, 1995; Lundborg, 1998; Schraeder, et al., 1998; Alesina and Dollar, 2000; Collier and Dollar, 2002; Neumayer, 2003a,b; Canavire et al. 2005), other studies have found the recipient needs criteria to be an important element in the aid allocation process (see McGillivray and Oczkowski, 1992; Gounder, 1995; Schraeder et al., 1998; Tarp et al., 1999; Alesina and Dollar 2000; Berthélemy and Tichit 2004; Alesina and Weder 2002; Neumayer, 2003a,b).

Along with the donor interest and recipient need motives, the existing literature has also found some other key determinants of aid allocation . Indeed, factors such as democracy (see Svensson 2000; Alesina and Dollar 2000), corruption (see Alesina and Weder 2002), being a rotating member of the UN Security Council (see Kuziemko and Weker 2006)[1], among others, have been found to affect aid allocation decisions. Finding robust set of determinants of aid allocation inherits similar problem as finding robust determinants of economic growth. Both the objectives face problems of numerousness of regressors leading to the uncertainty both in the selection of appropriate model and the relevant determinants. Drawing on the recent methodological advances in dealing with the stated nature of uncertainties, this paper reexamines aid allocation determinants by employing the Bayesian mechanism. To this end, collecting data for 146 aid recipient countries for the 1990-2007, we gather an extensive set of aid allocation determinants indentified in the literature . Then using Bayesian Analysis of Classical Estimates (BACE) approach we derive, "robust" determinants of aid allocation based on more than 500000 model specifications.

Our analysis gives rise to interesting findings, viz., both the recipient need and donor interest motives are found to be `significant' determinants of bilateral and multilateral aid allocation process. Our results also indicate that the measures for recipient need and donor interest vary from bilateral to multilateral donors. For example, with respect to the recipient need, we find that while income per capita matters in the allocation of multilateral aid, for bilateral donors the size of population, - an indicator of recipient need, is a key element in the allocation process.

[1] Along these lines Dreher and Sturm (2006) reported that that countries receiving financial support from the IMF and the World Bank tend to vote more frequently in line with G7 countries.

The rest of the paper proceeds as follows. In Section 2, an outline of the BACE procedure is presented. Section 3 is the empirical section where we discuss data and estimation results with some discussions on our findings. Finally, Section 4 concludes the paper.

2. Estimation strategy: the BACE Approach

We adopt the BACE approach to investigate the effectiveness of variables which are likely to determine aid allocation in developing countries. Because countries would not know beforehand which specific model variables would best describe the determinants of aid allocation, it is then natural to assume that the countries' choice of model and variables are based on some posterior information about their respective likelihood. In this circumstance, Bayesian estimation technique is of very good use. Under this framework, a country can play with many models and many variables and find a probability value that best describes their presence. Using this method which is commonly known as Bayesian Model Averaging technoque, the investigator faces a large set of plausible true models.[2] To illustrate the idea let us begin by describing a general representation of an aid allocation model, $Y = \xi X + \theta$; where Y is the dependent variable, X a vector of aid allocation determinants and θ the error term. There are several potential variables to be included in X. In practice, with K potential explanatory variables one would expect 2^K potential models thus implying that with 19 potential explanatory variables as in our case this amounts to 524288 possible model specifications resulting from various combinations of these variables. Choosing few specifications, as done in the existing literature, raises the issue of model uncertainty.

Bayesian model averaging technique allows the researcher to deal with the model uncertainty problem. The BACE approach is a form of Bayesian model averaging, as it does not anoint a single final model as "correct". For a given model, it uses diffuse priors for the parameters of each possible linear regression following classical estimation (which is based on OLS sampling distribution). By doing so the BACE approach could be seen as an approach that combines both Bayesian averaging model approach and the classical approach.

To understand the foundations of the approach denote a specific model M_i and the model space as $M = M_1, M_2, ..., M_N$. Assume that y is the vector of the observed data. Let θ_i be the k_i parameter vector associated with M_i. Further, let $p(\theta_i \mid M_i)$ be the prior density for θ_i under M_i, $L(y, \theta_i)$ the likelihood function for model M_i, and $p(M_i)$ the prior probability on the ith model. According to Bayes theorem, the posterior probability for the i^{th} model is described as follows:

$$p(M_i \mid y) = \frac{p(M_i)p(y \mid M_i)}{\sum_{i=1}^{N} p(M_j)p(y \mid M_j)} \tag{1}$$

[2] In this study, where we consider 19 potential explanatory variables, there are 524288 plausible models to choose from.

where, $$p(y \mid M_i) = \int L(y, \theta_j) p(\theta_j \mid M_j) d\theta_j \quad (2)$$

is the integrated likelihood of model j. Applying the Schwartz approximation to (2) as in Sala-i-Martin et al. (2004), the log form can be specified as

$$\ln p(y \mid M_j) = \ln L(y, \hat{\theta}_j) - 0.5 k_j \ln T \quad (3)$$

In (3), $\ln L(y, \hat{\theta}_j)$ represents the estimated log-likelihood function with the estimated parameter vector $\hat{\theta}_j$ for model M_j and T is the number of observations in the sample. If the least squares estimation approach is used to estimate the model then one can substitute $\ln L(y, \hat{\theta}_j)$ with $-0.5T \ln SSE_j$, where SSE_j represents the sum of squared residuals for model M_j. This gives rise to the following:

$$\ln p(y \mid M_j) = -0.5 T ln SSE_j - 0.5 k_j ln T. \quad (4)$$

Taking the exponential of (4) and substituting it into (1) gives:

$$p(M_i) \mid y) = \frac{p(M_i) T^{-ki/2} SSE^{-T/2}}{\sum_{j=1}^{2^K} p(M_j) T^{-K_j/2} SSE_j^{-T/2}} \quad (5)$$

Once the model weights have been calculated, Bayes' rule says that the posterior density of a parameter is the average of the posterior densities conditional on all models (Sala-i-martin et al., 2004). Taking expectations over all models we can use (5) to compute the mean and variance of the parameters of interest,

$$E[\gamma(\hat{\theta}) \mid y] = \sum_{i=1}^{2^K} p(M_i \mid y) \gamma_i(\hat{\theta}_i \mid y, M_i) \quad (6)$$

where $\gamma_i(\hat{\theta}_i \mid y, M_i)$ is the classical estimate of the parameters of interest obtained from the parameter vector $\hat{\theta}_i$ from model i. The posterior variance of the estimated parameter of interest is given by:

$$Var[\gamma(\hat{\theta}) \mid y] = \sum_{j=1}^{2^K} p(M_i \mid y) var[\gamma_i(\hat{\theta}_i) \mid y, M_i] + [\gamma_i(\hat{\theta}_i \mid y, M_i) - E[\gamma(\hat{\theta}) \mid y]]^2 \quad (7)$$

The BACE technique allows a computation of the posterior inclusion probability (PIP) of each of the K variables. The PIP represents the sum of the posterior probability of models which includes a given variable, and can be interpreted as the probability that this variable belongs to the true model.[3][4]

[3] The posterior inclusion probability is routinely interpreted as the robustness of a variable as a determinant of the phenomenon under investigation.

[4] The BACE can also be used to make statistical inferences in terms of the estimated coefficients of the variables used as well as their signs attached to these estimates. However, the interest in this paper is to find which variables are robust predictor of aid allocation decisions.

3 Empirical analysis

3.1 Data

Different studies have adopted different specifications in the aid allocation literature. The variables included can be generally grouped into four broad categories, viz., recipient needs, donor interest, governance considerations, and other variables. On the average, most studies consider around 5-7 explanatory variables in the aid allocation process. In this paper however, we try to identify most of the explanatory variables used in the literature and investigate the explanatory power in the aid allocation process. In other words, we do not adopt a specific specification.

A survey of the allocation literature shows that around 19 variables are commonly used across the different studies. These variables include:

- *Variables capturing recipient needs*: income per capita, physical quality of life index, population. *Donor interest variables*: export to the recipient, colonies, UN voting similarities, cultural similarities (share of Buddhist, Muslim, and Christian populations) and openness.
- *Democratic/governance variables*: rule of law, regulatory burden, political rights, civil liberties, military expenditure, corruption, and political terror scales.
- *Others*: Africa dummy and Diplomatic relation with Israel.

The objective in this paper therefore, is to employ BACE approach to "robustly" determine the aid allocation process in general and bilateral and multilateral agencies aid allocation decisions in particular. Following the existing literature on aid allocation (see for examples, McGillivray and White, 1993; Isopi and Mavrotas 2009; Neumayer 2003a,b) for the dependent variable we use using aid commitments values (in millions of constant 2007 USD)[5]. Table 1 in the Appendix provides information on the sources and definitions of the variables. The summary statistics of the variables used in the estimation are shown in Table 2 in the Appendix. The statistics related to aid suggest a wide spread in its distribution. The standard deviations for total aid, bilateral aid and multilateral aid are respectively 609.34, 474, 34 and 148.617. A comparison of bilateral and multilatreal aid means indicates that biletaral donors tend to give more aid than multilateral donors. However, judging by the estimates of standard deviation, bilateral aid tends to be more volatile than multilateral aid.

3.2 Results

To ensure consistency of estimation with the BACE frameowrk, we use the average of the variables over the 1990-2007 period. We start by exploring the determinants of total aid allocation. The BACE results are summarized in Table 3 in the appendix. Our focus is on the

[5] The objective in the aid allocation literature is to capture the donor decision making process; thus the use of commitment values is more appropriate than disbursement for this purpose.

posterior inclusion probabilities (PIP).[6] Column 2 of the table presents results for an expected model size $\bar{k}$=4 are shown.[7] Given that we have 19 explanatory variables the prior inclusion probability is 4/19 = 0.211.[8] There are 8 variables for which the posterior inclusion probability is greater than prior inclusion probability. The variables are income per capita, regulatory burden, rule of law, military expenditures, former colonies, population, diplomatic relation with Israel and exports to the recipient countries. These variables are said to be robust predictors of total aid allocation. The remaining 11 variables play little role in the allocation of total aid. A look at the results show that both recipient needs (income per capita and population) and donor interest (export to the recipients and former colonies) are important determinants of total aid allocation. What is more, out of the 8 variables which appear to be strong determinants of total aid allocation, it is interesting to note that 3 of them are democratic/governance variables (regulatory burden, rule of law and military expenditures).

In the next step we check the sensitivity of our results with respect to changes in the prior model size. Insofar we have assumed that $\bar{k}$=4; in the remaining part of the table we choose a prior model size of 7 and 10. Columns 4 and 6 present the respective results. The prior inclusion probabilities are 0.368 and 0.526 respectively for $\bar{k}$=7,10. The reported results show that the 8 variables earlier identified as robust dpredictors of total aid have a PIP higher than the prior inclusion probability. In other words, our results is not sensitive to the choice of prior model size.[9]

Next, we investigate the determinants of bilateral aid allocation. Table 4 in the appendix summarizes the results. Starting again with a prior model size of 4 (prior inclusion probability = 0.211), Column 2 of the table suggests that the variables population, export to recipients, the Africa dummy, civil liberties, former colonies, rule of law, share of Christian population, corruption, and having diplomatic relationship with Israel are `significant' determinants of bilateral aid allocation. This result implies that recipient needs (population) as well as donor interest (colonies) explain bilateral aid allocations. However, recipient needs as proxied by income per capita and the physical quality of life index are `weakly' related to bilateral aid allocation. Column 4 and 6 of the table show results for model prior size 7 (prior inclusion probability 0.368) and 10 (prior inclusion probability 0.526). With $\bar{k}$=7 our result remain unchanged in terms of the variables that are `significant' and `weak' determinants of bilateral aid allocation. For $\bar{k}$=10 the results remain similar except that the PIP for the variable civil liberty is lower than the corresponding prior inclusion probability.

The results for multilateral aid are presented in Table 5 in the Appendix. As above, we start with

[6] the posterior inclusion probabilities are order in descending order

[7] most researchers generally include moderate number of explanatory variables; thus we start with a moderate model size

[8] The posterior inclusion probability represents a measure of the weighted average goodness-of-fit of models including a particular variable-variables with high inclusion probabilities have high marginal contribution to the goodness-of-fit of the regression model

[9] We also experimented prior model sizes 5, 6, 8 , and 9 but the results do not change. It is important to stress that given the number of explanatory variables, 19, the highest expected model size is 19/2 which is approximately 10.

$\bar{k}$=4. There are 5 variables with a PIP greater than 0.211: these variables are income per capita, openness, military expenditure, rule of law and corruption. They can be regarded as `significant' determinants of multilateral aid allocation. Additionally three variables (viz., Economic freedom, civil liberties and political rights) are `marginal' determinants of multilateral aid. Changing the prior model size to $\bar{k}$=4 and 7, respectively does not change our findings in terms of the `significant' determinants of multilateral aid.

Further robustness check

The discussion so far has not made reference to the issue of endogeneity. However, variables such as income are likely to be endogenous. In practice several approaches have been used to deal with the problem of endogeneity. One of these approaches is to find an instrument which is correlated with the endogenous variable but not with the dependent variable. The problem with this approach is that those instruments are generally endogenous by nature and there is no strong theory to believe that the chosen instrument is exogenous. An alternative approach is to use internal instruments based on the lag values of the endogenous variable. In the bayesian model averaging context endogeneity might not be an issue; because, unless fixed, the endogenous predictors do not enter all the model specifications. Moreover, the results presented above should be understood as a means to derive meaningful model specifications to guide a researcher.

Having said that , however, we attempt to instrument income, a potentially endogenous variable, by using its lag values (as instruments). To save space we report results based on a model size *k* = 4 in Table 6 in the appendix. The evidence suggests that the results are quite similar to those reported earlier. In other words, our finding remain unchanged and are thus robust.

3.3 Discussion of the findings

To help us digest the findings, it may be useful to consider a synthetic representation of the above results. In this spirit, Figures 1, 2, and 3 provide a stylized illustration of the processes of total, bilateral and multilateral aid allocation, respectively. The summarized results show that recipient need as well as donor interest matter in the aid allocation process. Figure 1 shows that recipient need proxied by income per capita and population size play an important in the allocation of total aid. An interesting finding, when we look at Figure 2 and 3, is that the proxy for recipient need varies across donors. While the size of the population appears to affect bilateral aid allocation, income per capita is the recipient need variable that matters for multilateral aid allocation.

Turning to the donor interest argument, Figure 1 shows that being a former colony and and export to recipient countries affect total aid allocation decisions. As far as bilateral aid allocation is concerned the summarized results in Figure 2 indicate that being a former colony is a key factor.[10]. For multilateral aid allocation process, according to Figure 3, export to recipient is more important than being a former colony.[11] We next turn our attention to good governance and

[10]Surprisingly the importance of export to the recipient is weak

[11]In terms of UN voting similarities, another indicator of donor interest, this variable does not appear to be

economic governance. Looking at Figure 1, it is evident that three proxies for good governance viz., regulatory burden, rule of law, and military expenditure are important in the allocation of total aid. For the bilateral donors civil liberties, rule of law and corruption appear to be the most important governance indicator (see Figure 2); while multilateral donors, as Figure 3 portrays, military expenditure, rule of law and corruption are key factors. As far as economic governance, proxied by openness, only multilateral donors seem to care this variable in their allocation process. Finally, we look at the "other variables" group. The summarized results in Figures 1, 2, and 3 (in the appendix) show that these variables are only important for bilateral donors: both the Africa dummy and diplomatic relationship with Israel play an important role in explaining their allocation process.

4. Concluding remarks

In this study we have examined the factor that affect aid allocation process over the 1990-2007 period. The Bayesian averaging of classical estimates has been used to account for model and parameter uncertainty and to allow inclusion of a more comprehensive set of variables that might be related to the aid allocation process. We looked at aggregate aid, as well as bilateral and multilateral aid allocation processes. The results show that both recipient need and donor interest matters in aid allocation process. This is of course nothing new. What we do find, however, is that bilateral donors and multilateral donors value the different proxies of recipient need differently. Indeed, we find that while for bilateral donors the size of the population matters, for multilateral donors income per capita as a measure of recipient need is the most important.

Our results also show that being a former colony (a donor interest proxy) is a `significant' variable in explaining aggregate and bilateral aid allocation. However, unlike existing studies in the literature we did not find strong evidence in support of export to recipient (a donor interest measure) as an aid allocation determinant. With respect to good governance, the evidence suggest that donors accord great importance to this indicator in their decision making. Indeed, in all three sets of results, i.e. aggregate, bilateral and multilateral aid, at least three governance indicators were highly ranked (based on their posterior inclusion probability). Nonetheless, it is interesting to note that bilateral and multilateral donors have different views on what governance indicator to consider in their allocation process. In the bilateral aid allocation results, civil liberties, rule of law and corruption appear to be the most important governance indicator, while multilateral aid allocation results show that military expenditure, rule of low and corruption are key factors.

This study is not without limitations. One of them is that we have considered all bilateral donors as a group. However, it might be a worthy to investigate aid allocation process for each individual bilateral donor. A similar study can also be conducted for individual multilateral donors.

important in determining aid allocation. Similar findings also hold for cultural affinities.

Appendix

Table 1: Variable description

Variable	Definition	Source
Aid	Total, bilateral and multilateral aid commitments (billions of constant 2004 dollars)	OECD International Development statistics
Income per capita	Real GDP per capita	Heston, Summers and Aten, PWT 6.2
Population	Population in millions, beginning	Heston, Summers and Aten, PWT 6.2
Openness	Total Trade as percentage of GDP	Heston, Summers and Aten, PWT 6.2
Civil Liberties	Civil Liberty index	The Freedom House
Political Rights	Political Rights Index	The Freedom House
Rule of Law	Rule of Law	Political Risk Services (various years)
Regulatory Burden	Total of Public Health and Public	World Bank: www.doingbusiness.org
UN Friend	Percentage of times in which the recipient has voted in the UN as one of the donors	Neumayer (2003b)
Military Expenditure	Military expenditure (share of GDP)	World Development Indicators
Dipl. Rel. Israel	Diplomatic Relation with Israel	Neumayer (2003b)
Exports	Exports from donor country to the recipient	OECD Stat. Compendium
Colony	Number of years as a colony	Central Intelligence Agency (2009)
Africa	Dummy for SSA	Author created
Political Terror Scales	Measures levels of political violence and terror in a country	Political Terror Scale Org: http://www.politicalterrorscale.org/
PQLI	Physical quality of life index	Neumayer (2003b)
Corruption	Corruption	Kaufmann et al., 2008
Muslim	Percentage of Muslims in recipient country	La Porta et al. (1999), CIA
Christian	Percentage of Christians in recipient country	La Porta et al. (1999), CIA
Buddhist	Percentage of Buddhists in recipient country	Central Intelligence Agency (CIA)

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Table 2: Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Bilateral aid	313.23	474.35	3.32	3361.04
Civil liberties	3.83	1.53	1.00	7.00
cols	36.29	29.40	0.00	120.00
Corruption	-0.42	0.57	-1.57	1.03
Diplomatic Rel. with Israel	0.76	0.36	0.00	1.00
Export	0.09	0.18	0.00	1.14
Income per capita	3568.94	2901.24	495.52	14540.85
Multilateral aid	148.62	193.29	1.89	1413.69
Openness	78.95	43.13	2.48	261.78
Political rights	3.87	1.93	1.00	7.00
Political terror scales	-3.05	0.95	-5.00	-1.08
Population (000s)	35300.00	143000.00	50999.98	1220000.00
PQLI	62.09	18.22	13.60	91.25
Regulatory burden	-0.22	0.82	-3.14	1.23
Rule of Law	-0.42	0.69	-2.17	1.28
Share of Buddhist	3.73	16.54	0.00	92.00
Share of Christian	42.59	38.65	0.00	99.10
Share of Muslim	25.90	36.24	0.00	99.90
Total aid	462.13	609.34	9.08	3758.98
UN friend	0.37	0.10	0.13	0.66

Table 3: Determinants of Aid Allocation: dependent variable total aid

$\bar{k}$ =4		$\bar{k}$ =7		$\bar{k}$ =10	
Variables	PIP	Variables	PIP	Variables	PIP
Income Per Capita	1	Income Per Capita	1	Income Per Capita	1
Regulatory Burden	1	regulatory Burden	1	Rule of Law	1
Rule of Law	1	Rule of Law	1	regulatory Burden	1
Military Expenditure	1	Military Expenditure	1	Military Expenditure	1
Colony	0.999	Colony	1	Colony	1
population	0.995	Population	0.998	population	0.999
Dipl. Rel. Israel	0.940	Dipl. Rel. Israel	0.968	Dipl. Rel. Israel	0.976
Exports	0.359	Exports	0.536	Exports	0.748
Corruption	0.080	Corruption	0.172	Corruption	0.248
Africa	0.062	Muslim	0.115	Muslim	0.202
Muslim	0.057	Africa	0.112	Africa	0.161
Christian	0.047	Buddhist	0.075	Openness	0.124
Political Terror Scales	0.035	Openness	0.075	Political Terror Scales	0.122
openness	0.033	Political Terror Scales	0.073	UN Friend	0.115
UN Friend	0.031	UN Friend	0.067	Political Rights	0.107
Political Rights	0.031	Christian	0.066	Buddhist	0.104
Civil Liberty	0.030	Political Rights	0.064	Civil Liberty	0.103
Buddhist	0.027	Civil Liberty	0.063	Christian	0.103
PQLI	0.025	PQLI	0.053	PQLI	0.093

Posterior mean model size: 7.49; 8.05; 9.03.

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Table 4: Determinants of Aid Allocation (dependent variable bilateral aid)

	$\bar{k}$ =4	$\bar{k}$ =7		$\bar{k}$ =10	
Variables	PIB	Variables	PIB	Variables	PIB
population	1	Population	1	Population	1
Africa	0.547	Africa	0.811	Africa	0.913
Civil Liberty	0.528	Colony	0.679	Colony	0.746
Colony	0.469	Rule of Law	0.623	Rule of Law	0.710
Rule of Law	0.452	Christian	0.494	Dip. Rel. Israel	0.582
Christian	0.418	Dip. Rel. Israel	0.469	Corruption	0.535
Corruption	0.293	Corruption	0.417	Christian	0.528
Dipl. Rel. Israel	0.273	Civil Liberty	0.384	Civil Liberty	0.391
Buddhist	0.199	Muslim	0.222	Muslim	0.283
Muslim	0.172	Buddhist	0.205	Buddhist	0.262
UN Friend	0.105	Exports	0.161	Exports	0.259
Exports	0.075	UN Friend	0.152	UN Friend	0.207
Regulatory Burden	0.059	regulatory Burden	0.112	Political Terror Scales	0.180
PQLI	0.051	Political Terror Scales	0.099	regulatory Burden	0.174
Political Rights	0.045	Political Rights	0.082	Political Rights	0.140
Income Per Capita	0.045	PQLI	0.082	Openness	0.138
Political Terror Scales	0.044	Income Per Capita	0.077	PQLI	0.136
openness	0.034	openness	0.071	Income Per Capita	0.132
Military Expenditure	0.030	Military Expenditure	0.060	Military Expenditure	0.106

Posterior mean model size: 1.93; 3.06; 4.832.

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Table 5: Determinants of Aid Allocation (dependent variable multilateral aid)

	$\bar{k}=4$	$\bar{k}=7$		$\bar{k}=10$	
Variables	PIB	Variables	PIB	Variables	PIB
Income Per Capita	0.991	Income Per Capita	0.996	Income Per Capita	0.999
openness	0.601	openness	0.778	openness	0.871
Military Expenditure	0.532	Military Expenditure	0.679	Military Expenditure	0.746
Rule of Law	0.304	Rule of Law	0.474	Rule of Law	0.577
Corruption	0.218	Corruption	0.204	Corruption	0.304
freedom	0.141	Exports	0.191	Exports	0.251
Civil Liberty	0.134	freedom	0.162	Buddhist	0.225
Political Rights	0.114	Political Rights	0.156	Africa	0.219
Christian	0.094	Civil Liberty	0.150	population	0.198
Exports	0.092	Africa	0.149	Political Rights	0.198
Africa	0.087	Christian	0.129	PQLI	0.196
PQLI	0.061	Buddhist	0.127	freedom	0.191
Buddhist	0.060	PQLI	0.119	Christian	0.184
population	0.053	population	0.111	Civil Liberty	0.167
Colony	0.050	Muslim	0.085	Political Terror Scales	0.142
Muslim	0.046	Colony	0.0845	Muslim	0.140
Political Terror Scales	0.038	Political Terror Scales	0.081	Colony	0.139
UN Friend	0.035	UN Friend	0.073	regulatory Burden	0.122
Regulatory Burden	0.031	regulatory Burden	0.065	UN Friend	0.121
Dipl. Rel. Israel	0.0286	Dipl. Rel. Israel	0.059	Dipl. Rel. Israel	0.106

Posterior mean model size: 3.71; 4.87; 6.09.

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Table 6: Determinants of Aid Allocation

Total Aid		Bilateral aid		Multilateral Aid	
Variables	PIP	Variables	PIP	Variables	PIP
Income Per Capita	1	Population	1	Income Per Capita	0.990
Regulatory Burden	1	Africa	1	Rule of Law	0.601
Rule of Law	1	Colony	1	regulatory Burden	0.531
Military Expenditure	0.999	Rule of Law	0.999	Military Expenditure	0.303
Colony	0.999	Christian	0.999	Colony	0.218
population	0.995	Dip. Rel. Israel	0.998	population	0.141
Dipl. Rel. Israel	0.939	Corruption	0.968	Dipl. Rel. Israel	0.134
Exports	0.356	Civil Liberty	0.535	Exports	0.114
Corruption	0.080	Muslim	0.172	Corruption	0.094
Africa	0.062	Buddhist	0.114	Muslim	0.092
Muslim	0.055	Exports	0.112	Africa	0.087
Christian	0.047	UN Friend	0.075	Openness	0.061
Political Terror Scales	0.035	regulatory Burden	0.075	Political Terror Scales	0.060
openness	0.033	Political Terror Scales	0.073	UN Friend	0.053
UN Friend	0.031	Political Rights	0.067	Political Rights	0.050
Political Rights	0.031	PQLI	0.066	Buddhist	0.046
Civil Liberty	0.030	Income Per Capita	0.064	Civil Liberty	0.038
Buddhist	0.027	Openness	0.063	Christian	0.035
PQLI	0.025	Military Expenditure	0.053	PQLI	0.030

Posterior mean model size: 7.49.

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FIGURE 1
"SIGNIFICANT" DETERMINANTS OF TOTAL AID ALLOCATION

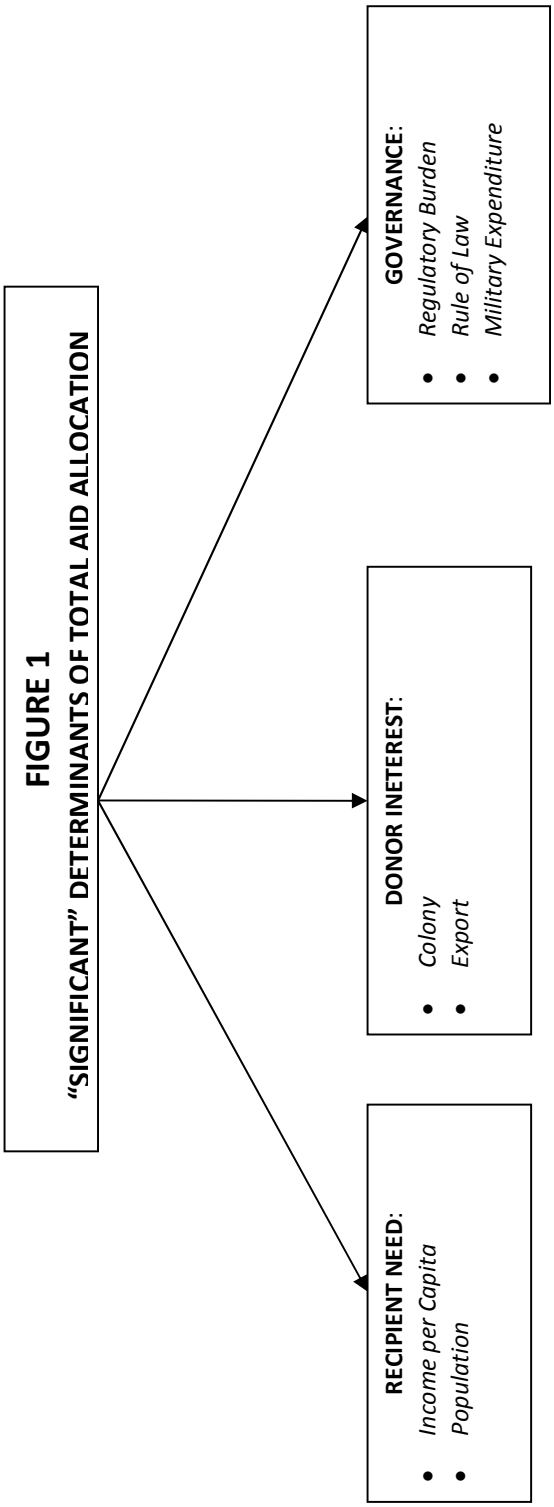
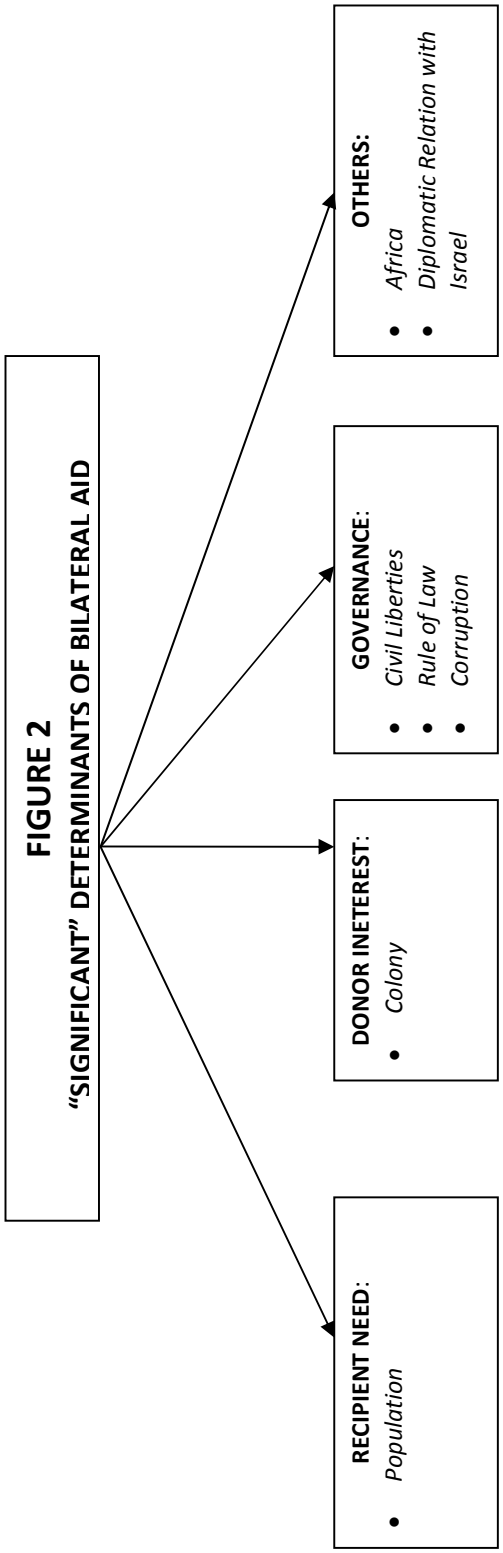


FIGURE 2
"SIGNIFICANT" DETERMINANTS OF BILATERAL AID



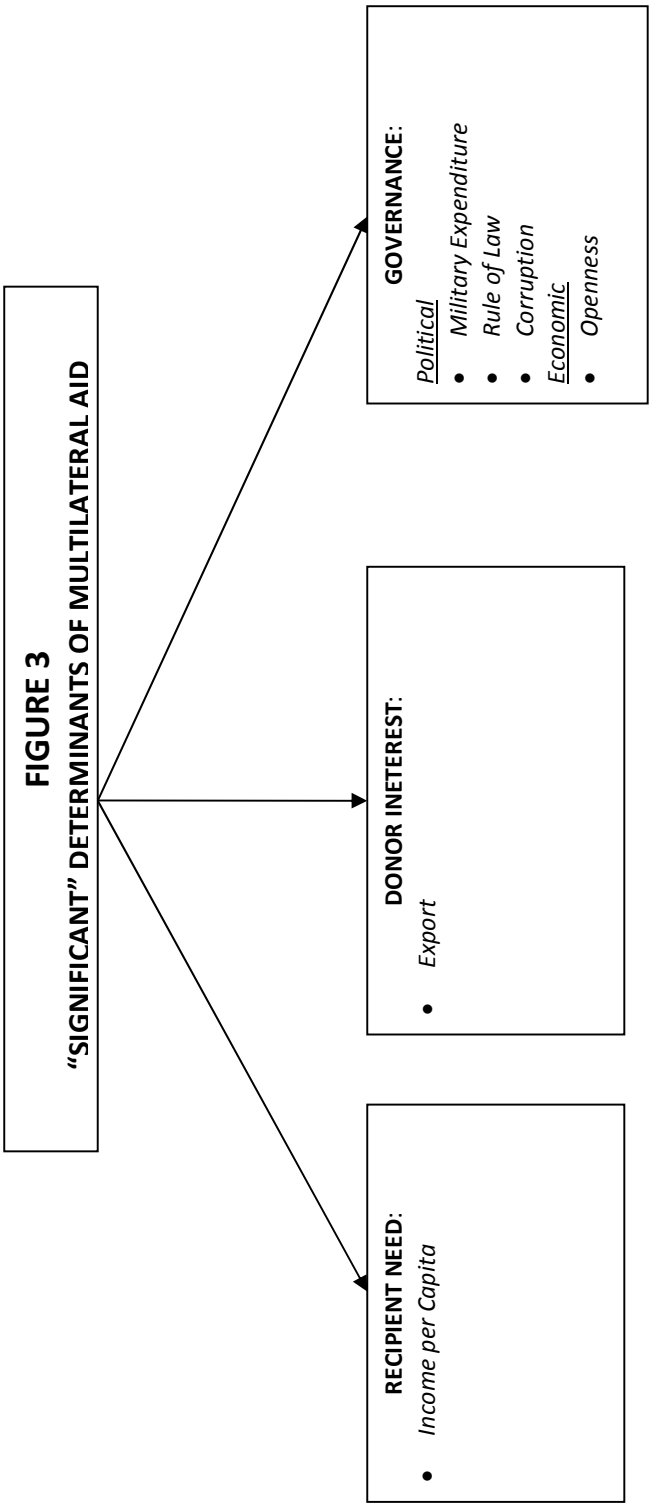


FIGURE 3
"SIGNIFICANT" DETERMINANTS OF MULTILATERAL AID
GOVERNANCE:
Political
Military Expenditure
Rule of Law
Corruption
Economic
Openness
DONOR INETEREST:
Export
RECIPIENT NEED:
Income per Capita

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