Additional Material for:

Need, Merit or Self-Interest – What Determines the Allocation of Aid?

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Figure 1:Total bilateral aid allocation by major donors (1980-2004)
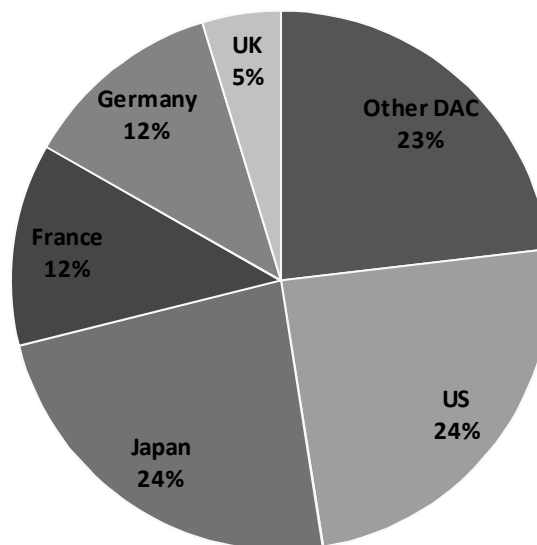
Table A1: Variable Means

Variable	Top Five Donors Sample Table 3	DAC Donors Sample Table 4 Columns2&3
Number of Observations	8,305	27,373
ln Aid per capita	0.229	-1.431
Aid per capita (in const. 2003 US$)	5.882	2.921
Ln GDP per capita(t-1)	6.668	6.754
ln Other Aid (sum of aid given by other donors)	8.318	8.251
Growth (t-1) (growth of per capita GDP)	1.242	1.248
Democracy (t-1) (index -10 to 10)	0.210	0.350
Human Rights (t-1) (index 1-5)	2.675	2.714
ln Trade (t-1) (imports+exports/donor GDP)	-4.667	-4.472
UN Friend UK (index 0-1)	0.375	0.3816
UN Friend USA (index 0-1)	0.163	0.163
UN Friend France (index 0-1)	0.400	0.405
UN Friend Germany (index 0-1)	0.456	0.462
UN Friend Japan (index 0-1)	0.488	0.493
ln Population (total population)	16.155	16.224
Post Cold War (dummy variable)	0.547	0.555

Table A2: Top 10 Recipients of DAC Aid (Millions $US)

Cold War 1980-1989		Post-Cold War 1990-2000		Post-Cold War 2001-2004	
Egypt	26,320	Egypt	46,117	Iraq	14,299
India	25,349	Indonesia	26,898	Pakistan	7,717
Indonesia	22,503	China	24,945	Indonesia	7,159
Israel	20,743	India	18,963	China	6,936
China	15,851	Israel	17,773	DRC	6,574
Bangladesh	15,317	Philippines	16,158	India	5,944
Pakistan	12,683	Thailand	13,010	Afghanistan	5,262
Philippines	11,624	Bangladesh	10,352	Vietnam	4,123
Tanzania	9,721	Vietnam	9,637	Russian Fed.	4,006
Turkey	9,454	Tanzania	9,156	Serbia&Mont.	3,518

Source: OECD Online Statistics

Table A3: Bilateral Aid from the Top Five Donors to Former Colonies (1980-2004)

Donor	Aid to Former Colonies (%)	Aid to Former Colonies (Million US$)
UK	71%	36,798
France	51%	67,748
USA	3%	7,465
Germany	3%	4,263
Japan	0%	

Source: OECD Online Statistics

Table A4: How Do the Top Five Donors Allocate Aid?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	UK	USA	Japan	Germany	France	UK	USA	Japan	Germany	France
	OLS	OLS	OLS	OLS	OLS	FE	FE	FE	FE	FE
ln GDP per capita (t-1)	-1.314	-0.522	-0.701	-0.455	-0.768	-0.697	-1.448	-0.076	-0.555	-0.430
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.026)**	(0.000)***	(0.746)	(0.007)***	(0.056)*
ln Other Aid per capita	-0.178	2.791	0.268	1.742	1.043	0.393	1.927	0.447	1.072	0.700
	(0.686)	(0.000)***	(0.570)	(0.000)***	(0.009)***	(0.215)	(0.000)***	(0.206)	(0.000)***	(0.015)**
Growth (t-1)	0.023	-0.008	0.016	0.001	0.007	0.016	0.006	0.023	0.008	0.021
	(0.006)***	(0.336)	(0.088)*	(0.879)	(0.365)	(0.005)***	(0.290)	(0.002)***	(0.029)**	(0.000)***
Democracy (t-1)	0.056	0.031	0.038	0.006	0.004	0.024	0.018	0.008	0.010	0.007
	(0.000)***	(0.000)***	(0.000)***	(0.195)	(0.551)	(0.001)***	(0.042)**	(0.345)	(0.080)*	(0.386)
Human Rights (t-1)	0.026	0.247	-0.270	-0.062	-0.119	-0.000	-0.033	-0.325	-0.167	-0.113
	(0.529)	(0.000)***	(0.000)***	(0.026)**	(0.002)***	(0.997)	(0.415)	(0.000)***	(0.000)***	(0.001)***
ln Trade (t-1)	0.838	0.148	0.449	0.212	0.867	0.067	0.045	-0.016	0.087	0.089
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.411)	(0.458)	(0.860)	(0.141)	(0.154)
UN Friend UK	3.724	-6.023	-0.358	-7.638	-4.560	3.105	-3.433	-1.149	-1.661	-1.048
	(0.008)***	(0.000)***	(0.805)	(0.000)***	(0.000)***	(0.006)***	(0.007)***	(0.400)	(0.043)**	(0.309)
UN Friend USA	-4.473	7.839	-1.355	5.497	-1.133	0.508	-0.875	-0.041	1.247	-1.039
	(0.000)***	(0.000)***	(0.087)*	(0.000)***	(0.087)*	(0.502)	(0.285)	(0.965)	(0.018)**	(0.113)
UN Friend Japan	0.514	1.801	4.701	1.251	1.191	0.073	1.639	1.353	0.654	0.528
	(0.566)	(0.055)*	(0.000)***	(0.032)**	(0.153)	(0.904)	(0.011)**	(0.065)*	(0.124)	(0.359)
UN Friend Germany	-0.622	0.363	-0.594	0.061	0.164	-0.456	0.062	-0.081	-0.200	0.537
	(0.152)	(0.385)	(0.125)	(0.830)	(0.677)	(0.097)*	(0.816)	(0.792)	(0.338)	(0.030)**
UN Friend France	-1.744	0.812	-2.657	4.425	3.398	-3.136	2.360	0.324	0.891	0.912
	(0.266)	(0.624)	(0.088)*	(0.000)***	(0.019)**	(0.004)***	(0.054)*	(0.811)	(0.259)	(0.370)
ln Population	-1.234	1.992	-0.243	1.243	0.005	-0.593	0.406	0.529	-1.111	-0.581
	(0.006)***	(0.000)***	(0.608)	(0.000)***	(0.989)	(0.221)	(0.426)	(0.327)	(0.001)***	(0.159)
Post Cold War	0.508	-0.858	0.453	-0.305	0.219	0.151	-0.261	0.147	0.060	-0.053
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.012)**	(0.083)*	(0.003)***	(0.110)	(0.302)	(0.431)
R-squared	0.418	0.306	0.206	0.316	0.479	0.786	0.755	0.633	0.720	0.820
Hausman Test F(116,1531)						22.67	24.14	15.35	19.07	24.97

Note: Dependent variable = ln (Aid per capita). Regressions include a constant term. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. Robust p-values in parentheses. N= 1661. OLS results presented in columns (1)-(5) and Fixed Effects results presented in columns (6)-(10).

Table A5: Aid Allocation

	(1)	(2)	(3)
	Top Five Donors OLS	22 DAC Donors OLS	22 DAC Donors FE
ln GDP per capita (t-1)	-1.314 (0.000)***	-0.786 (0.000)***	-1.065 (0.000)***
ln Other Aid per capita	-0.178 (0.686)	1.236 (0.000)***	1.050 (0.000)***
Growth (t-1)	0.023 (0.006)***	0.011 (0.000)***	0.009 (0.001)***
Democracy (t-1)	0.056 (0.000)***	0.021 (0.000)***	0.004 (0.334)
Human Rights (t-1)	0.026 (0.529)	0.052 (0.006)***	-0.031 (0.137)
ln Trade (t-1)	0.838 (0.000)***	0.320 (0.000)***	0.458 (0.000)***
UN Friend UK	3.724 (0.008)***	-6.542 (0.000)***	-3.288 (0.000)***
UN Friend USA	-4.473 (0.000)***	1.519 (0.000)***	0.483 (0.233)
UN Friend France	-1.744 (0.265)	3.960 (0.000)***	1.437 (0.042)**
UN Friend Germany	-0.622 (0.152)	-0.000 (1.000)	-0.090 (0.642)
UN Friend Japan	0.514 (0.566)	1.946 (0.000)***	1.490 (0.000)***
ln Population	-1.234 (0.006)***	0.303 (0.119)	-0.200 (0.374)
Post Cold War	0.508 (0.000)***	-0.083 (0.041)**	-0.004 (0.930)
USA Donor Dummy	-83.326 (0.000)***	-40.290 (0.001)***	-41.794 (0.000)***
France Donor Dummy	-32.281 (0.027)**	13.179 (0.184)	20.879 (0.024)**
Germany Donor Dummy	-62.318 (0.000)***	-26.788 (0.002)***	-10.224 (0.173)
Japan Donor Dummy	-23.277 (0.143)	17.650 (0.112)	24.610 (0.028)**
USA*ln GDP per capita (t-1)	0.792 (0.000)***	0.138 (0.047)**	0.008 (0.901)
Germany*ln GDP per capita (t-1)	0.859 (0.000)***	0.164 (0.000)***	0.061 (0.082)*
France*ln GDP per capita (t-1)	0.546 (0.000)***	-0.098 (0.020)**	-0.042 (0.247)
Japan*ln GDP per capita (t-1)	0.613 (0.000)***	-0.095 (0.044)**	-0.058 (0.200)
USA*Population	3.226 (0.000)***	1.766 (0.000)***	1.848 (0.000)***
Germany*Population	2.477 (0.000)***	1.333 (0.000)***	0.646 (0.035)**
France*Population	1.239 (0.038)**	-0.378 (0.350)	-0.725 (0.055)*
Japan*Population	0.990 (0.128)	-0.415 (0.362)	-0.733 (0.109)

USA*Growth (t-1)	-0.031	-0.022	-0.024
	(0.008)***	(0.004)***	(0.002)***
Germany*Growth (t-1)	-0.022	-0.009	-0.013
	(0.027)**	(0.138)	(0.008)***
France*Growth (t-1)	-0.016	0.000	-0.003
	(0.168)	(0.964)	(0.688)
Japan*Growth (t-1)	-0.008	0.018	0.009
	(0.537)	(0.044)**	(0.271)
USA*ln Other Aid per capita	2.969	1.603	1.752
	(0.000)***	(0.001)***	(0.000)***
Germany*ln Other Aid per capita	1.920	0.816	0.383
	(0.000)***	(0.020)**	(0.205)
France*ln Other Aid per capita	1.221	-0.225	-0.470
	(0.039)**	(0.577)	(0.211)
Japan*ln Other Aid per capita	0.446	-0.780	-1.003
	(0.489)	(0.085)*	(0.028)**
USA*Trade (t-1)	-0.690	-0.114	-0.097
	(0.000)***	(0.001)***	(0.003)***
Germany*Trade (t-1)	-0.626	-0.102	0.138
	(0.000)***	(0.001)***	(0.000)***
France*Trade (t-1)	0.028	0.484	0.584
	(0.579)	(0.000)***	(0.000)***
Japan*Trade (t-1)	-0.389	0.139	0.173
	(0.000)***	(0.000)***	(0.000)***
USA*Democracy (t-1)	-0.025	0.010	0.005
	(0.012)**	(0.222)	(0.498)
Germany*Democracy (t-1)	-0.050	0.006	0.001
	(0.000)***	(0.274)	(0.824)
France*Democracy (t-1)	-0.052	-0.007	-0.007
	(0.000)***	(0.276)	(0.250)
Japan*Democracy (t-1)	-0.018	0.027	0.016
	(0.059)*	(0.000)***	(0.008)***
USA*Human Rights	0.220	0.134	0.089
	(0.001)***	(0.010)**	(0.064)*
Germany*Human Rights	-0.088	-0.135	-0.133
	(0.080)*	(0.000)***	(0.000)***
France*Human Rights	-0.145	-0.107	-0.077
	(0.010)**	(0.005)***	(0.032)**
Japan*Human Rights	-0.297	-0.338	-0.319
	(0.000)***	(0.000)***	(0.000)***
USA*UN Friend UK	-9.747	0.093	1.135
	(0.000)***	(0.953)	(0.426)
USA*UN Friend USA	12.312	8.106	8.554
	(0.000)***	(0.000)***	(0.000)***
USA*UN Friend Germany	0.985	0.452	0.545
	(0.102)	(0.332)	(0.199)
USA*UN Friend France	2.556	-3.188	-3.225
	(0.262)	(0.068)*	(0.042)**
USA*UN Friend Japan	1.287	-0.399	-1.106
	(0.321)	(0.684)	(0.213)
Germany*UN Friend UK	-11.362	-1.362	0.026
	(0.000)***	(0.240)	(0.979)
Germany*UN Friend USA	9.971	5.098	3.483
	(0.000)***	(0.000)***	(0.000)***
Germany*UN Friend Germany	0.683	-0.141	-0.446
	(0.188)	(0.694)	(0.161)

Germany*UN Friend France	6.169	0.880	-0.925
	(0.001)***	(0.496)	(0.406)
Germany*UN Friend Japan	0.737	-0.661	0.063
	(0.489)	(0.335)	(0.916)
France*UN Friend UK	-8.284	3.885	4.472
	(0.000)***	(0.003)***	(0.000)***
France*UN Friend USA	3.341	-2.374	-3.149
	(0.005)***	(0.000)***	(0.000)***
France*UN Friend Germany	0.785	0.117	-0.016
	(0.180)	(0.764)	(0.963)
France*UN Friend France	5.143	-2.083	-2.511
	(0.016)**	(0.149)	(0.053)*
France*UN Friend Japan	0.677	-1.056	-0.986
	(0.580)	(0.205)	(0.187)
Japan*UN Friend UK	-4.082	5.808	7.565
	(0.044)**	(0.000)***	(0.000)***
Japan*UN Friend USA	3.118	-3.019	-3.491
	(0.013)**	(0.000)***	(0.000)***
Japan*UN Friend Germany	0.028	-0.650	-0.521
	(0.962)	(0.129)	(0.215)
Japan*UN Friend France	-0.913	-5.112	-5.597
	(0.679)	(0.001)***	(0.000)***
Japan*UN Friend Japan	4.187	2.054	1.312
	(0.001)***	(0.021)**	(0.123)
USA*Post Cold War	-1.366	-0.776	-0.779
	(0.000)***	(0.000)***	(0.000)***
Germany*Cold War	-0.813	-0.358	-0.024
	(0.000)***	(0.000)***	(0.732)
France*Post Cold War	-0.289	0.159	0.295
	(0.031)**	(0.063)*	(0.000)***
Japan*Post Cold War	-0.055	0.506	0.614
	(0.698)	(0.000)***	(0.000)***
UK Donor Dummy		33.759	39.154
		(0.004)***	(0.000)***
UK*ln GDP per capita (t-1)		-0.620	-0.705
		(0.000)***	(0.000)***
UK*ln Other Aid per capita		-0.972	-1.090
		(0.040)**	(0.013)**
UK*Growth (t-1)		0.003	0.003
		(0.761)	(0.758)
UK*Democracy (t-1)		0.051	0.051
		(0.000)***	(0.000)***
UK*Human Rights (t-1)		-0.051	-0.033
		(0.254)	(0.422)
UK*Trade (t-1)		0.492	0.594
		(0.000)***	(0.000)***
UK*UN Friend UK		9.398	10.447
		(0.000)***	(0.000)***
UK*UN Friend USA		-4.650	-5.106
		(0.000)***	(0.000)***
UK*UN Friend Germany		-0.813	-0.919
		(0.082)*	(0.032)**
UK*UN Friend France		-5.165	-5.539
		(0.002)***	(0.000)***
UK*UN Friend Japan		-0.997	-1.546
		(0.285)	(0.073)*

UK*Post Cold War		0.438	0.569
		(0.000)***	(0.000)***
UK*Population		-1.137	-1.345
		(0.017)**	(0.002)***
Constant	32.412	-11.104	2.437
	(0.003)***	(0.020)**	(0.623)
Hausman Test F(125,27164)			36.91
Observations	8305	27373	27373
R-squared	0.438	0.433	0.515

Notes: Dependent variable = ln (Aid per capita). UK is the base donor in model (1). Results presented in columns (1) and (2) are based on OLS estimation, column (3) based on Fixed Effects estimation. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. Robust p values in parentheses. Results from column 3 are reported Table 2 of the published article.

Partial R^2

The partial R^2 values reported in section 4 show how much of the variation in the dependent variable, aid, is explained by the need, merit and self-interest variables. We base our estimation of the partial R^2 values on Cohen *et al* (2003, pp. 168-169). This and other textbooks do not suggest how to deal with interaction terms and we would like to thank Steve Bond for helpful suggestions.

Our core model in Table 4, column 3 can be summarized as follows:

$$AID_{ijt} = \beta_0 + \beta_1 N_{ijt} + \beta_2 N_{ijt} \cdot D_i + \beta_3 M_{ijt} + \beta_4 D_i \cdot M_{ijt} + \beta_5 SI_{ijt} + \beta_6 SI_{ijt} \cdot D_i + \beta_7 D_i$$
$$+ \beta_8 \eta_j + u_{ijt}$$

where we regress aid, Aid_{ijt}, on three vectors, need (N_{ijt}), merit (M_{ijt}) and self-interest (SI_{ijt}), donor dummies (D_i), the recipient dummies (η_j) and the interactions between the explanatory variables and the donor dummies.

The partial R_N^2 indicates how much of the variation in Aid_{ijt} is explained by the vector of need variables, N_{ijt}. We obtained the partial R_N^2 by regressing Aid_{ijt} on all of the other explanatory variables other than the need variables, the donor dummies and their interaction term. We save the residuals $\widehat{e_{aid}}$ from this regression. We then regress each of the need variables, donor dummies and interaction terms on all of the other variables. We save the residuals from each regression, $\widehat{e_{N1}}$, $\widehat{e_{N2}}$ ... $\widehat{e_{D1}}$, $\widehat{e_{D2}}$ ... $\widehat{e_{ND1}}$, $\widehat{e_{ND2}}$ ... etc. As a last step we regress $\widehat{e_{aid}}$ on all of these residuals. We interpret the R^2 from this regression as partial R_N^2, i.e. this R^2 indicates how much of the variation in aid is explained by the need variables, the donor variables and their interaction terms, while holding all the other variables constant.

Variable Definitions and Data Sources

ln Aid
is measured in logarithm of per capita aid. This includes technical assistance but excludes grants, loans and credit for military purposes or transfers to individuals. We use aid commitments rather than disbursements which provide a more accurate picture of intended aid allocation by donors in a given year (whereas there are many reasons that may prevent the aid from actually being disbursed.) Aid is reported in constant 2003 dollars, thus accounting for inflation over the period. We include both Official Development Assistance (ODA) to Part I countries and Official Aid (OA) to Part II countries as defined by the OECD. Many studies choose to exclude the Part II countries, which consist of more advanced developing countries and Newly Independent States of the Former Soviet Union, because of the incompleteness of information prior to 1995. However, given the potential substitutability of aid between these two groups, we have incorporated them both in our analysis. Furthermore, over 25 countries (such as Bermuda, Kuwait and Netherland Antilles) have moved from Part I to Part II over the sample period. In 2005, the OECD abolished the definition of Part II countries and has reverted to a single list of recipient countries. Data Source: OECD online.

ln GDP (t-1)
the logarithm of per capita income measured in the previous year. Per capita income is measured in constant US$. Source: World Development Indicators. Some studies suggest a non-linear relationship between aid and income (e.g. Bandyopadhyay and Wall 2007). In order to keep our model parsimonious we refrained from including a squared income term in addition to a linear one.

Growth (t-1)
is the annual growth rate in per capita income in the previous year. Source: World Development Indicators.

Latin America
Dummy variable, takes a value of one for countries in Latin America and the Caribbean and zero otherwise.

Democracy
Democracy is measured by the variable polity2 from the Polity IV data set. It ranges from-10 to 10, higher values indicate more democratic regimes. For a more detailed description see Jaggers and Gurr (1995). It is measured in the previous year.
Data source: http://www.systemicpeace.org/polity/polity4.htm

Human rights
Human rights violations are measured using the Political Terror Scale, based on information from the US State Department and Amnesty International (Cornett, Gibney and Wood 2006). The index is measured on a scale of 1 to 5, with higher numbers indicating more human rights abuses. We used the US State Department index, the index based on Amnesty International reports provided similar results. The democracy and human rights proxies are ordinal variables. Since we have a large number of interaction terms in our model it is not possible to include ten democracy and four human rights dummies. However, we constructed a democracy dummy by

categorizing observations of zero and above as democratic and a dummy for human rights by classifying countries of three and above as poor human rights regimes. Our core results remain essentially unchanged when we use these dummy variables instead of the ordinal variables. Results are available upon request.

ln Trade (t-1)
Trade is measured as the sum of imports and exports between a donor and a recipient, as a percentage of donor GDP. We include the natural logarithm of this variable. Data source: IMF, Direction of Trade Statistics.

ln Other Aid
This variable is the sum of all the aid received from other bilateral donors. It is measured in per capita terms. Data source: OECD online.

ln Population
is the logarithm of the total population. Source: World Development Indicators.

Post Cold War
Dummy variable, taking the value zero for the years 1980-1989 and one for 1990-2004.

Sub-Saharan Africa
Dummy variable, takes a value of one for countries in Sub-Saharan Africa and zero otherwise. We categorise South Africa as 'other'.

'UN Friend'
The UN voting variable ranges from -1 to 1, where -1 (1) indicates that the recipient never (always) voted alongside the donor. There are a number of issues when constructing the UN Friend variable (Dreher and Sturm, 2006). First, is the choice of how to deal with abstentions and absenteeism. Second, there is a great deal of variation in the importance of votes in the General Assembly and many votes are of little strategic importance to donor countries. However, given that there is no categorization of votes according to their importance and the subjective nature of what should be deemed "important", all votes are included in our analysis. Following Kegley and Hook (1991) we only count yes/no votes and discard abstentions and absenteeism.

Additional References

Examples of historical accounts of aid allocation include:

Akram, Tanweer, "The International Foreign Aid Regime: Who gets Foreign Aid and How Much?" *Applied Economics* 35 (2003):1351-1356.

Thorbecke, Erik, "The Evolution of the Development Doctrine and the Role of Foreign Aid" in F. Tarp and P. Hjertholm (eds), *Foreign Aid and Development*, Oxon: Routledge, 2006.

Examples of the earlier empirical literature include:

Dudley, L., and C. Montmarquette (1976) "A model of the supply of bilateral foreign aid." *American Economic Review,* 66 (1), pp. 132-142.

McKinley, R.D., and R. Little (1977) "A foreign policy model of US bilateral aid allocation." *World Politics*, 30 (1), pp. 58-86.

Mosley, P. (1978) "Models of the aid allocation process: A comment on McKinley and Little", *Political Studies,* 24(2), pp. 245-253.

Discussion of the Partial R-squared:

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