Foreign aid and the quest for poverty reduction: Is aid to agriculture effective?

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Introduction

There are some key channels for aid to influence the welfare of the poor and these channels can act via increased economic growth and/or reduced poverty. The theoretical and empirical literature on foreign aid effectiveness mostly concentrated on its ability to promote economic growth implicitly assuming that only through increased growth rate of output, could aid affect the poverty levels of developing countries in the long run. However, this may not be the only channel since total effect of aid on poverty can be characterized as a combination of its direct and indirect effects through growth and policy.

For the purpose of this study, we focus on the direct and indirect effects of sectoral aid, mainly aid to the agricultural sector, on poverty reduction. We are specifically interested in aid given to the agricultural sector because of the ties among foreign aid directed to the agriculture, agricultural sector and poverty reduction in most of the developing countries.

Research focusing on poverty reduction has found that sustainable rapid transition out of poverty requires a special emphasis on the agricultural sector. The agricultural sector can be viewed as the “engine of growth” especially in the early stages of development. Cross-country estimates show that GDP growth originating in agriculture is at least twice as effective in reducing poverty as GDP growth originating outside agriculture (Ravallion and Datt 1996; Timmer 1997; Ravallion and Datt 1999; Diao et al. 2007). Accordingly, agricultural growth not only favors the poor directly, but also expands the poverty-reducing effects of other sectors (Ravallion and Datt 1996; Thorbecke and Jung 1996; Bourguignon and Morrison 1998; Fan, Chan-Kang, and Mukherjee 2005).

Methods

Our study uses four year averaged cross-country data to regress poverty (P) on sector specific foreign aid (Ai), per capita income (y), a measure of the pro-poor government spending (PPE) as a policy indicator, and country specific factors (X). We estimate the following model

$$P_{i,t} = \alpha + \beta y_{i,t-1} + \gamma Aid_{i,t-1} + \varphi PPE_{i,t} + \theta X_{i,t} + \varepsilon_{i,t}$$

We use fixed effects method to account for unobserved country heterogeneity for our core results.

Methods cont.

However, our empirical model presents a situation where a unidirectional relationship among poverty level, foreign aid and pro-poor expenditure may not be maintained because it is quite possible that there may be a feedback relationship among these variables (i.e. aid may be negatively related to poverty but decisions on aid may be influenced by the poverty levels in recipient countries; and so forth). To take such feedback relationship among variables, we specify a system for poverty, aid and pro-poor expenditure equations and use a simultaneous equation model with three-stage least squares (3SLS) methodology to check for the robustness of our results.

Table 1. The Results of FE regressions with different PPE indices

	1	2	3	4	5	6
Agricultural aid, lagged	-0.19*	-0.21§	-0.20*	-0.17*	-0.19*	-0.14*
	0.11	0.09	0.11	0.11	0.12	0.08
Investment aid, lagged	-0.06	-0.09	-0.05	-0.16*	-0.03	-0.16†
	0.07	0.08	0.09	0.07	0.08	0.05
Noninvestment aid, lagged	-0.10	0.10	-0.13	0.18§	-0.10	0.21§
	0.10	0.09	0.10	0.08	0.10	0.09
Social infrastructure aid, lagged	0.17	0.24	0.19	0.27	0.15	0.18
	0.12	0.18	0.12	0.21	0.13	0.15
GDP per capita, lagged	-1.70†	-3.46†	-1.76†	-2.33**	-1.77†	-2.40†
	0.54	0.78	0.54	1.00	0.59	0.79
Military expenditure	0.46§	-0.26	0.38§	-0.17	0.43§	-0.10
	0.18	0.453	0.192	0.508	0.199	0.562
Gini coefficient	0.04§	0.06†	0.04§	0.08†	0.04§	0.08†
	0.018	0.02	0.02	0.02	0.02	0.03
Rural population	-1.36	-1.95	-0.85	-1.74	-1.23	-1.62
	1.04	1.86	1.12	2.24	1.12	1.67
Unweighted PPE residual	0.18	1.54†				
	0.15	0.53				
Beta coef. PPE residual			0.22	0.12		
			0.18	0.16		
Regression PPE residual					0.02	-0.34
					0.06	0.24
Other gov. expenditure		1.41*		1.93*		2.14*
		0.75		0.98		1.05
Constant	25.82§	35.58§	21.59§	24.01	25.21§	22.83*
	9.80	15.90	10.43	17.12	10.78	12.59
R-squared	0.38	0.72	0.37	0.62	0.36	0.66
N	139	68	140	68	140	68

Notes: Dependent variable is headcount poverty ratio, fixed effect estimation. All variables measured in logs. Heteroscedasticity and autocorrelation corrected standard errors reported under the coefficient estimates. The second column is the estimation that also includes other government expenditure not used to construct the PPE index. Explanatory power for fixed effect estimates reported by R-squared rather than adjusted R-squared. * p<0.1; § p<0.05; † p<0.01

Results

Our results show that aid given to the agricultural sector is effective in reducing poverty both directly and indirectly through growth and a policy variable representing pro-poor expenditure. There are studies that focus on total foreign aid or disaggregate the aid variable and look at its effect on poverty reduction (Mosley et al. 2004; Gomanee et al. 2005; Alvi and Senbeta 2011). However, we are not aware of any study that disaggregates aid into agricultural and nonagricultural aid to assess the effect of foreign aid directed to the agricultural sector on the poverty level of the aid recipient countries. Our study aims to fill this gap.

Table 2. 3 SLS Regressions with Sectoral Aid and 3 Different PPE Indices

	PPE unweighted				PPE beta coefficient				PPE regression			
	Poverty	Aid	Growth	PPE	Poverty	Aid	Growth	PPE	Poverty	Aid	Growth	PPE
Agricultural aid, lagged	-0.29§		0.54	0.54†	-0.21*		0.57	-0.04	-0.21*		0.67*	0.59§
	(0.13)		(0.41)	(0.15)	(0.13)		(0.41)	(0.10)	(0.13)		(0.40)	(0.24)
Investment aid, lagged	0.04		0.11	-0.46†	0.02		0.07	-0.06	-0.05		-0.00	0.22
	(0.12)		(0.34)	(0.15)	(0.12)		(0.33)	(0.10)	(0.12)		(0.33)	(0.24)
Noninvest.aid, lagged	-0.01		-1.51†	-0.06	-0.02		-1.55†	0.13	0.01		-1.59†	0.40§
	(0.10)		(0.36)	(0.12)	(0.09)		(0.35)	(0.08)	(0.10)		(0.35)	(0.19)
Social infr. aid, lagged	0.15		0.52	-0.05	0.14		0.58*	-0.13	0.18		0.59*	0.23
	(0.11)		(0.34)	(0.13)	(0.11)		(0.34)	(0.09)	(0.12)		(0.33)	(0.22)
GDP per capita, lagged	-1.50†	-1.71†	-0.97§	0.20*	-1.37†	-1.73†	-0.98§	-0.06	-1.24†	-1.74†	-0.99§	0.78†
	(0.16)	(0.16)	(0.44)	(0.12)	(0.15)	(0.16)	(0.44)	(0.10)	(0.18)	(0.16)	(0.44)	(0.24)
Gini coefficient	0.02*				0.03§				0.02*			
	(0.01)				-0.01				(0.01)			
PPE	-0.50				-0.58				-0.52*			
	(0.44)				(0.53)				(0.29)			
Rural population		-0.48†				-0.50†				-0.50†		
		(0.07)				(0.07)				(0.07)		
Colonialism		-0.04				-0.03				-0.03		
		(0.05)				(0.05)				(0.05)		
Islam		0.01*				0.01§				0.01§		
		(0.00)				(0.00)				(0.00)		
Inflation		0.21				0.21				0.21		
		(0.15)				(0.15)				(0.15)		
Openness		0.73†				0.74†				0.71†		
		(0.24)				(0.24)				(0.24)		
Infant mortality rate		0.34				0.31				0.28		
		(0.24)				(0.24)				(0.24)		
Other gov. expenditure	-0.78				-0.44							
	(0.67)				(0.28)							
Constant	15.63†	14.97†	8.87†	-3.45†	12.56†	15.34†	9.03†	-0.94	11.04†	15.53†	9.29†	-8.41†
	(4.05)	(2.02)	(3.12)	(1.10)	(1.14)	(2.02)	(3.11)	(0.74)	(1.36)	(2.02)	(3.10)	(1.79)

Notes: Dependent variables are poverty indicator, foreign aid, growth and pro-poor government expenditure, respectively, using 3SLS estimation. All variables measured in logs. * p<0.1; § p<0.05; † p<0.01

Conclusions

- For the purpose of this study, we focus on the direct and indirect effects of sectoral aid, mainly aid to the agricultural sector, on poverty reduction.
- We use two different specifications to investigate this relationship and we find that aid given to the agricultural sector is effective in reducing poverty both directly and indirectly through a policy variable representing pro-poor expenditure.
- Our results show that aid given to the agricultural sector is effective in reducing poverty both directly and indirectly through growth and a policy variable representing pro-poor expenditure.
- Consequently, policymakers should pay more attention to the level of development in the recipient countries when they allocate resources to these sectors, especially the agricultural sector, if the immediate objective is poverty reduction.

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