FOREIGN AID, GROWTH, POLICY AND REFORM

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Abstract

Whether good macroeconomic policy facilitates aid effectiveness in generating growth is a highly debated topic. In this paper we investigate if economic reform has a favorable effect on the aid-growth relation—specifically, if reform enhances the effect of aid on growth. In doing so, we also construct a new policy index and examine the robustness of the Burnside and Dollar (2000) 'policy view'. The results indicate that although our new policy index and reform are both growth enhancing, they do not increase aid-effectiveness and aid seem to play no positive role in the picture.

1. Introduction

The effectiveness of multilateral foreign aid in promoting growth has been a highly debated issue. The debate started following a recent paper by Burnside and Dollar (2000) where the authors claim that aid helps growth *only* in a good macroeconomic policy environment. This particular 'policy view' has also had a tremendous impact on donor policies (Easterly, 2003)—given limited resources and the implication that aid be directed to countries with good policies, many developing poor countries with questionable policy record would be especially be at risk of losing foreign assistance. A large number of empirical papers followed to re-examine the robustness of this particular policy view, as well as to assess the aid-growth relationship in this light (for example, Alvi et al, forthcoming; Collier and Dehn, 2001; Collier and Dollar, 2002; Hansen and Tarp, 2001; Easterly *et al,* 2004, Dalgaard et al, 2004; Clemens et al; 2004; Rajan et al 2005 and Rodrik 2005, to name a few). Most of the empirical papers find that the policy view is not robust to the sample used (Easterly et al, 2004, Dalgaard et al, 2004) or the empirical specifications (Alvi et al, forthcoming).

In this paper we attempt to check the robustness of the policy view in a more direct way. In order to improve the policy environment, the IMF imposes structural reforms on aid receiving countries. We plan to investigate whether such reforms themselves are growth enhancing and, more importantly, whether reforms increase aid effectiveness in a typical developing country. While policy itself is a complex outcome of several economic factors, reform is a relatively more straightforward measure. It is noteworthy that donors have no direct control over the macroeconomic environment of a country but they do have direct control over the 'reform' agenda. To our knowledge there has not been any rigorous study in the literature that directly tests the impact of reform on aid effectiveness. In this paper we intend to fill this gap. We estimate a typical aid-growth regression that includes a reform dummy as one of the explanatory variables. We also construct a new policy measure by broadening the Burnside and Dollar policy index to incorporate more variables. This enables us to investigate the traditional aid-policy-growth nexus in the presence of the reform dummy, while using a more comprehensive

policy index.[1] We also directly test the aid-reform-growth relation via the effect of the aid-reform interaction term.

Section two describes the construction of a new policy index that we use in this paper. Section three discusses data and empirical estimation; section 4 presents the results and concludes with a discussion.

2. Construction of New Policy Index

The Burnside and Dollar (2000) policy index has been used in most of the empirical studies in recent years. This index is defined as a weighted sum of budget deficit/surplus, inflation rate and the Sachs-Warner openness index where each component is weighted by its coefficient in the growth regression. Although this index provides a good idea of a country's policy stance, we believe that it is not broad enough for a typical developing economy. We construct a more comprehensive policy index by incorporating two additional variables—credit to the private sector as a percentage of GDP (referred to as "private"), and telephone main lines per 1000 people (telephone)— into the existing index. While credit to the private sector captures the financial depth or degree of financial liberalization, telephone main line is used as an indicator of infrastructure policy. The new index that we consider is given below.[2]

Policynew = f(Budget, Inflation, SACW, Private Credit, Telephone)

In all cases, as in Burnside and Dollar (2000), weights are assigned based on the coefficients of the variables in a growth regression that does not include aid. Although the new index is not exhaustive, it includes a key financial variable and a commonly used basic access variable that represents infrastructure. It is widely believed that credit availability and better communications are prerequisites to creating a favorable growth scenario. Also, in most developing countries, the depth of the credit market and telephone main lines are very much within the control of domestic policy, making their inclusion in a policy index quite desirable. Improvements in these aspects would generally indicate transition to better policy.

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[1] In fact, one could argue that the exclusion of the reform dummy may leave substantial omitted variable bias in the regression.
[2] The Burnside-Dollar policy index is given by *f (Budget, Inflation, SACW)*

3. Empirical Estimation and Data

The original Burnside-Dollar (henceforth BD) type empirical model used to test the impact of reform on the relationship between aid and growth can be specified as follows.[3]

$GDPG_{it} = a_0 + a_1 LGDP_{0it} + a_2 ETHNIC_{it} + a_3 ASSASIN_{it} + a_4(ETHNIC * ASSASIN)_{it}$
$+ a_5 (INSTITUTION)_{it} + a_6 SSA_i + a_7 EASIA_i + a_8 M2 + a_9 AID_{it} + a_{10}$ **$(AID*Policy_{it})$** $+ a_{12}$
$POLICY_{it} + U_{it}$

We augment this with a reform variable and use the following alternative specifications:

$GDPG_{it} = a_0 + a_1 LGDP_{0it} + a_2 ETHNIC_{it} + a_3 ASSASIN_{it} + a_4(ETHNIC * ASSASIN)_{it}$
$+ a_5 (INSTITUTION)_{it} + a_6 SSA_i + a_7 EASIA_i + a_8 M2 + a_9 AID_{it} + a_{10}$ **$Reform$** $+ a_{11} POLICY_{it}$
$+$ **$a_{12}Aid*Reform$** $+ U_{it}$

Or,

$GDPG_{it} = a_0 + a_1 LGDP_{0it} + a_2 ETHNIC_{it} + a_3 ASSASIN_{it} + a_4(ETHNIC * ASSASIN)_{it}$
$+ a_5 (INSTITUTION)_{it} + a_6 SSA_i + a_7 EASIA_i + a_8 M2 + a_9 AID_{it} + a_{10}$ **$Reform$** $+ a_{11} POLICY_{it}$
$+$ **$a_{12}Aid*Policy$** $+ U_{it}$

This is similar to the specification used by Burnside and Dollar (2000) except that now reform is included as one of the regressors.

We employ the Generalized Method of Moments (GMM) estimator of Arellano and Bond (1991) in our growth regressions. This estimator removes country specific effects by taking first differences and makes use of lagged values of the dependent

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[3] $GDPG_{it}$ is the growth of Real GDP per capita, $LGDP_{0it}$ is the real GDP per capita at the beginning of each period, ETHNIC stands for ethnic fractionalization; ASSASIN represents assassinations; (ETHNIC * ASSAS) $_{it}$ is the interaction term between ETHNIC and ASSASIN; INSTITUTION presents institutional quality; SSA and EASIA are dummy variables for Sub-Saharan Africa and East Asia respectively; REFORM is a dummy variable that takes 1 in the post reform period and 0 otherwise, POLICY is an index constructed as described in the previous section; AID is Official Development Assistance (ODA), AID* REFORM is an interaction term between aid and REFORM. In all the above i indexes country and t indexes time.

variable and the predetermined variables as instruments. Here Aid, Policy, and Reform are considered as endogenous and their respective lagged values are used as instruments. Note that the *SSA, EASIA* and *ETHNIC*ASSASIN* dummies are dropped in the GMM regression.

We use aggregate aid data from 31 developing countries with reform dates for the period 1974-2001. This gives us 7 time periods, since we consider 4-year averages. However, in our GMM regression we lose 2 time periods due to the use of lagged values and thus end up with 155 observations. Information on reform date is obtained from the IMF.[4] Of the reforming countries in our sample, we include only those that initiated reform no later than 1992. This would allow enough time to assess the effects of reform on subsequent growth. Data on all other variables including credit to the private sector as percent of GDP, and trade as a percent of GDP are obtained from the World Bank's World Development Indicators (2004). The following countries are included in our sample. Argentina, Bolivia, Brazil, Chile, Cameroon, Colombia, Cost Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Ghana, Guatemala, Honduras, Haiti, India, Jamaica, Kenya, Mexico, Morocco, Nicaragua, Nigeria, Peru, Philippines, Senegal, Sri Lanka, Syria, Tunisia, Turkey, Uruguay, and Zambia. This country list is smaller than Roodman's because not all countries had reform information within the period under consideration.

4. Results and Discussion:

The GMM results presented in Table 1 show that reform has a direct positive effect on growth. This is true for all cases that we consider. The new policy index is also positive and significant in all cases. But the BD policy appears to lose significance once we bring the reform dummy into the picture. This could be due to the fact that the new policy measure is more comprehensive than the BD policy index. The institution variable looses its significance also once we introduce the reform dummy. Interestingly, neither the aid-policy interaction term, nor the aid-reform interaction term is significant in our GMM regressions. Since our sample is smaller than the original BD sample (due to the

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[4] The reform date is the year in which the IMF had the first standby arrangement (SBA) with the country in question where the IMF would lend conditional on implementation of the reform programs. See IMF: Terms of IMF Financial Assistance 2007.

inclusion of the reform variable), we try BD type specification (i.e., regression without the reform variable) for this new sample. The result is presented in Table 2. Surprisingly, for this sample BD policy still remains insignificant, though our new policy index remains positive and highly significant. Thus we provide two new robustness checks on the BD conclusion—(a) *using reform*, we do not find evidence that 'aid is effective *only* in a good policy environment', and (b) without reform, we do not find evidence that 'aid is effective *only* in a good policy environment' in our *new* sample. The latter result is in conformity with Easterly et al (2004), which shows that BD results are highly sensitive to the sample used. Furthermore, we do not find evidence to support the claim that aid is more effective after reform (note that aid*reform is not positive and significant either). Although reform itself always turns out to be highly positive and significant, we find that aid hardly has any impact on growth. For robustness check, we also run the regression without policy index, but with its individual components appearing separately in the regression. This changes our model specification and we still find a similar conclusion— that reform is highly positive and significant, but aid and aid*reform are both insignificant.[5]

Our findings offer a new perspective on the aid effectiveness debate: whether aid is productive only in a good policy scenario can also be assessed in terms of aid effectiveness in a reforming country scenario. Whereas policy as measured in BD is the result of various macroeconomic outcomes, the reform mandate is more salient and less dependent on macro performance. Our conclusion that reform itself is highly significant in fostering growth, though aid is not - despite good policy or reform, offers an interesting perspective. Perhaps policymakers and donors ought to concentrate on reform and its long-term effects while aid should be used as incentive to achieve that end.

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[5] Note that when we do not include policy index in our regression, we need to include budget, inflation and openness (i.e. the three main components of policy index) separately in the regression because these three variables are standard covariates in a typical growth regression. Reform alone can not capture their effects because desired levels of these variables can possibly be achieved without reform and also reform does not guarantee a desired state of these variables.

Table 1: Policy and Reform: GMM Results

Variable	GMM (BD Policy)	GMM (BD Policy)	GMM (Policy new)	GMM (Policy new)
LGDP	0.06	0.02	-0.02	-0.01
	(0.08)	(0.08)	(0.09)	(0.08)
ASSASIN	0.11	0.13	0.02	-0.01
	(0 .19)	(0 .18)	(0 .20)	(0 .20)
M2l	-0.06	-0.06	-0.05	-0.04
	(0.04)	(0.04)	(0.04)	(0.04)
INSTITUTION	0.38	0.45*	0.23	0.32
	(0.29)	(0.27)	(0.29)	(0.28)
REFORM	2.15**	2.34*	3.27**	3.14***
	(0 .93)	(0 .85)	(1 .04)	(0 .91)
AID	-0.004	-0.02	-0.26	-0.08
	(0.32)	(0.20)	(0.30)	(0.22)
POLICY	0.002	0.18	1.57***	1.32**
	(0 .32)	(0 .31)	(0 .43)	(0 .45)
AID*REFORM	-0.03		0.08	
	(0.30)		(0.27)	
AID*POLICY		-0.01		-0.01
		(0.06)		(0.22)
No. Of Observations	155	155	155	155
Sargan Test (P-Value)	0.98	0.91	0.98	0.98
Arellano-Bond Test (P-Value)	0.76	0.58	0.69	0.67

Note: Dependent variable is GDP. *, **and *** indicate10%, 5% and 1% significant levels respectively. Standard errors are in parentheses. The Sargan of Over-identifying Restrictions shows the validity of the instruments used and there is also no second order serial correlation in the differenced error terms in accordance with Arellano and Bond (1991).

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Table 2: GMM Results (No Reform)

Variable	GMM (BD)	GMM (Policy new)
LGDP	0.03	-0.03
	(0.08)	(0.08)
ASSASIN	0.17	0.12
	(0 .18)	(0 .20)
M2l	-0.06	-0.06*
	(0.04)	(0.04)
INSTITUTION	0.54*	0.30
	(0.28)	(0.28)
AID	-0.07	-0.05
	(0.21)	(0.22)
POLICY	0.27	1.63***
	(0 .31)	(0 .46)
AID*POLICY	0.01	-0.11
	(0.06)	(0.21)
No. Of Observations	155	155
Sargan Test (P-Value)	0.4111	0.6455
Arellano-Bond Test (P-Value)	0.4716	0.3573

Note: *, **and *** indicate10%, 5% and 1% significant levels respectively. Standard errors are in parentheses. The Sargan test of Over-identifying Restrictions shows the validity of the instruments used and there is also no second order serial correlation in the differenced error terms in accordance with Arellano and Bond test.

References:

Alvi, Eskander, Debasri Mukherjee, and Elias K. Shukralla. 2008. Aid, Policies, and Growth in Developing Countries: A New Look at the Empirics. *Southern Economic Journal* 74 (3).

Burnside, Craig, and David Dollar. 2000. Aid, Policies, and Growth. *American Economic Review* 90: 847-868.

Clemens, Michael A., Steven Radelet, and Rikhil Bhavnani. 2004. Counting Chickens When They Hatch: The Short Term Effect of Aid on Growth. Center for Global Development Working Paper No. 44.

Collier, Paul, and Jan Dehn. 2001. Aid, Shocks and Growth. The World Bank Policy Research Working Paper No. 2688.

Collier, Paul, and David Dollar. 2002. Aid Allocation and Poverty Reduction. *European Economic Review* 46: 1475-1500.

Dalgaard, Carl-Johan, and Henrik Hansen. 2001. On Aid Growth and Good policies. *Journal of Development Studies* 37: 17-41.

Dalgaard, Carl-Johan, Henrik Hansen, and Finn Tarp. 2004. On the Empirics of Foreign Aid and Growth. The Economic Journal 114: F191-F216.

Easterly, William. 2003. Can Foreign Aid Buy Growth? *The Journal of Economic Perspectives* 17: 23-48.

Easterly, William, Ross Levin, and David Roodman. 2004. Aid, Policies, and Growth: Comment. *American Economic Review* 94: 774-780.

Hansen, Henrik, and Finn Tarp. 2001. Aid and Growth Regressions. *Journal of Development Economics* 64: 547-570.

IMF: Terms of IMF Financial Assistance, 2007, IMF website: (http://www.imf.org/external/np/tre/lend/terms.htm).

Rajan, Raghuram G., and Arvind Subramanium. 2005. Aid and Growth: What Does the Cross-Country Evidence Really Show? IMF Working Paper No. 127.

Rodrik, Dani. 2005. Why We Learn Nothing from Regressing Economic Growth on Policies? Harvard University Working Paper.

Roodman, David. 2004. The Anarchy of Numbers: Aid, Development, and Cross-Country Empirics. Centre for Global Development Working Paper No. 32.