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Abstract

This note reconciles an on-going debate on the effect of foreign aid on corruption by introducing a previously missing heterogeneity dimension of aid. The relationship was estimated using dynamic system GMM and quantile regressions (QR). Results show that both narratives in the debate are correct, contingent on the type of development assistance. The QR results are robust to endogeneity when the independent variables of interest are instrumented with their first-lags.

JEL Classification: B20; F35; F50; O10; O55
Keywords: Foreign Aid; Political Economy; Development; Africa

1. Introduction

Okada and Samreth (2012) reported the findings of their research on aid and corruption – for 120 countries from 1999 to 2009 – in *Economic Letters*, where they concluded that aid reduces corruption and the effect is stronger for less corrupt countries. Asongu (2012) later passed a comment in *Economics Bulletin* that the findings of Okada and Samreth, though sufficient to aid policy and academic debates, may not be relevant in the African context. The main argument of the author is that when testing the model of Okada and Samreth (2012) in Africa, there is no sufficient and robust evidence to conclude that foreign aid reduces corruption.

We are yet to findany empirical study that has attempted to clarify this murky conclusions, at-least for Africa; a continent with countries of somewhat homogenous economic and institutional structure (Asiedu, 2006; Efobi, 2014).Foreign aid for African countries, subsists as an important source of capital for development (Moyo, 2009). Perhaps, it is presumed that the ambiguity of the effect of aid that ispronounced in the existent literature can be resolved by considering aid distribution by sector. The aid data used by the previous studies were total, multilateral and bilateral aids.These types of foreign aid data maybe problematic especially because they capture aggregate aid data from different originating sources (bilateral and multilateral); but do not account for the actual usage of foreign aid, for which it is directed. Hence, they will most likely make the effect of foreign aid unclear (Selaya and Sunesen, 2012).

In this study, we considered aid flow by sector and the effect on corruption for a global sample of 100 countries (for which data was available) and for an African sub-sample. There may be several reasons to expect that disaggregating aid flow data by sector will provide a clearer perspective of the aid-corruption nexus. First, some forms of aidthat are directed towards some particular sectors are more likely to have a rent-seeking effect compared to others (Harms and Lutz, 2006; Kimura and Todo, 2010). For example, those aids directed at the development of social infrastructures like health and education may not be easily verified by donors in terms of the input requirement for a particular output. Therefore aid funds get lost due to the unbenevolent attitudes of the aid recipient government in efficiently disbursing such funds (Easterly, 2008). This is unlike other forms of aids that are directed at sectors with obvious outputs like infrastructure and programme related funds. Second,improving the external economics of scale for foreign investment inflow through infrastructural development and ensuring investment security, is a central national policy of developing countries (Bartels and Crombrugghe, 2009), especially aid recipients. In driving this policy, countries rely on huge capital investment, which most times are gotten from foreign aids. Constrained by the policy, the occurrence of rent seeking behaviour in aid recipient countries will likely be minimised for aids directed towards economic infrastructure and security; unlike aids to other sectors.

We follow the suggestion of Selaya and Sunesen (2012) that – probably – a disaggregated aid data (aid flow by sector) will provide a robust evidence on what type of aid ‘fuels’ corruption. An African sub-sample was included in the analysis in order to reach a clear conclusion on the implications of our study for a more specific sample.

2. Empirical Approach

The model(equation 1) follows the intuition of Asongu (2012) and Okada and Samreth (2012) to include the covariates log of real per capita GDP and democracy. The other variables are explained and described in Table 1 for a sample of 101 countries (2005-2013).

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$$Corruption_{it} = \alpha + \beta Foreign\_aid_{it}^{k} + \delta Covariates_{it} + \varepsilon_{it} \quad (1)$$

The empirical model was estimated using the Quantile Regression (QR) technique in order to examine the effect of the categories of aid across different levels of corruption. This favours the approach of Okada and Samreth (2012) and for comparison, the system GMM (SGMM) technique, as applied inAsongu(2012), was also estimated.

Table 1: Data Description and Summary Statistics

Variable	Indicators	Definition	Total Sample N=101	African sub-Sample N=53	Source
Corruption	Corruption	The extent to which public office is exercised for private gains. It is scaled from -2.5 (high corruption) to +2.5 (low corruption). This measure was rescaled so that higher values signify more corruption. Thus 0 (low corruption) to 5 (high corruption)	2.935	3.091	World Governance Indicators
Foreign Aid	Social Infrastructure & Services	Foreign aid directed at human development purposes such as education, water supply and sanitation	0.055	0.074	Organisation for Economic Corporation and Development
	Economic Infrastructure and Services	Foreign aid directed at infrastructures like transport, communication and energy	0.016	0.024	
	Production Sectors	Foreign aid directed at the productive sector like agriculture, industry, mining, construction, trade and tourism	0.003	0.005	
	Multi sector	Foreign aid directed at other sectorial development like rural development	0.003	0.004	
	Programme Assistance	Foreign aid directed towards program related assistance like food aid, disaster and war	0.007	0.009	
	Action on debt	Aid directed towards debt relief	0.010	0.014	
Covariates	GDP Per Capita	The log of per capita GDP at 2005 constant USD	3103.33	1888.67	World Development Indicators
	Democracy	Reflects the level of competiveness in the political system, the presence of electoral democracies and the freedom of political instruments like the press. Ranked from 1 (low democratic institution) to 7 (high democratic institution).	4.33	3.71	Freedom House

Note: The mean values are presented in the Table. The values for the foreign aids are in GDP 2005 Constant USD ratio.

3. Empirical Result

To begin the analysis, the multicollinearity test was first conducted (not reported for space) and there was no evidence of multicollinearity. Tables 2 and 3 present the SGMM and QR result for the entire sample and the African sub-sample. The signs and significant levels of the covariates follow theoretical expectations[1]that economic development and democratic institutions are significant determinants of corruption (also applicable forthe African sub-sample).

From the Tables, aids to social infrastructure and debt relief are significant inducers of corrupt practices in the sampled countries. The signs were consistently positive for the entire columns in Tables 2 and 3. Although these forms of aid spur rent-seeking behaviour, the impact is more visible for countries at the lower quantiles of corruption. The reason being that these forms of aid create an initial outward shock of public resources that pushes public officers to rent-seeking behaviour (Economides et al, 2008), especially when the usage of the aid cannot be verified. And with regard to debt relief, studies (e.g. Jalles, 2011; Cooray and Schneider, 2013) have shown that foreign debt enhances corruption. Therefore,aids directed towards debt relief in a country with debt problems, will further consolidate corruption in such country. No wonder the signs of this variable were consistently positive in all the columns.

Aid directed towards the development of economic infrastructure, multi-sector and programme assistance were consistently reducing corruption for both the entire sample and for the African countries (especially for countries in the 25th, 50th and 75th quantiles). These forms of aid disbursements are more likely to reduce rent-seeking tendencies of public officers because their utilisation can easily be verified through the presence of physical outputs (like infrastructural, sectorial development and program related assistance) and the improvement of the investment environment of the recipient countries.

[1] (See Asongu, 2012; Okada and Samreth, 2012)

Table 2: Corruption and Foreign Aid

	SGMM	Q10	Q25	Q50	Q75	Q90
	-0.070	-0.020*	-0.013*	-0.080*	-0.044*	-0.035*
GDP Per capita	(0.156)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
	-0.028*	-0.124*	-0.098*	-0.157*	-0.153*	-0.151*
Democracy	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.0312**	0.670*	0.295*	0.105	0.144***	-0.076
Aid to Social Infrastructure	(0.014)	(0.000)	(0.004)	(0.402)	(0.054)	(0.114)
	-0.0724	-3.918*	-1.072**	0.006	-0.103	-0.180
Aid to Economic Infrastructure	(0.346)	(0.000)	(0.029)	(0.991)	(0.801)	(0.414)
	0.354	4.335	2.820	1.942	2.329	6.039***
Aid to Productive sector	(0.640)	(0.106)	(0.383)	(0.532)	(0.357)	(0.063)
	-1.372	-33.587*	-22.038*	-2.067	5.872***	0.476
Aid to Multi Sector	(0.135)	(0.000)	(0.000)	(0.659)	(0.073)	(0.942)
	-0.6912	-4.054**	-7.484*	-6.221*	-4.937*	-2.380**
Aid to Program Assistance	(0.121)	(0.026)	(0.000)	(0.000)	(0.000)	(0.015)
	0.278*	0.602*	0.529*	0.123	-0.235	0.297**
Aid to Actions Related to debt	(0.000)	(0.002)	(0.003)	(0.609)	(0.213)	(0.046)
	0.859*					
Corruption	(0.000)	---	---	---	---	---
	0.551	3.612	3.645	3.983	4.086	4.198
Constant	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2		0.322	0.208	0.203	0.274	0.307
AR (2)	0.693	---	---	---	---	---
Sargan	0.420	---	---	---	---	---
Instrument	36	---	---	---	---	---

Note: *, ** and *** signify 1, 5 and 10% significance levels. The values in parenthesis are the prob. values

Table 3: Corruption and Foreign Aid (African sub-Sample)

	(SGMM)	(Q10)	(Q25)	(Q50)	(Q75)	(Q90)
	-0.043	-0.020*	-0.020*	-0.013*	-0.084*	-0.004*
GDP Per capita	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
	-0.035*	-0.135*	-0.174*	-0.166*	-0.155*	-0.163*
Democracy	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	0.037**	0.648*	0.484*	0.118	0.017	0.041
Aid to Social Infrastructure	(0.000)	(0.000)	(0.002)	(0.310)	(0.856)	(0.512)
	-0.101**	-3.765*	-1.374*	0.123	-0.088	-0.446
Aid to Economic Infrastructure	(0.048)	(0.000)	(0.009)	(0.811)	(0.871)	(0.286)
	-0.434	4.813	3.766	1.578	2.102	0.849
Aid to Productive sector	(0.499)	(0.218)	(0.372)	(0.658)	(0.525)	(0.730)
	-1.276***	-36.391*	-37.111*	-19.815*	-18.229*	-10.050***
Aid to Multi Sector	(0.100)	(0.000)	(0.000)	(0.001)	(0.001)	(0.062)
	-0.436	-2.230	-3.442**	-4.453*	-2.374***	-0.391
Aid to Program Assistance	(0.267)	(0.345)	(0.033)	(0.004)	(0.100)	(0.677)
	0.299*	0.618**	0.618*	0.426	0.098	0.164
Aid to Actions Related to debt	(0.000)	(0.011)	(0.001)	(0.236)	(0.573)	(0.215)
	0.834*					
Corruption	(0.000)	---	---	---	---	---
	0.551	3.634	3.948	4.056	4.188	4.295
Constant	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	---	0.394	0.291	0.256	0.277	0.302
AR (2)	0.551	---	---	---	---	---
Sargan	0.725	---	---	---	---	---
Instrument	36	---	---	---	---	---

Note: *, ** and *** signify 1, 5 and 10% significance levels. The values in parenthesis are the prob. values

Robustness

Two robust checkswere conducted: the corruption measure by Transparency International was used as an explained variable. Table 1A (see appendix) presents the estimates; the signs and significance of the variables were consistent as in Tables 1 and 2.The second check was to correct for possible endogeneity in the QR by instrumenting the independent variables of interest with their first-lags. The result (not reported for space) also establishes the consistency of the signs and significance of the variables. These checks reverberate the fact that aid to social infrastructure and debt relief has an increasing effect on corruption; while aid to economic infrastructure, multi-sector and programme assistance has a reducing effect on corruption.

4. Conclusion

This note has taken a debate on the effect of foreign aid on institutions in recipient countries to another platform. We have introduced a dimension of aid heterogeneity to show that the sign of the effect is contingent on the type of aid. Our findings are robust by three fundamental factors motivating the debate, inter alia: endogeneity, sampled countries and estimation techniques.

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Appendix

Table 1A: Robustness (Using Corruption Perception Index as Explained Variables)

	All	African sub-Sample	All	African sub-Sample	All	African sub-Sample	All	African sub-Sample	All	African sub-Sample
	Q10	Q10	Q25	Q25	Q50	Q50	Q75	Q75	Q90	Q90
	-0.041*	-0.047*	-0.036*	-0.044*	-0.021*	-0.017*	-0.010*	-0.017*	-0.084*	-0.092*
GDP Per capita	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)
	-0.176*	-0.194*	-0.206*	-0.280*	-0.210*	-0.267*	-0.221*	-0.266*	-0.186*	-0.232*
Democracy	(0.003)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Aid to Social Infra-	0.918*	0.923*	0.609*	0.696*	0.404***	0.408*	0.247***	0.408*	0.078	0.394*
structure	(0.002)	(0.002)	(0.005)	(0.000)	(0.095)	(0.000)	(0.087)	(0.000)	(0.386)	(0.000)
Aid to Economic	-3.334**	-3.205**	*-1.149*	*-1.020*	-1.310	-1.691*	-1.115	-1.691*	-1.199*	-2.153*
Infrastructure	(0.022)	(0.039)	*(0.291)*	*(0.248)*	(0.158)	(0.002)	(0.160)	(0.002)	(0.001)	(0.000)
Aid to Productive	*-3.727*	-20.154**	-3.575	-1.696	0.980	4.757	6.877	4.758	5.618	4.941
sector	*(0.562)*	(0.037)	(0.569)	(0.792)	(0.861)	(0.196)	(0.154)	(0.196)	(0.296)	(0.355)
	-54.598*	-48.769*	-28.260*	-35.860*	-4.599	2.112	2.246	2.112	-1.002	-5.364
Aid to Multi Sector	(0.000)	(0.002)	(0.002)	(0.001)	(0.591)	(0.761)	(0.692)	(0.761)	(0.783)	(0.408)
Aid to Program	-6.839***	*-5.358*	-10.330**	-9.368*	-5.372***	-2.957**	-4.359**	-2.958**	-0.213	3.264***
Assistance	(0.073)	*(0.185)*	(0.001)	(0.003)	(0.057)	(0.041)	(0.040)	(0.041)	(0.907)	(0.068)
Aid to Actions	1.392*	1.464**	*0.997*	1.102*	0.255	0.153	0.118	0.154	0.385	0.424
Related to debt	(0.010)	(0.012)	*(0.126)*	(0.002)	(0.556)	(0.534)	(0.690)	(0.534)	(0.166)	(0.154)
	7.994*	8.059*	8.276*	8.566*	8.412*	8.796*	8.635*	8.796*	8.730*	8.798*
Constant	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R^2	0.341	0.404	0.241	0.310	0.199	0.261	0.229	0.261	0.224	0.245

Note: *, ** and *** signify 1, 5 and 10% significance levels. The values in parenthesis are the probability values.