Government Policy and the Effectiveness of Foreign Aid

Robert G Murphy*
Department of Economics, Boston College

Nicholas G Tresp
UBS Investment Bank

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Abstract

This paper reconsiders the role of economic policy in determining the effectiveness of foreign aid for generating economic growth in developing countries. We update and modify the data set originally used by Burnside and Dollar (2000) in order to more fully consider the critique presented by Easterly et al. (2004). Our findings suggest that the relationship among foreign aid, government policy, and economic growth is tenuous and depends importantly on the subset of countries included in the analysis. Good policy enhances the effectiveness of foreign aid in spurring growth when we use the original set of countries included in Burnside and Dollar, but this relationship disappears for an expanded set of countries. Because the relationship among aid, policy, and growth is likely to be nonlinear, we present an alternative probit model emphasizing growth thresholds. Our results from this alternative analysis confirm the conclusions of Easterly et al., finding little support for the view that good policy increases the probability that foreign aid contributes to growth.

Keywords: foreign aid, economic development, economic growth, government policy, development assistance
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*Corresponding author: Robert G Murphy, Department of Economics, Boston College, Chestnut Hill, MA 02467 USA, Tel: 617-552-3688, e-mail: murphyro@bc.edu. Views expressed are the authors' alone and do not represent the views of the institutions with which they are affiliated.

1 Introduction

Over the past 40 years, many papers have explored the role of foreign aid in spurring economic growth for developing countries. The findings of this extensive literature are mixed, with some authors arguing that aid has been effective in stimulating growth and others arguing for a much less sanguine view.[1] A firmer consensus, however, has emerged regarding the importance of economic policies as a determinant of growth. Countries with sound economic policies have generally experienced better economic performance.[2]

In a seminal paper, Burnside and Dollar (2000) build upon the consensus that policy is important for growth by investigating the role of economic policy in determining the effectiveness of foreign aid. Their findings suggest that aid conditioned on good policy does raise growth in developing economies.

The Burnside and Dollar results have generated a number of subsequent papers that also examine the aid-policy-growth relationship.[3] These papers have considered variations and extensions of the Burnside and Dollar methodology. Some of these papers have supported Burnside and Dollar's findings while others have rejected them. Recent work by Easterly et al. (2004) stands out from these papers by using the same specification as Burnside and Dollar and only updating and expanding the data sample. Easterly et al. find that the role of policy in determining the effectiveness of foreign aid disappears when additional countries are added to the sample.

[1] For the early debate on this issue, see Chenery and Strout (1966, 1968), Papanek (1972, 1973), and Newlyn (1973). See Boone (1996), Easterly (2003), Hansen and Tarp (2000), and Levy (1987) for more recent assessments.

[2] See, for example, Sachs and Warner (1995), Fischer (1993), Easterly and Rebelo (1993).

[3] For some examples, see, Dalgaard and Hansen (2001), Dalgaard et al. (2004), Guillaumont and Chauvet (2001), Hansen and Tarp (2001), and Lensink and White (2001)

In this paper, we extend the work of Burnside and Dollar (2000) by updating their data set and exploring alternative formulations of how aid, policy and economic growth might be related. Our purpose is two fold. First, we seek to assess the robustness of the critique in Easterly et al. (2004) by using the latest available data. Second, we explore the possibility, raised in Burnside and Dollar's (2004) reply to Easterly et al. (2004), that the relationship between aid, policy and growth is nonlinear. We estimate a probit model in which the probability of growth exceeding a certain threshold is a function of aid and policy. This alternative specification considers whether good policy enhances the likelihood of foreign aid contributing to economic growth.

The remainder of the paper proceeds as follows. Section 2 briefly reviews the framework used by Burnside and Dollar, discusses our update of their data set, and presents estimation results. Our results confirm that Burnside and Dollar's conclusions are not robust to the additional data we consider. Section 3 presents and estimates a threshold model of growth. Here we find little evidence that good policy increases the *probability* a country grows faster than a given threshold. The paper concludes in Section 4 with a brief summary and suggestions for further research.

2 The Burnside-Dollar Framework

The basic specification used by Burnside and Dollar is a standard growth regression that expresses the growth rate of per capita real GDP as a function of the initial level of per capita real GDP, foreign aid, economic policy, and a set of control variables. This specification is intended to capture the conditional convergence of per capita income predicted by the neoclassical

theory of growth. Countries with high initial levels of per capita income, other things equal, would be expected to grow more slowly than countries with low initial levels of per capita income.

Burnside and Dollar's main contribution is to include a measure of foreign aid in the regression and *interact* it with a measure of economic policy:

$$g_{it} = \beta_1 a_{it} + \beta_2 p_{it} + \beta_3 a_{it} p_{it} + \beta_3 y_{it} + control\ variables + u_{it} \qquad (1)$$

where g_{it} is growth of per capita real GDP, a_{it} is foreign aid as a share of GDP, p_{it} is a composite policy variable, y_{it} is the logarithm of initial per capita real GDP, and u_{it} the regression error. The composite policy variable combines the effects of three macroeconomic policies that are known to be associated with growth. These include monetary policy (measured by inflation performance), the budget surplus as a share of GDP, and a dummy variable constructed by Sachs and Warner (1995) to measure the openness of the economy.[4] The composite policy measure is computed by first regressing per capita GDP growth on y_{it}, the control variables, and the three policy variables (leaving out the aid variable) and then using the estimated coefficients to combine the values of the policy variables. Burnside and Dollar employ this composite measure because the separate policy variables are highly correlated with each other, leading to multicollinearity if used together as independent variables in growth regressions.[5]

[4]The Sachs–Warner (1995) measure treats an economy as "closed" if any of the following hold: an average tariff above 40 percent on machinery and materials, a government monopoly of export goods, a black-market premium for the currency above 20 percent, a socialist political regime, or an effective average rate of non-tarriff measures, such as quotas, above 40 percent.

[5]The composite policy variable is normalized so that it equals the average rate of growth in the data set when the individual policy variables are set equal to their average

The data used by Burnside and Dollar begin in 1970 and end in 1993. They compute average growth rates over successive four-year periods and match these with averages of the explanatory variables. This helps to lessen the influence of short-term fluctuations in growth that are not related to longer-term forces. Easterly et al. (2004) subsequently updated the data through 1997. We extend their data through 2001 and we revise the earlier data using the latest sources. One difference between our data and Burnside and Dollar's (and Easterly et al.) is that we use net official development assistance, which includes both grants and loans, as our aid variable instead of effective development assistance, which includes grants and only the concessional part of loans. The aid series used by Burnside and Dollar was computed by Chang (1999) and has not been updated beyond 1995. Easterly et al. extrapolated effective development assistance for an additional 2 years, through 1997, using its correlation with official development assistance. We chose not to extend this extrapolation through 2001, the end period of our data, out of concern that extrapolating out six years was pushing the limits of a simple approach.[6]

In Table 1, we present results from estimating equation (1). Our set of control variables include ones used previously by Burnside and Dollar. These are a measure of ethnolinguistic fractionalization developed by Easterly and Levine (1997), a measure of institutional quality developed by Knack and

levels.

[6]Net official development assistance has a correlation of only 0.75 with effective development assistance over the period for which the latter is available, 1974–1995, raising concerns about the usefulness of further extrapolating the series. Note also that the aid measure developed by Chang (1999) required important decisions about appropriate market interest rates with which to discount aid flows. By using the official development assistance data, we avoid concerns about these decisions regarding market interest rates. And since we are able to closely match the results of Burnside and Dollar and of Easterly et al. when we use net official development assistance as the aid variable, we have confidence that our results are not driven by the choice of our aid measure.

Keefer (1995), assassinations as a measure of civil unrest, the ratio of M2 to GDP as a proxy for financial development, dummy variables for Sub-Sahran Africa and East Asia, and dummy variables for time periods. Descriptions of each variable and data sources are provided in the appendix.[7] In keeping with Burnside and Dollar's approach, we eliminate observations that are judged to be outliers from the data set used for the estimates in Table 1.[8] We provide results using both OLS and 2SLS estimation techniques.[9]

As can be seen in columns 1 and 2, using our data but limiting the analysis to the country set and sample period of Burnside and Dollar (1970–1993), we find that aid interacted with policy is significant at standard levels. When we extend the data set through 2001, but continue to restrict the sample to the countries used by Burnside and Dollar, we again find in columns 3 and 4 that the coefficient on the aid-policy interaction variable is significant.

But when we include additional countries for which data are now available, we find, as shown in columns 5 to 8, that the aid-policy interaction variable is no longer significant. This result is robust to selection of time period, holding for both the original Burnside and Dollar sample period (columns 5 and 6), as well as for the longer sample period (columns 7 and 8).

Table 2 provides results for a subset of the data containing only low-

[7] The data set and Stata estimation files are available from the authors on request.

[8] We employ the Hadi (1994) method to eliminate outliers in our data, using a significance level of 0.05.

[9] Because policy and aid may be determined simultaneously, we estimated equation (1) using 2SLS, as implemented in Stata with the ivreg2 command. The instruments are the same set used in Burnside and Dollar, and include arms imports lagged, the logarithm of initial income interacted with policy, the logarithm of population interacted with policy, the logarithm of initial income squared interacted with policy, the logarithm of population squared interacted with policy, and dummy variables for Egypt, Franc zone countries, and Central American countries.

income countries.[10] In all cases, the aid-policy interaction variable is never significant at standard levels, though its p-value (not shown) is smaller for those regressions restricted to the country group used in Burnside and Dollar than for our expanded country set.[11]

Thus, when we restrict the data set to only those countries considered in Burnside and Dollar, we find results similar to theirs regardless of sample period, but when we include additional countries (and continue to remove outliers) the aid-policy interaction variable is no longer significant regardless of sample period. Our findings hold for both OLS and 2SLS estimation methods.[12] Our findings thereby confirm for our updated data the conclusions of Easterly et al. regarding the effect of including additional countries on the Burnside and Dollar results.

The additional countries included in our updated data (and also in the data set used by Easterly et al.) are Burkina Faso, Congo, Iran, Jordan, Mali, Myanamar, Papua New Guinea, and Uganda. To investigate the apparent influence of these countries on the results, we checked to see whether any of the observations for these countries were close to being identified as outliers. When we apply the Hadi method to identify outliers, the observations are rank-ordered by their distance from the mean values of the

[10] Low-income countries are those with per capita real income, measured in constant 1985 dollars, below $1900 in 1970, the same criteria used in Burnside and Dollar (2000). As in Burnside and Dollar, we include Nicaragua in this group because its income fell significantly below the threshold early in the sample period, although it was slightly above in 1970.

[11] Burnside and Dollar find a significant effect for the interaction variable in the subset of low-income countries that is no longer present in our revised data.

[12] Tables 1 and 2 provide test statistics supporting the validity of the instruments in the 2SLS estimates. In all cases, the Anderson canonical correlations likelihood-ratio test (LR Statistic) overwhelmingly rejects the null hypothesis that the equation is underidentified. The Hansen-Sargan test (J Statistic) never rejects the overidentifying restrictions at the 1-percent level, although it does reject at the 5-percent level for estimates using the smaller sample of low-income countries shown in Table 2.

variables. Using this method, observations with variables having values that are more than two standard deviations from their mean are removed from the data. Thirty observations were just within the two-standard-deviation cutoff. Of these, one-third were from the additional countries added to Burnside and Dollar's set. The high concentration of observations from these countries near the cut-off for outliers may in part explain why the results are so sensitive to whether or not these countries are included in the sample.

Close examination of these countries also reveals some interesting peculiarities. Iran, for example, experienced several periods of reasonable growth despite quite poor policies and less-than-average amounts of aid. A country such as Iran likely benefited from episodes of growth in the real value of oil production. Papua New Guinea and Jordan, on the other hand, show relatively poor growth but good policy and significant inflows of aid. While several factors could account for this, one candidate might be corruption in government that is not fully controlled for in our analysis. More in-depth analysis of the channels through which aid and policy affect growth in these countries is necessary before deciding whether these countries are anomalous.

3 A Threshold Model of Growth

Burnside and Dollar (2004) raise the possibility that the relationship between growth, aid, and policy is non-linear. In particular, they provide estimates of equation (1) for the expanded country group (including outliers) in which policy is interacted with aid squared. This variable enters the growth equation with a significant positive coefficient, while the aid-policy

variable itself enters negatively. They interpret these results as suggesting that increasing returns to aid may occur in the presence of good policy.

Using our data set, we estimated this specification. Table 3 reports our results. As in Burnside and Dollar (2004), we generally find a positive significant coefficient for the aid-squared-policy interaction variable and a negative coefficient for the aid-policy interaction variable.[13]

One way to capture the possible non-linear nature of the growth-aid-policy relationship while remaining agnostic on its exact specification is to suppose that good policy enhances the probability that a given amount of aid pushes a country's growth rate above a given threshold. The idea is that, on average, aid will help countries with good policy achieve growth, though the exact relationship is not linear and possibly not even continuous. To assess this sort of relationship, we estimate a probit model in which the dependent variable equals one when growth is above a given threshold and zero otherwise. Our specification of the right-hand side variables is the same as in equation (1).[14]

Table 4 provides estimation results for the probit model. For brevity, we report only estimates for the coefficients on the aid-policy interaction variable. We provide results both for all countries and for the subset of low-income countries. As seen in columns 1 and 5, the coefficient on the aid-policy interaction term is significant and positive for some thresholds when the sample is limited to those countries used by Burnside and Dollar with outliers excluded. When the sample is expanded to include all available countries, as shown in columns 3, 4, 7 and 8, the coefficient is no longer significant, regardless of whether or not outliers are excluded. These results

[13] Except for the expanded country set over the sample period 1970–93.

[14] We explored thresholds for growth varying from zero to 3 percent per year in increments of 0.25. In Table 4, we report results for several of these thresholds.

match qualitatively the results reported in Table 1, confirming the sensitivity of our findings to the particular country group considered.[15] Our simple threshold model thus provides little support for a more general non-linear relationship between growth, aid, and policy.

4 Summary

This paper has reconsidered the role of economic policy in determining the effectiveness of foreign aid for generating economic growth in developing countries. We updated and modified the data set originally used by Burnside and Dollar (2000) in order to more fully consider the critique presented by Easterly et al. (2004). Our findings show that the relationship among foreign aid, government policy, and economic growth is tenuous and depends heavily on the particular set of countries included in the analysis. Good policy enhances the effectiveness of foreign aid in spurring growth when we use the original set of countries included in Burnside and Dollar's work, but this relationship disappears for an expanded set of countries.

Because the relationship among aid, policy, and growth is likely to be nonlinear, we also presented a probit model emphasizing growth thresholds. The probit model considers how aid and policy influence the probability of achieving a given rate of economic growth. Our results from this alternative analysis confirm the conclusions of Easterly et al., finding little support for the view that good policy increases the probability that foreign aid contributes to growth.

We are left in the end believing that attempts to delineate a systematic relationship between aid, policy, and growth are unlikely to be fruitful even

[15] We also estimated a logit specification with qualitatively similar findings.

when using more complex specifications and/or more sophisticated econometric analysis. Future research should instead focus on using case study approaches to understand more fully successful examples of countries in which aid and policy have helped foster growth and development.

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Table 1 – Growth Regressions

	BD Country Set 1970-1993		BD Country Set 1970-2001		Expanded Country Set 1970-1993		Expanded Country Set 1970-2001	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Log Initial Per Capita Real GDP	0.156	-0.367	-0.064	-0.353	-0.052	-0.427	-0.257	-0.430
	(0.519)	(0.632)	(0.439)	(0.523)	(0.523)	(0.632)	(0.418)	(0.522)
Ethnic Fractionalization	-0.610	-1.125	0.102	-0.226	-0.143	-0.449	0.163	-0.012
	(0.758)	(0.825)	(0.609)	(0.663)	(0.791)	(0.831)	(0.637)	(0.681)
Assassinations	-0.563*	-0.519*			-0.341	-0.296		
	(0.295)	(0.294)			(0.331)	(0.329)		
Ethnic Fractionalizations * Assassinations	0.984*	0.851*			0.175	0.045		
	(0.516)	(0.508)			(0.804)	(0.798)		
Institutional Quality	0.329**	0.318**	0.371**	0.350**	0.276**	0.289**	0.288**	0.280**
	(0.140)	(0.137)	(0.122)	(0.121)	(0.140)	(0.137)	(0.120)	(0.120)
M2/GDP (lagged)	0.015	0.023	0.024**	0.029**	-0.006	-0.002	0.003	0.006
	(0.016)	(0.016)	(0.012)	(0.012)	(0.015)	(0.016)	(0.010)	(0.011)
Sub-Saharan Africa	-1.074	-0.487	-1.297*	-0.885	-1.379*	-1.069	-1.397**	-1.122*
	(0.762)	(0.761)	(0.675)	(0.670)	(0.739)	(0.731)	(0.634)	(0.624)
East Asia	1.347**	1.425**	1.279**	1.363**	1.425**	1.631**	1.469**	1.574**
	(0.592)	(0.583)	(0.507)	(0.508)	(0.602)	(0.595)	(0.516)	(0.521)
Policy Index	0.799**	0.613**	0.834**	0.658**	0.931**	0.681**	0.960**	0.801**
	(0.207)	(0.240)	(0.193)	(0.228)	(0.210)	(0.233)	(0.194)	(0.231)
Aid/GDP	0.059	-0.462	-0.002	-0.385	0.117	-0.259	0.043	-0.215
	(0.154)	(0.306)	(0.132)	(0.248)	(0.142)	(0.296)	(0.117)	(0.235)
Aid/GDP * Policy	0.158*	0.280*	0.142*	0.262**	0.029	0.176	0.029	0.129
	(0.095)	(0.147)	(0.085)	(0.120)	(0.085)	(0.134)	(0.080)	(0.114)
R – squared	0.3736	0.3465	0.3462	0.3314	0.3244	0.3102	0.2924	0.2861
Observations	273	273	355	347	295	295	390	381
LR Statistic		81.520		101.505		93.235		117.735
$\chi^2(9)$ P-value		0.000		0.000		0.000		0.000
J Statistic		14.053		12.581		13.101		14.324
$\chi^2(8)$ P-value		0.080		0.127		0.108		0.073

Notes: The dependent variable is per capita real GDP growth. The results in this table are from regressions that exclude outliers as identified by the Hadi (1994) method. Assassination variable was not available for the 1998-2001 and is omitted in regressions using the longer sample period. Robust standard errors are in parentheses. LR Statistic is for Anderson canonical correlations likelihood-ratio test of null hypothesis that equation is underidentified. J Statistic is for Hansen-Sargan test of joint null hypothesis that instruments are uncorrelated with the error and correctly excluded from the estimated equation.

* Significant at the 10-percent level
** Significant at the 5-percent level

Table 2 – Growth Regressions, Low Income Countries

	BD Country Set 1970-1993		BD Country Set 1970-2001		Expanded Country Set 1970-1993		Expanded Country Set 1970-2001	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Log Initial Per Capita Real GDP	-0.068	-0.643	-0.241	-0.519	-0.314	-0.664	-0.479	-0.634
	(0.499)	(0.533)	(0.453)	(0.455)	(0.517)	(0.525)	(0.441)	(0.477)
Ethnic Fractionalization	-0.849	-1.329	-0.117	-0.378	-0.484	-0.732	0.159	0.206
	(0.911)	(0.956)	(0.698)	(0.745)	(0.917)	(0.927)	(0.704)	(0.744)
Assassinations	-1.026**	-0.895*			-0.925*	-0.840		
	(0.503)	(0.514)			(0.512)	(0.511)		
Ethnic Fractionalizations * Assassinations	1.579	1.082			1.418	1.049		
	(1.021)	(0.994)			(1.053)	(1.034)		
Institutional Quality	0.460**	0.511**	0.503**	0.494**	0.328**	0.379**	0.329**	0.306**
	(0.162)	(0.152)	(0.141)	(0.141)	(0.155)	(0.146)	(0.139)	(0.136)
M2/GDP (lagged)	0.032*	0.035**	0.031**	0.035**	0.005	0.007	0.007	0.011
	(0.018)	(0.018)	(0.014)	(0.014)	(0.018)	(0.018)	(0.012)	(0.012)
Sub-Saharan Africa	-1.272*	-0.912	-1.518**	-1.164*	-1.304*	-1.154	-1.474**	-1.240**
	(0.701)	(0.715)	(0.587)	(0.620)	(0.710)	(0.711)	(0.586)	(0.627)
East Asia	1.326*	1.526**	1.193**	1.129*	1.165*	1.401**	1.304**	0.899
	(0.682)	(0.694)	(0.587)	(0.626)	(0.686)	(0.692)	(0.589)	(0.637)
Policy Index	0.959**	0.654*	0.982**	0.910**	1.263**	0.969**	1.197**	1.526**
	(0.310)	(0.391)	(0.305)	(0.460)	(0.324)	(0.398)	(0.295)	(0.492)
Aid/GDP	0.054	-0.484*	-0.010	-0.322	0.128	-0.212	0.030	-0.005
	(0.178)	(0.285)	(0.153)	(0.247)	(0.141)	(0.274)	(0.118)	(0.229)
Aid/GDP * Policy	0.149	0.284	0.120	0.165	-0.029	0.091	-0.008	-0.133
	(0.112)	(0.178)	(0.110)	(0.188)	(0.098)	(0.169)	(0.094)	(0.178)
R – squared	0.4751	0.4426	0.4067	0.3916	0.4063	0.3931	0.3365	0.3328
Observations	182	182	237	232	199	199	263	257
LR Statistic		67.868		68.656		69.556		73.853
$\chi^2(9)$ P-value		0.000		0.000		0.000		0.000
J Statistic		16.162		17.135		17.353		18.006
$\chi^2(8)$ P-value		0.040		0.029		0.027		0.021

Notes: The dependent variable is per capita real GDP growth. The results in this table are from regressions that exclude outliers as identified by the Hadi (1994) method. Low-income countries are those with per capita real income (constant 1985 dollars) below $1900 in 1970, the same criteria used in Burnside and Dollar (2000). Assassination variable was not available for 1998-2001 and is omitted in regressions using the longer sample period. Robust standard errors are in parentheses. LR Statistic is for Anderson canonical correlations likelihood-ratio test of null hypothesis that equation is underidentified. J Statistic is for Hansen-Sargan test of joint null hypothesis that instruments are uncorrelated with the error and correctly excluded from the estimated equation.

* Significant at the 10-percent level
** Significant at the 5-percent level

Table 3 – Growth Regressions with Aid-Policy Term Squared

	All Countries		Low Income Countries	
	(1)	(2)	(3)	(4)
	1970-1993	1970-2001	1970-1993	1970-2001
	OLS	OLS	OLS	OLS
Log Initial Per Capita Real GDP	-0.062	-0.260	-0.330	-0.496
	(0.520)	(0.419)	(0.513)	(0.442)
Ethnic Fractionalization	-0.185	0.146	-0.524	0.160
	(0.784)	(0.632)	(0.911)	(0.702)
Assassinations	-0.349		-0.917*	
	(0.333)		(0.517)	
Ethnic Fractionalizations x Assassinations	0.193		1.479	
	(0.804)		(1.043)	
Institutional Quality	0.264*	0.279**	0.314**	0.317**
	(0.139)	(0.119)	(0.153)	(0.137)
M2/GDP (lagged)	-0.005	0.004	0.007	0.008
	(0.015)	(0.010)	(0.018)	(0.012)
Sub-Saharan Africa	-1.35*	-1.383**	-1.260*	-1.474**
	(0.735)	(0.627)	(0.706)	(0.578)
East Asia	1.297**	1.363**	0.888	1.070*
	(0.601)	(0.512)	(0.694)	(0.584)
Policy Index	1.024**	1.065**	1.454**	1.409**
	(0.216)	(0.198)	(0.331)	(0.296)
Aid/GDP	0.140	0.075	0.176	0.085
	(0.121)	(0.099)	(0.120)	(0.100)
Aid/GDP * Policy	-0.049	-0.067	-0.142*	-0.145*
	(0.071)	(0.070)	(0.082)	(0.083)
$(Aid/GDP)^2$ * Policy	0.004	0.007**	0.006*	0.010**
	(0.003)	(0.004)	(0.004)	(0.004)
R – squared	0.3498	0.3173	0.4416	0.3727
Observations	300	398	204	270

Notes: The dependent variable is per capita real GDP growth. Expanded country set, including outliers, is used in all regressions. Low-income countries are those with per capita real income (constant 1985 dollars) below $1900 in 1970, the same criteria used in Burnside and Dollar (2000). Assassination variable was not available for 1998-2001 and is omitted in regressions using the longer sample period. Robust standard errors are in parentheses.

* Significant at the 10-percent level
** Significant at the 5-percent level

Table 4 – Growth Threshold Model Results

	All Countries				Low-Income Countries			
	BD Country Set		Expanded Country Set		BD Country Set		Expanded Country Set	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Outliers Included?	No	Yes	No	Yes	No	Yes	No	Yes
Per Capita Real GDP Growth ≥ 0 %	0.094*	0.042	0.009	0.019	0.067	0.010	-0.027	-0.001
	(0.055)	(0.048)	(0.040)	(0.033)	(0.065)	(0.055)	(0.045)	(0.036)
Per Capita Real GDP Growth ≥ 0.5 %	0.100*	0.056	0.015	0.026	0.082	0.035	-0.013	0.012
	(0.052)	(0.048)	(0.043)	(0.035)	(0.062)	(0.055)	(0.049)	(0.040)
Per Capita Real GDP Growth ≥ 1.0 %	0.103**	0.058	0.007	0.022	0.103*	0.052	0.000	0.024
	(0.050)	(0.047)	(0.040)	(0.033)	(0.062)	(0.057)	(0.049)	(0.041)
Per Capita Real GDP Growth ≥ 1.5 %	0.112**	0.050	0.043	0.033	0.139**	0.052	0.052	0.037
	(0.048)	(0.045)	(0.043)	(0.035)	(0.063)	(0.058)	(0.058)	(0.047)
Per Capita Real GDP Growth ≥ 2.0 %	0.054	0.017	0.007	0.006	0.083	0.027	0.009	0.006
	(0.049)	(0.043)	(0.042)	(0.031)	(0.066)	(0.058)	(0.061)	(0.044)
Observations	355	360	390	398	237	241	263	270

Notes: The dependent variable is equal to "one" if per capita real GDP growth is greater than or equal to the percentage specified in the left-hand column and "zero" otherwise. The coefficients reported are the marginal effect of a change in (aid*policy) computed at its mean value. Outliers are identified by the Hadi (1994) method. Low-income countries are those with per capita real income (constant 1985 dollars) below $1900 in 1970, the same criteria used in Burnside and Dollar (2000). Robust standard errors are in parentheses.

* Significant at the 10-percent level
** Significant at the 5-percent level

Appendix

Description of Variables Used in Regressions

VARIABLE	DESCRIPTION	SOURCE
Log Initial Per Capita Real GDP	Log of per capita PPP real GDP for the first year of each time period, constant 1996 dollars	Summers and Heston, 1991; World Penn Tables, updated using per capita real GDP growth
Ethnic Fractionalization	Measure of societal conflict, constant value for each country	Easterly and Levine, 1997
Assassinations	Measure of assassinations and attempted assassinations each year	Banks, 2002
Institutional Quality	Average of 5 variables to measure the quality of government and bureaucracy; 1980 value used throughout	Knack and Keefer, 1995
M2/GDP	Broad measure of money supply as share of GDP to gauge development of financial system; lagged one period	World Bank, 2004
Budget Balance	Government surplus as a share of GDP	World Bank, 2004
Inflation	Log(1+ inflation rate)	World Bank, 2004
Sachs-Warner	Measure of openness of an economy	Sachs and Warner, 1995
Sub-Saharan Africa	Dummy Variable	
East Asia	Dummy Variable	
Aid	Official Development Assistance as a share of GDP	Development Assistance Committee (DAC); OECD, 2005
Per Capita Real GDP Growth	Measured in percentage terms	World Bank, 2004