Economics Bulletin

Volume 32, Issue 3

On the effect of foreign aid on corruption

Simplice A Asongu
HEC-Management School(University of Liège)

Abstract

The Okada & Samreth (2012, EL) finding that aid deters corruption could have an important influence on policy and academic debates. This paper partially negates their criticism of the mainstream approach to the aid-development nexus. Using updated data (1996-2010) from 52 African countries, we provide robust evidence of a positive aid-corruption nexus. Development assistance fuels (mitigates) corruption (the control of corruption) in the African continent. As a policy implication, the Okada & Samreth (2012, EL) finding for developing countries may not be relevant for Africa.

Citation: Simplice A Asongu, (2012) "On the effect of foreign aid on corruption", *Economics Bulletin*, Vol. 32 No. 3 pp. 2174-2180.
Contact: Simplice A Asongu - asongusimplice@yahoo.com.
Submitted: February 24, 2012. **Published:** August 01, 2012.

1. Introduction

The purpose of this comment is to stress some policy and methodological issues resulting from Okada & Samreth (2012). The methodological basis of the paper is the following: *"previous research has primarily been based on Ordinary Least Squares (OLS), instrumental variables and panel estimation. These approaches have disadvantages, as they only estimate the parameters of interest at the mean evaluation by a conditional distribution of the dependent variable (Billger & Goel, 2009)"*(p.240). To confirm this assertion we peruse Billger & Goel (2009) and find the following: " *many previous studies of the determinants of corruption employ OLS estimation, therefore reporting parameters estimates at the conditional mean of corruption. While mean effects are certainly important, we expand upon such findings using quantile regression. In addition, an underlying assumption for OLS regression is that the error term and the dependent variables are normally distributed…..OLS estimation can yield unreliable estimates, but quantile regression does not require a normally distributed error term*"(pp.300-301). Three facts result from this cross-examination:

- Billger & Goel (2009) do not invalidate panel instrumental variable estimation techniques;
-if the classical conditions for the validity of OLS are satisfied, that is, if the error term is independently and identically distributed, conditional on the independent variables, then quantile regression is redundant: all the conditional quantiles of the dependent variable will march in lockstep with the conditional mean;
-while the Okada & Samreth (2012) criticism is valid with respect to OLS, it is short of substance when extended to some instrumental and dynamic panel estimation techniques.

In this comment we assess the effect of foreign aid on corruption using two panel estimation techniques in the context of Africa. The choice of Africa is based on the substantial reliance of the continent on the 'Big-Push' development (poverty-reduction) policy. The rest of the paper is organized as follows. Section 2 presents data and outlines the methodology. Section 3 covers the empirical analysis. Section 4 concludes.

2. Data and Methodology

2.1 Data

We investigate a panel of 52 African countries with data from African Development Indicators (ADI) of the World Bank (WB) ranging from 1996 to 2010. Okada & Samreth (2012) have used data (1995 to 2009) from 120 developing countries. The outcome variables are the 'control of corruption' and the 'corruption perception' indexes. The explaining variable is Net Official Development Assistance (NODA). For robustness checks, we use total NODA, NODA from Multilateral donors and NODA from the Development Assistance Committee (DAC) countries. In the estimations, we control for openness (trade), autocracy and democracy. The choice of control variables is contingent on the degrees of freedom necessary for overidentifying restrictions tests at second-stage regressions (more than two control variables will result in exact or under-identification; meaning instruments are either equal-to or less-than the number of endogenous explaining variables respectively). The aid and trade variables are in percentage of GDP. Instrumental variables include: legal-origins, income-levels and religious-dominations. These instruments have been substantially documented in the economic development literature (La Porta et al., 1997; Beck et al., 2003).

2.2 Methodology

2.2.1 Endogeneity

While development assistance affects the quality of institutions in the recipient countries, some foreign-aid is also contingent on the quality of institutions in the beneficiary countries. We are thus faced with an important issue of endogeneity owing to reverse-causality and omitted variables. To address this concern we shall assess the presence of endogeneity with the Hausman-test and selection of estimation technique will depend on the outcome of the test.

2.2.2 Estimation techniques

HAC Two-Stage Least Squares (TSLS) Instrumental Variables (IV)

The TSLS is preceded by the Hausman test for endogeneity. The null hypothesis of this test is the stance that OLS estimates are efficient and consistent; therefore a rejection of this null hypothesis points to the presence of endogeneity and hence, an estimation approach that incorporates it. Before estimation, we verify that the instruments are exogenous to the endogenous components of explaining variables (aid channels) conditional on other covariates (control variables). Borrowing from Beck et al. (2003), with use the TSLS-IV with Heteroscedasticity and Autocorrelation Consistent (HAC) standard errors. The validity of the instruments is assessed by the Sargan Overidentifying Restrictions (OIR) test. The null hypothesis of this test is the position that the instruments are not correlated with the error term in the equation of interest (do not suffer from endogeneity).

System Generalized Methods of Moments (Dynamic Panel)

Blundell & Bond (1998) proposed another approach to the issue of endogeneity with an application of the Generalized Method of Moments (GMM) that exploits all the orthogonality conditions between the lagged dependent variables and the error term. We prefer the *second-step* GMM since it corrects the residuals for heteroscedasticity. In the *first-step*, the residuals are homoscedastic. The hypothesis of no auto-correlation in residuals is crucial as past differenced variables are to be used as instruments for the dependent variables. This concern is addressed with the second-order autocorrelation test: AR(2). Also the estimation depends on the assumption that the lagged values of the outcome variable and other explaining variables are valid instruments in the estimation. The validity of the instruments is investigated by the Sargan over-identifying restrictions test (OIR).

2.2.3 Robustness checks

To ensure robustness of the analysis, the following checks will be carried out: (1) usage of alternative NODA indicators ; (2) employment of two distinct interchangeable sets of moment conditions that encompass every category of the instruments; (3) usage of alternative corruption indicators; (4) account for the concern of endogeneity; (5) estimation with robust Heteroscedasticity and Autocorrelation Consistent (HAC) standard errors; (6) application of restricted and unrestricted regressions.

3.Empirical results

3.1 Instrumental Panel (TSLS)

Table 1 below presents results in HAC standard errors for restricted (Panel A) and unrestricted (Panel B) TSLS-IV regressions. Rejection of the null hypothesis of the Hausman test in all regressions confirms the presence of endogeneity and hence the choice of the IV estimation approach. Failure to reject the hull hypothesis of the Sargan-OIR test lends credit to the validity of the instruments. Clearly, it could be noticed that foreign-aid significantly diminishes the 'control of corruption' and the Corruption Perception Index (CPI). Reduction in the CPI indicates an increase in corruption (see Transparency International CPI computation). These results are robust to the alternative set of instrumental variables.

3.2 Dynamic Panel (System GMM)

Table 2 presents dynamic panel system GMM estimation results for restricted (Panel A) and unrestricted (Panel B) regressions. Failure to reject the null hypotheses of the AR(2) and Sargan-OIR tests for the most part confirms the absence of autocorrelation in the residuals and validity of the instruments respectively. The results broadly confirm those in Table 1.

Table I: Two-Stage Least Squares Instrumental Variable regressions

	Panel A: Restricted regressions (HAC standard errors)					
	Control of Corruption			**Corruption Perception Index (CPI)**		
NODAgdp	**-0.035*** **	---	---	**-0.032***	---	---
	(0.000)			**(0.060)**		
NODAMDgdp	---	**-0.082*** **	---	---	**-0.074***	---
		(0.000)			**(0.068)**	
NODADACgdp	---	---	**-0.062*** **	---	---	**-0.058***
			(0.000)			**(0.057)**
Democracy	**0.101***	**0.119***	0.087	0.261	0.275	0.248
	(0.086)	**(0.078)**	(0.116)	(0.105)	(0.104)	(0.110)
Autocracy	-0.032	-0.000	-0.058	0.171	0.200	0.145
	(0.773)	(0.999)	(0.575)	(0.516)	(0.459)	(0.577)
Trade	-0.005	-0.007	-0.004	**0.027***	**0.025***	**0.028****
	(0.223)	(0.169)	(0.322)	**(0.050)**	**(0.075)**	**(0.035)**
Hausman	**234.028*****	**255.223*****	**233.669*****	**501.364*****	**495.951*****	**504.967*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Sargan-OIR	**0.024**	**0.109**	**0.000**	**2.122**	**2.290**	**1.982**
	(0.875)	**(0.741)**	**(0.996)**	**(0.145)**	**(0.130)**	**(0.159)**
Adjusted R^2	0.106	0.098	0.094	0.180	0.177	0.178
Fisher	**16.099*****	**14.177*****	**17.011*****	**148.337*****	**158.260*****	**138.526*****
Observations	488	488	488	368	368	368

	Panel B: Unrestricted Regressions (HAC standard errors)					
	Control of Corruption			**Corruption Perception Index**		
Constant	**-0.631*****	**-0.649*****	**-0.621*****	**2.782*****	**2.727*****	**2.813*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
NODAgdp	**-0.023****	---	---	**-0.068*****	---	---
	(0.014)			**(0.000)**		
NODAMDgdp	---	**-0.053****	---	---	**-0.150*****	---
		(0.017)			**(0.000)**	
NODADACgdp	**---**	---	**-0.041****	**---**	---	**-0.125*****
			(0.013)			**(0.000)**
Democracy	**0.105****	**0.107****	**0.104****	**0.255*****	**0.259*****	**0.252*****
	(0.017)	**(0.017)**	**(0.018)**	**(0.000)**	**(0.000)**	**(0.000)**
Hausman	**49.346*****	**50.302*****	**49.910*****	**115.635*****	**118.12*****	**118.09*****
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Sargan-OIR	**0.039**	**0.695**	**0.214**	**2.383**	**2.086**	**3.825**
	(0.980)	**(0.706)**	**(0.898)**	**(0.303)**	**(0.352)**	**(0.147)**
Adjusted R^2	0.177	0.172	0.167	0.241	0.235	0.225
Fisher	**6.416*****	**6.315*****	**6.400*****	**21.499*****	**20.853*****	**21.255*****
Observations	514	514	514	388	388	388
First-Set of Instruments	Constant; English ; Christianity; Middle Income; Lower Middle Income					
Second-Set of Instruments	Constant; French; Islam; Lower Income; Upper Middle Income					

*;**;***: significance levels of 10%, 5% and 1% respectively. OIR: Overidentifying Restrictions test. NODAgdp: NODA on GDP. NODAMD: NODA from Multilateral Donors on GDP. NODADACgdp: NODA from DAC countries on GDP. OIR: Overidentifying Restrictions test. P-values in brackets.

Table II: Dynamic System GMM regressions

Panel A: Restricted regressions

	Control of Corruption			Corruption Perception Index		
Initial	**0.785*** **	**0.789*** **	**0.790*** **	**0.873*** **	**0.870*** **	**0.874*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
NODAgdp	**-0.005*** **	---	---	0.005	---	---
	(0.004)			(0.108)		
NODAMDgdp	---	**-0.010** **	---	---	**0.015***	---
		(0.042)			**(0.081)**	
NODADACgdp	---	---	**-0.007*** **	---	---	0.008
			(0.001)			(0.130)
Democracy	0.001	0.001	0.0005	**0.045***	**0.045** **	**0.046***
	(0.576)	(0.694)	(0.873)	**(0.055)**	**(0.022)**	**(0.055)**
AR(2)	**1.324**	**1.272**	**1.366**	1.812*	1.821*	1.799*
	(0.185)	**(0.203)**	**(0.171)**	(0.069)	(0.068)	(0.072)
Sargan-OIR	**47.079**	**46.156**	**45.410**	**44.902**	**44.891**	**44.769**
	(0.347)	**(0.383)**	**(0.413)**	**(0.966)**	**(0.966)**	**(0.967)**
Wald	**547.996*** **	**420.894*** **	**648.423*** **	**6836.4*** **	**6437.15*** **	**6876.4*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	334	334	334	335	335	335

Panel B: Unrestricted regressions

	Control of Corruption			Corruption Perception Index		
Initial	**0.681*** **	**0.668*** **	**0.689*** **	**0.776*** **	**0.776*** **	**0.780*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Constant	**-0.250*** **	**-0.267*** **	**-0.248*** **	**0.597*** **	**0.594*** **	**0.582*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.001)**	**(0.003)**	**(0.000)**
NODAgdp	**-0.001*** **	---	---	-0.003	---	---
	(0.005)			(0.148)		
NODAMDgdp	---	-0.003	---	---	-0.008	---
		(0.133)			(0.153)	
NODADACgdp	---	---	**-0.002*** **	---	---	-0.005
			(0.005)			(0.144)
Democracy	**0.021*** **	**0.023*** **	**0.020*** **	**0.026** **	**0.026** **	**0.024** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.016)**	**(0.027)**	**(0.019)**
AR(2)	**1.353**	**1.332**	**1.347**	1.943*	1.933*	1.949*
	(0.175)	**(0.182)**	**(0.177)**	(0.051)	(0.053)	(0.051)
Sargan-OIR	**46.024**	**45.935**	**45.431**	**44.569**	**44.553**	**44.759**
	(0.388)	**(0.392)**	**(0.412)**	**(0.969)**	**(0.969)**	**(0.967)**
Wald	**175.78*** **	**137.485*** **	**172.401*** **	**377.631*** **	**376.473*** **	**385.711*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Observations	334	334	334	335	335	335

*;**;***: significance levels of 10%, 5% and 1% respectively. OIR: Overidentifying Restrictions test. NODAgdp: NODA on GDP. NODAMD: NODA from Multilateral Donors on GDP. NODADACgdp: NODA from DAC countries on GDP. OIR: Overidentifying Restrictions test. AR(2): Second order auto correlation test. Wald: statistics for joint significance of estimated coefficients. Initial: lagged endogenous variable. P-values in brackets.

4. Conclusion

The Okada & Samreth (2012, EL) finding that aid deters corruption could have an important influence on policy and academic debates. This paper partially negates their criticism of the mainstream approach to the aid-development nexus. Using updated data (1996-2010) from 52 African countries we provide robust evidence of a positive aid-corruption nexus. Development assistance fuels (mitigates) corruption (the control of corruption) in the African continent. As a policy implication, the Okada & Samreth (2012, EL) finding for developing countries may not be relevant for Africa.

References

Blundell, R. W and Bond, S. R. (1998) "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models" *Journal of Econometrics*, **87**, 115-143.

Beck, T., Demirgüç-Kunt, A and Levine, R. (2003) "Law and finance: why does legal origin matter?" *Journal of Comparative Economics*, **31**, 653-675.

Billger, S. M and Goel, R. K. (2009) "Do existing corruption levels matter in controlling corruption? cross-country quantile regression estimates" *Journal of Development Economics*, **90**, 299–305.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R. W. (1997) "Legal Determinants of External Finance" *Journal of Finance*, **52**, 1131-1150.

Okada, K. and Samreth, S. (2012), "The effect of foreign aid on corruption: A quantile regression approach" *Economic Letters*, **11**, 240-243.