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Aid, Institutions, and Growth:
Building Institutions Matters for Development
Effectiveness

Yumeka HIRANO

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Yumeka HIRANO[*]

Graduate School of International Development, Nagoya University

Abstract

This study aims to revisit the controversial discussion of development effectiveness. We conducted a series of cross-country analyses of the impact of aid on growth, using sectoral data of economic aid and social aid (unbalanced panel data of 183 growth spells in 60 countries during the late 1990s to the 2000s), in comparison with aggregate aid data. The originality of this study is its focus on institutional quality, and capacity in particular, as a key factor for aid effectiveness, unlike the exposition of previous studies, which emphasized the importance of policies as prerequisite conditions. Given the evidence that economic aid indeed promotes growth independent from policy or institutional conditions, this paper argues that past literatures often underestimated the impact of aid by using aggregate aid data. This study also reveals that impact of aid is significant in countries, whose institutional quality, or capacity, is improving, while the impact of aid is not necessarily depending on the initial conditions of institutional quality of a recipient country. These findings imply that even a country with lower institutional quality has a possibility to achieve higher growth, unlike the continuing debates on policy conditions for aid effectiveness. With emphasis on improvements in institutional quality, this study suggests providing aid packages with institution and capacity building schemes or projects would increase development effectiveness.

[Address] Graduate School of International Development, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8601, JAPAN
[E-mail] hirano.yumeka@a.mbox.nagoya-u.ac.jp

1. Introduction

Debate about the effectiveness of development aid has been controversial for decades in the field of economic development. The reason behind this is that aid is, in general, considered to have a positive impact on economic growth, which is believed to be a vital force in poverty reduction. However, cross-country empirical studies on aid effectiveness have shown its fragility and ambiguity. Some studies have confirmed this positive relationship (Gulati, 1978; Hansen & Tarp, 2000; Clemens, Radelet, & Bhavnani, 2004; Minoiu, & Reddy, 2010), while others have argued that there is no significant impact of aid on growth (Mosley, Hudson & Horrell, 1987; Bonne, 1996; Easterly, Levine, & Roodman, 2004). Moreover, some studies have suggested that the positive impact emerges only with certain prerequisite conditions such as good policies (Burnside & Dollar, 2000; Collier & Dollar, 2001), geographical environments (Dalgaard, Hansen, & Tarp, 2004), and only in certain forms or categories of aid (Sawada, Kohama, & Kono, 2003; Clemens et al., 2004; Minoiu, & Reddy, 2010). Although current discourse asserts the importance of good policies (including fiscal, monetary, and trade policies) for effective development aid to promote growth effectively, the controversy leaves room for further research.

Concerning these continuing discussions, the current study aims to revisit the discussion of development effectiveness by examining whether aid indeed contributes to promoting growth and reducing poverty. The following are the two key questions to be addressed in this study.

1.1 Does Aid Promote Growth?

This is the question that needs to be asked again, regardless of the large number of past literatures that deal with it. The current author suspects that one of the reasons for the controversy in aid-growth literatures comes from the usage of aggregate aid data in their analyses. Their insignificant, even negative, results should be regarded as natural, because purposes of aid are not necessarily, or directly, targeted for economic growth. For example, humanitarian aid is not aimed to enhance growth, but to provide people in a crisis with the basic human needs during an emergency. Unlike most of the previous literatures, this study employed the sector-level aid data of economic aid, social aid, as well as aggregate aid data for comparison, to test the different effects of aid on growth in more precise manner.

Despite considerable research in the past, re-examination of the aid-growth relationship with the latest data should be worthwhile. There have been the changes of international aid architecture and aid allocation since the mid-1990s: aid has been more systematically allocated to countries with sound institutions and policies that are critical for growth (Burnside & Dollar, 2004; Bourguignon & Sundberg, 2007). In addition, there was the historical turnaround of the growth performance among developing countries in the 1990s (Hirano & Otsubo,

2012, Figure 1). We consider that without reflecting these changes into the analyses, useful policy suggestions for development effectiveness cannot be elicited.

1.2 Do Institutions Matter for Development Effectiveness?

We argue that institutional quality, and capacity in particular, should be one of the key factors for the effectiveness of development aid, unlike past literature that focused on policy stance. The current study is concerned with the nature of institutional quality, which should be clearly differentiated from that of policy. Policy stance can be changed relatively easily by external efforts, while the change of institutions needs constant efforts from inside the country. Having a good policy stance does not necessarily mean that the countries become capable of creating good policy impact or managing their economy effectively. In reality, constraints remain in the absence of good institutions, as institutional quality captures long-term characteristics of countries that affect policies and growth (Burnside & Dollar, 2000). Building institutions takes longer to bring about its effects on economic growth than policy changes (Williamson, 2000), similar to the impact of aid in the long-run growth theory. Considering these effects of institutional quality, this study intends to shed new light on the discussion of development effectiveness.

2. Literature Review: Cross-Country Empirics on Aid Effectiveness

The debate surrounding the aid–growth relationship has passed through more than a half century and a number of cross-country analyses have been conducted. Earlier studies simply examined the impacts of aid in promoting economic growth or investment (Bonne, 1996; Mosley, 1980; Hansen & Tarp, 2000), while recent studies yielded widely divergent estimates of the cross-country relationship in aid effectiveness. A short review of previous literature confirms that the existing evidence of cross-country analyses of aid effectiveness is mixed.[1]

2.1 Aid, Policy, and Growth

One of the most influential papers in aid effectiveness research is the work of Burnside and Dollar (2000). Through a panel analysis of 56 countries during six four-year time periods from 1970 until 1993, their study concluded that, on average, foreign aid had little impact on growth, yet aid had a stronger positive impact on growth if accompanied by good policies (fiscal, monetary, and trade policies).[2] They asserted the importance of good policy conditions for effectiveness of aid.

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[1] Conflicting results and a lack of robustness in statistical analysis partly stem from the marginal nature of aid, where the ratio of aid to GDP is relatively small.

[2] The unique feature of this analysis was that Burnside and Dollar incorporated a policy index, consisting of the budget surplus, the inflation rate, and a trade openness dummy variable (Sachs and Warner index).

Easterly, Levine, and Roodman (2004), however, argued the insignificance of Burnside and Dollar's findings, based on their results with a new extended dataset. Sawada, Kohama, and Kono (2003) also re-examined these earlier studies with an extended data, and argued that the linkage between aid and growth, conditional on good policies, had broken down. In turn, Hansen and Tarp (2000) concluded that aid increased the growth rate, regardless of the policy environments defined by Burnside and Dollar.

Following Burnside and Dollar's assertion, many researchers have paid attention to the role of policy. Collier and Dollar (2001) found that the interaction of aid and policy, as measured by the World Bank's Country Policy and Institutional Assessment (CPIA), was statistically highly significant, even though the coefficient of aid itself was insignificant with negative sign. On the one hand, Rajan and Subramanianz (2008) re-examined the effects of aid on growth with cross-sectional panel data and found no evidence to prove that aid worked better in a sound policy environment.

2.2 Aid, Institutions, and Growth

The importance of institutions for aid effectiveness is often discussed together with the need of sound policies of a recipient country in the development community. Nevertheless, past aid-growth empirical research did not pay much attention to the roles of institutions, and instead tended to stick to the significance of policy conditions popularized by Burnside and Dollar (2000). Most of the above-mentioned literatures included institutional indicators as one of the control variables, yet not the main target of their discussions. Burnside and Dollar (2000) employed institutional quality that captures the security of property right and efficiency of the government bureaucracy from the International Country Risk Guide (ICRG) indicator. Burnside and Dollar (2000), as well as Easterly, Levine, and Roodman (2004), found a positive impact of institutional quality on growth with statistical significance.

The recent study by Burnside and Dollar (2004) placed more emphasis on institutional quality. They used a new cross-sectional data-set of the 1990s and employed an overall index of institutional quality developed by Kaufmann, Kraay, and Zoido-Lobatón (1999) for their regression analyses. While aid itself had little impact on growth, the interaction of aid and institutional quality had a robust positive relationship with growth. This result supported the view that the impact of aid would depend on the quality of state institutions in a similar way that they found in their original paper. Clemens et al. (2004) also examined interaction terms between aid and institutional quality (as measured by the average of corruption, bureaucratic quality, and rule of law form ICRG indicators). They found a positive and significant coefficient of the interaction term and suggested that aid would

indeed work better to some degree in countries that effectively battle corruption, guard property rights, and cultivate a respect for law.

2.3 Effectiveness of Different Types or Sectors of Aid

The aid effectiveness of different types of aid had been a point of contention in the recent discourse. Sawada, Kohama, and Kono (2003) found that the impact of loan aid was statistically significant in promoting economic growth independently from policy conditions. They suggested that the incentive to repay the loan by careful management of development projects resulted in the accumulation of productive resources and that this positively affects growth performance. Similarly, Imai and Ojima (2005) argued that loan aid could be more effective than grants in terms of recipient countries' efforts to achieve economic growth, fiscal discipline, and domestic revenue mobilization.

As for the impact of different sectors of aid, there are few studies that conducted extensive analyses on it. Clemens et al. (2004) used sector-level data to classify them into what they termed short- and long-impact of aid and humanitarian aid for their cross-country regression analyses. They found that short-impact aid, which consists mainly of aid for the economic sector, promoted growth, regardless of a recipient's quality of institutions and policies. They also observed that the impact on growth was larger in countries with stronger institutions.

3. Methods and Empirical Models

3.1 Cross-Country Analysis and Model Specifications

We conducted a series of cross-country analysis based on the following model with a worldwide unbalanced paned data, using the two-stage least squares (TSLS) estimator.[3] We employed the Barro-type ad hoc growth equations for the conditional convergence with elements of exogenous conditions (X), important factors under consideration such as policies and institutions (Z), and aid (A).

$$(\ln y_{ct} - \ln y_{c0})/T = \alpha + \beta \ln y_{c0} + \gamma \ln X_{ct} + \delta \ln Z_{ct} + \theta \ln A_{ct} + \lambda_t + \varepsilon_{ct} \tag{1}$$

where y is the average per capita income, c and t indicate countries and years, respectively, and $\lambda_t + \varepsilon_{ct}$ is a composite error term. That is, the dependent variable is the growth rate of average per capita real income during the period. The natural logarithm of real per capita income of the initial year, $\ln y_{c0,}$ is included as an explanatory

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[3] We also used the generalized method of moments (GMM) estimator for a robustness check. We found there was negligible small changes, or no changes in the GMM results, as compared with that of TSLS. This also proves that TSLS estimation results were valid without endogeneity or serial correlation issues.

variable to examine the conditional β-convergence.

Instrumental Variables (IV) estimation is applied to cope with endogeneity, which is one of the inevitable issues in aid-growth studies (Clemens et al., 2004, pp.26-27; Dalgaard, Hansen, & Tarp, 2004, pp.201-208; Rajan and Subramanianz, 2008, pp.645-650). We used simple and standardized instruments of lagged values for the levels (including lagged period averages for period averages), and initial value and lagged rate of changes for growth spells. Variables of trade, institutions, and aid, except for initial values of those, were instrumented.[4]

In order to examine if institutional quality could be a key factor for development effectiveness,[5] we compare the aid outcomes among different set of countries, which were divided by *level* and *changes* of institutional quality respectively: (i) countries whose initial level of institutional quality is high (more than the sample mean); (ii) countries whose initial level of institutional quality is low (less than the sample mean); (iii) countries whose institutional quality is improving (the change ratio is positive); and (iv) countries whose institutional quality is not-improving (the change ratio is zero or negative).

3.2 Description of Explanatory Variables

Policy Variables (Z): We employed three policy variables (fiscal, monetary, and trade policies), commonly used in the empirical aid-growth literature: government consumption relative to GDP (G/GDP), the period average inflation rate, trade (exports plus imports) relative to GDP (T/GDP). Excessively large presence of government (G/GDP) in the economy is mostly considered to be inefficient and impedimental to active private-sector growth. Higher inflation rate is considered as an impediment to economic growth, causing a negative influence on household consumption and investment behavior. Trade is believed to promote industrialization and technological progress, which eventually contribute to growth. At the same time, trade volume tends to become larger in some developing countries mainly because of the increasing importation of consumption goods. How much the benefits of liberalized trade can be derived for growth depends on countries. The impact of trade is expected to be neutral.

Institutional Variables (Z): Institutional quality was incorporated as a focused variable. Many previous studies used some selected institutional quality index. Considering the capacity of the recipient country is key for aid effectiveness, and we used the variable of institutional quality, which indicates capacity in particular. A country with good capacity and institutions can manage both public and private activities efficiently, which brings about positive effects on growth as well as aid effectiveness.

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[4] We have checked the instrument validity: (i) the test of weak instruments for instrument relevance; and (ii) the overidentifying restrictions test (with commonly used the J-statistic) for instrument exogeneity.
[5] We found the cross terms of aid and institutions were not statistically significant. This arises from the fact that estimating its marginal effects heavily depends on the sample selection, time duration, and sets of variables. Kraay (2005) pointed out the marginal effect with the evidence that the interaction term of aid and policy accounted for only four percent for contributing growth.

Aid Variables (A): Aid is another key variable for assessing the effectiveness of aid. We used two different sectoral data of economic aid and social aid, in addition to aggregate aid relative to GDP. It is assumed that economic aid has a positive impact on growth, while social and aggregate aid may not have significant positive impact, as not all of aid is targeted for growth.[6]

Exogenous Variables (X): Fertility rate and average rate of change in terms of trade (TOT) were added as exogenous variables. These variables are considered to be exogenous, or not-correlated with other selected variables, while they have explanatory power for growth. These are the typical variables used in growth literatures, as represented by Barro's study (1997).

Regional Dummies: We used three dummies: East Asia and Pacific (EAP), Sub-Saharan Africa (SSA), and Former Soviet Union (FSU),[7] with other regions treated as the base. EAP and SSA regional dummies are the ones mostly used together in aid-growth empirics. EAP tends to achieve higher performance than other regions, while SSA tends to lag behind. In addition, we included the FSU dummy, as the countries of FSU experienced rapid reform (with economic downturns) and remarkable growth thereafter.

Time Dummies: We used crises dummy as a time designation rather than normal time dummies such as annual, or decadal time dummies. To be attached with crisis dummy, the period has to contain one of the crises: Debt Crisis (1982-83), Asian Financial Crisis (1997-98), or the World Financial Crsis (2008-09). This dummy takes care of time-fixed effects (λ_t') caused mostly by crises.

3.3 Cross-correlations between Variables

Table 1 shows cross-correlations of dependent variables and explanatory variables. Social and aggregate aid is negatively correlated with the period average growth rate of a nations' average per capita income, while economic aid has the positive correlation. These simple correlation coefficients indicate that effects of aid vary between different sectors of aid. We also pay attentions that the aid variables are negatively correlated with initial level of institutional quality (ICRG Capacity) at a significant level, while the correlation with changes of institutional quality is positive, yet insignificant. This shows aid is given to lower-income countries, whose initial condition of institutional quality is usually low at early stages of development. On the other hand, the allocation of aid is neutral to changes of institutional quality.

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[6] Author found that significant impact of social in mitigating inequality in her research (Hirano, 2013).

[7] We used the FSU as a regional designation rather than the ECA that includes the FSU, as the FSU had more significance. This is consistent with the judgment in Burnside and Dollar (2004).

4. Data

The growth spells of the medium-term are compiled from the available data points of bottom-quintile income shares during the period from 1978 to 2010. This database contains 245 growth spells of 5-9-year period each with an average duration of 5.72 years. Out of these, the growth spells of aid analyses were obtained in accordance with the data availability of sectoral aid. The data for sectoral aid analysis contains 183 growth spells for 60 countries during the late 1990s to the 2000s.[8] Major socio-economic data are taken from World Development Indicators (WDI) of the World Bank (World Bank, 2012), unless otherwise indicated. The variables and their data sources are listed in Appendix 1.

Aid data is obtained from the Organization for Economic Co-operation and Development (OECD)'s Creditor Reporting System (CRS) (OECD-DAC, 2013). We used the sectoral data of (I) social infrastructure and services, as we called it social aid, and (II) economic infrastructure, as economic aid, in comparison with the aggregate aid of the eight main categories.[9]

The indices for the quality of institutions are extracted from the ICRG of the PRS Group (PRS Group, 2012). We formed the capacity sub-composite (ICRG Capacity) by compiling the particular five components: government stability; investment profile; corruption; law and order, and; bureaucracy quality. These five indicators denote the management ability of recipient countries, while other indicators represent different meanings of institutions such as the security and stability. As to the measurement, we placed importance on the changes of institutional quality rather than the levels for assessing aid effectiveness, while the majority of past research used levels of institutional quality with the assumption that it does not change much. In fact, rapid poverty reduction in low-income countries depends primarily on these countries improving their own policies and institutions (Collier & Dollar, 2001).

5. Regression Results

5.1 Economic Aid is Good for Growth

Table 2 shows the regression results of Equation 1. Firstly, we examined the impact of three policy variables and aid variable on growth (Columns 3-5). A negative coefficient on initial G/GDP implies that a large size of the government is, in general, negatively associated with growth performance. The importance of inflation control persists throughout the examinations, as strong negative coefficients on inflation shows. The result of changes of T/GDP was mixed and it was statistically insignificant. That is, impact of trade varies among countries. This

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[8] See Hirano (2013) for further details, including the country selection and the growth spells.
[9] Due to the limitation on disbursement data, we used the commitments data for economic aid and social aid. The coverage ratio of disbursements data was below 60% before 2002 in CRS data. The period average ratios of disbursement to commitment data are approximately 96% for the sample courtiers and periods used in this study.

tendency is said to be robust, as it is consistent with the results in Hirano and Otsubo (2012). All the coefficients of economic, social, and aggregate aid were positive at the 5 % significance level. However, it can be seen that these positive results happened to stem from the relatively high correlation between trade and aid variables, especially for economic aid.[10] To avoid the possible distortion in the results, we decided to use only inflation variable as a policy variable.[11]

The estimation results with one policy (inflation) are shown in (Columns 6-8). We found that the positive and significant impact of economic aid, in addition to positive, yet smaller and insignificant coefficients of social aid and aggregate aid.[12] These results confirm that economic aid contributes to growth despite the certain prerequisite conditions of a recipient country, such as good policies, institutional quality, and geographical environments. We argue that the reason why past literatures often failed to prove the significant positive impact of aid on growth is not because aid actually did not promote growth, but because they failed to extract the different effects of each aid sector. This result of economic aid is in line with that which Sawada, Kohama, and Kono (2003) found for loan aid: By carefully considering the uniqueness of each sector or type, aid effectiveness can be appropriately assessed.

Next, we tested the impact of changes of institutional quality and aid on growth (Columns 10-12). The variable of changes of institutional quality was positive, yet insignificant, in all estimations. The significant and positive coefficient of social aid, as well as a moderately significant and positive coefficient of aggregate aid, was observed. These increasing significance levels of social aid and aggregate aid could be attributed from its joint effects with changes of institutional quality. In other words, the impact of aid on growth can be more significant in a recipient country whose institutional quality is improving. On one hand, the positive coefficient of economic aid lost its statistical significance, as it has a relatively high correlation with changes of institutional quality, as shown in Table 1. This issue prevents us from adding these two variables together in growth regressions in our study.[13]

On top of these estimations of institutions and aid, we added the inflation as a selected policy variable (Columns 14-16). Inclusion of the inflation did not change the core results, only increasing the degree of

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[10] Rodriguez and Rodrik (2001) claimed that that trade might simply act as a proxy for a variety of other important policy and institutional variables due to the high correlation.

[11] For simplicity, G/GDP variable was also dropped in the estimation in order to measure the marginal effect of aid. Nevertheless, the inclusion of G/GDP did not change the results, while only increasing the R^2 by 2-4 percentage points.

[12] We have tested various equations with a different set of selected variables. We found the tendency was robust throughout the examinations: coefficients attached to economic aid are the largest, social aid is the second largest, and aggregate aid is the next. In addition, economic aid always exhibited a higher significant level in comparison with social aid and aggregate aid.

[13] Therefore, regression results of economic aid with the change of institution (Columns 10 &14) are presented only for references in this paper.

coefficients and significance of all aid variables. An additional finding is that effectiveness of aid increases in a county where monetary policy is appropriately managed.

5.2 Building Institutions Matters for Development Effectiveness

Table 3 shows the impact of aid on growth by different conditions of institutional quality of recipient countries; high, low, improving, or not-improving. The estimation results of Columns 6, 7, & 8 in Table 2 are used as a base (as listed again in Columns 1, 6, & 11 in Table 2 for easy-understanding).

When we tested the sample groups, divided by initial level of institutional quality, we found that the impact of aid became less significant (Columns 2, 3, 7, 8, & 12), no matter how high or low the institutional quality a country has at the initial time point. Impact of economic aid lost its statistical significance of 10% level, while social aid decreased *t*-statistic value. Interestingly, we found more distinct differences when testing the sample groups divided by changes of institutional quality. Impact of both economic and social aid became larger with statistical significance in a country whose institutional quality is improving (Columns 4 & 9). On the other hand, effects of both economic and social aid became much smaller in a country whose institutional quality is not-improving or worsening (Column 5 & 10). On the other hand, the impact of the aggregate aid was not increased. Mutually offsetting effects of various types of aid are operating in both groups, with or without high or improving institutional quality.

In summary, these series of results imply that aid effectiveness does not depend on the initial conditions of institutional quality, while aid effectiveness does depend on whether the institutional quality, or capacity, of a recipient country is improving or not. In other words, aid effectiveness could be maximized if aid is allocated to a country where the government and people are making efforts for building better institutions. We also should not neglect that negative coefficient attached to the SSA regional dummy persisted. This suggests that the characteristics of region should be taken into consideration in formulating and implementing development strategies.

6. Conclusions and Policy Implications

We examined the effectiveness of aid in promoting economic growth, paying attentions to different effects of each aid sector, as well as focusing on institutional quality as a key determinant. This study revealed that economic aid indeed promoted growth. We argue that the significant effect of economic aid on growth should be recognized in economic analyses as well as in policy discussions. Past literatures often underestimated the impact of aid by using aggregate aid data and this gave the misleading interpretation that aid was ineffective. Carefully

considering that there are different incentives and natures in different sectors or forms of aid, aid effectiveness should be reassessed.

Furthermore, we affirm that the building institutions do matter for development effectiveness. Our study clearly shows that development effectiveness is significant in countries, whose institutional quality, or capacity, is improving, while development effectiveness is not necessarily depending on the initial conditions of institutional quality of a recipient country. It may imply that even a country with lower institutional quality has a possibility to achieve higher growth, unlike the continuing debates on policy conditions for aid effectiveness. We should note the fact that developing countries often encounter constraints in building capacity by themselves during the early stages of development. These suggest that development practitioners and policy makers should take this potential into consideration in their decision-making concerning aid allocation.

In case of Japan's official development assistance (ODA), institutional and capacity building has been her area of specialty in line with Japan's ODA policy. Japan's ODA has long experiences of providing aid packages with a technical assistance project or a capacity building scheme. This study supports that such efforts for institutional and capacity building would greatly contribute growth of developing countries with maximizing effectiveness of aid.

This study signifies the importance of improvement of institutional quality for development effectiveness, while the past studies regarded institutional quality as something that does not change for a long time in their estimations. This is a new insight to the voluminous aid-growth literatures. Given the evidence, this study emphasizes the significance of providing aid packages with institution and capacity building schemes for the development effectiveness.

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Table 1 Cross Correlations between Dependent and Explanatory Variables (the late 1990s - 2000s)

	(1) pcY	(2) G/GDP	(3) Inflation	(4) Δ_T/GDP	(5) In_ICRG	(6) Δ_ICRGC	(7) EAID/GDP	(8) SAID/GDP	(9) AAID/GDP
(1) Period Average Growth Rate of Per Capita Income	1								
(2) Initial Government Consumption/GDP	0.0555	1							
(3) Ln(1 + Period Average Inflation/CPI)	-0.0787	-0.0046	1						
(4) Period Average Growth Rate of Trade/GDP	0.1293	0.0118	0.1019	1					
(5) Initial Level of Institutional Quality (ICRG Capacity)	0.0366	0.4240***	-0.0660	-0.0069	1				
(6) Period Average Rate of Change of Institutional Quality (ICRG Capacity)	0.1602*	-0.1063	-0.0139	0.1042	-0.5575***	1			
(7) Period Average Economic Aid/GDP	0.0166 (0.20)	-0.0977 (1.13)	0.1241 (1.42)	0.1661* (1.83)	-0.2443*** (2.63)	0.1378 (1.45)	1 -----		
(8) Period Average Social Aid/GDP	-0.1358 (1.61)	0.0125 (0.14)	0.0097 (0.11)	0.1035 (1.13)	-0.1946** (2.07)	0.0204 (0.21)	0.6071*** (8.98)	1 -----	
(9) Period Average Aggregate Aid/GDP	-0.1482* (1.76)	-0.0148 (0.17)	0.0631 (0.72)	0.1084 (1.18)	-0.2625*** (2.84)	0.0711 (0.74)	0.8102*** (16.24)	0.8968*** (23.81)	1 -----

Note: *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.
Absolute value of t-statistics calculated with White-corrected standard errors is in parentheses (for aid data variables only).
Source: Author's compilation

Table 2 Aid, Policies, Institutions, and Growth

Dependent Variable: Period Average Growth Rate of Per Capita Income

	(1)	(2)	Eco Aid (3)	Soc Aid (4)	Agg Aid (5)	Eco Aid (6)	Soc Aid (7)	Agg Aid (8)	(9)	EcoAid (10)	Soc Aid (11)	Agg Aid (12)	(13)	EcoAid (14)	Soc Aid (15)	Agg Aid (16)
			Policies							Institutions				Policies and Institutions		
Constant	0.1188***	0.1348***	0.0998**	0.1259***	0.1204***	0.0799	0.1162***	0.1177***	0.1202***	0.1358***	0.1293***	0.1334***	0.1257***	0.1315***	0.1349***	0.1319***
	(5.99)	(5.27)	(2.11)	(3.94)	(4.11)	(1.58)	(3.55)	(4.36)	(5.10)	(2.96)	(4.79)	(4.94)	(5.19)	(2.99)	(5.32)	(4.99)
Initial Ln(Per Capita Income)	-0.0082***	-0.0083***	-0.0035	-0.0060*	-0.0058*	-0.0028	-0.0069**	-0.0073**	-0.0078***	-0.0096**	-0.0085***	-0.0090**	-0.0081***	-0.0083*	-0.0082***	-0.0080***
	(3.83)	(3.03)	(0.71)	(1.78)	(1.87)	(0.53)	(1.99)	(2.58)	(2.84)	(1.99)	(2.88)	(3.07)	(2.86)	(1.80)	(2.98)	(2.74)
Initial Ln(Fertility)	-0.0253***	-0.0273***	-0.0300***	-0.0342***	-0.0337***	-0.0245**	-0.0281***	-0.0269***	-0.0318***	-0.0355***	-0.0386***	-0.0388***	-0.0304***	-0.0342***	-0.0396***	-0.0405***
	(4.27)	(3.63)	(2.90)	(3.37)	(3.67)	(2.57)	(3.29)	(3.25)	(5.34)	(2.96)	(3.76)	(4.10)	(4.82)	(2.92)	(3.83)	(4.12)
Period Average Rate of Change of TOT	0.1142**	0.0918	0.1299**	0.1225**	0.1104*	0.1521***	0.1474***	0.1509***	0.0467	0.0556	0.0557	0.0598*	0.0701	0.0805**	0.0804*	0.0726
	(2.10)	(1.45)	(2.09)	(2.05)	(1.94)	(2.68)	(2.74)	(2.88)	(1.05)	(1.23)	(1.23)	(1.28)	(1.38)	(1.82)	(1.76)	(1.54)
Initial Government Consumption/GDP		-0.0005	-0.0005	-0.0008	-0.0007*											
		(1.04)	(1.05)	(1.63)	(1.83)											
Ln(1 + Period Average Inflation/CPI)		-0.0671	-0.1099***	-0.1098***	-0.0741*	-0.1132***	-0.1064***	-0.0806**					-0.0627*	-0.0869***	-0.0860***	-0.0576*
		(1.46)	(2.91)	(3.14)	(1.76)	(4.38)	(3.93)	(2.31)					(1.97)	(2.67)	(2.85)	(1.84)
Period Average Growth Rate of Trade/GDP#1		0.0717	-0.0984	-0.0804	-0.0074											
		(0.49)	(0.52)	(0.43)	(0.05)											
Period Average Rate of Change of Institutional Quality (ICRG Capacity)#1									-0.0495	0.0176	0.0623	0.0210	-0.0914	0.0542	0.0468	0.0123
									(0.92)	(0.08)	(0.35)	(0.20)	(0.76)	(0.30)	(0.30)	(0.13)
Period Average Aid/GDP#2			0.0111**	0.0034**	0.0013**	0.0099*	0.0017	0.0004		0.0027	0.0028**	0.0010		0.0047	0.0033***	0.0014*
			(2.00)	(2.09)	(2.57)	(1.73)	(0.99)	(0.74)		(0.52)	(2.33)	(1.53)		(0.89)	(2.54)	(1.91)
Regional Dummy EAP	0.0017	-0.0068	-0.0052	-0.0058	-0.0069	-0.0056	-0.0042	-0.0051	0.0032	-0.0037	-0.0020	-0.0035	-0.0914	-0.0064	-0.0055	-0.0065
	(0.26)	(0.84)	(0.59)	(0.68)	(0.85)	(0.78)	(0.61)	(0.76)	(0.43)	(0.51)	(0.27)	(0.46)	(0.76)	(0.88)	(0.74)	(0.86)
Regional Dummy SSA	-0.0065	-0.0026	-0.0054	-0.0029	-0.0067	-0.0102*	-0.0079	-0.0098**	-0.0003	-0.0044	-0.0060	-0.0063	-0.0032	-0.0065	-0.0076	-0.0088
	(1.53)	(0.42)	(0.79)	(0.45)	(1.17)	(1.85)	(1.66)	(2.09)	(0.04)	(0.52)	(0.86)	(0.90)	(0.47)	(0.77)	(1.10)	(1.18)
FSU Dummy	0.0199**	0.0198*	0.0235	0.0225	0.0233	0.0259**	0.0254*	0.0246*	-0.0140	-0.0324**	-0.0365***	-0.0369***	-0.0138	-0.0302**	-0.0384***	-0.0398***
	(2.18)	(1.68)	(1.34)	(1.25)	(1.28)	(1.96)	(1.89)	(1.84)	(0.89)	(2.13)	(2.93)	(3.35)	(0.82)	(2.14)	(3.15)	(3.53)
Crises Dummy	-0.0057	-0.0062	-0.0039	-0.0030	-0.0013	-0.0025	-0.0026	-0.0026	-0.0027	0.0005	0.0005	0.0017	-0.0005	-0.0005	0.0001	0.0021
	(1.61)	(1.55)	(0.93)	(0.67)	(0.34)	(0.61)	(0.60)	(0.67)	(0.68)	(0.09)	(0.10)	(0.35)	(0.10)	(0.10)	(0.03)	(0.43)
No. of Observations	127	105	85	85	95	99	100	112	102	77	77	82	87	74	74	79
R-squared	0.44	0.41	0.44	0.47	0.47	0.49	0.47	0.45	0.24	0.27	0.34	0.28	0.24	0.35	0.40	0.34

Notes: i) Absolute value of t-statistics calculated with White-corrected standard errors is in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

ii) Panel two-stage least squares methods is used for these analyses.

iii) # denotes variables are instrumented with; #1-the initial level and period average growth rate of the previous spell; #2 -the period average rate of the previous spell.

Source: Author's compilation

Table 3 Impact of Aid on Growth by Different Conditions of Institutional Quality

Dependent Variable: Period Average Growth Rate of Per Capita Income

Conditions of Institutional Quality	Economic Aid					Social Aid					Aggregate Aid				
	All	In_Inst>Ave	In_Inst=<Ave	Avg_Inst>0	Avg_Inst=<0	All	In_Inst>Ave	In_Inst=<Ave	Avg_Inst>0	Avg_Inst=<0	All	In_Inst>Ave	In_Inst=<Ave	Avg_Inst>0	Avg_Inst=<0
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Constant	0.0799	0.1428*	0.1085	0.1583***	0.1545**	0.1162***	0.1552***	0.1280**	0.2009***	0.1579***	0.1177***	0.1533***	0.0893	0.1934***	0.1647***
	(1.58)	(1.82)	(1.47)	(2.82)	(2.19)	(3.55)	(3.41)	(2.17)	(3.65)	(3.02)	(4.36)	(3.56)	(1.61)	(3.87)	(3.07)
Initial Ln(Per Capita Income)	-0.0028	-0.0100	-0.0062	-0.0086	-0.0105	-0.0069**	-0.0114**	-0.0086	-0.0134**	-0.0111**	-0.0073**	-0.0114**	-0.0048	-0.0125**	-0.0121**
	(0.53)	(1.23)	(0.75)	(1.29)	(1.42)	(1.99)	(2.43)	(1.39)	(2.29)	(2.14)	(2.59)	(2.47)	(0.88)	(2.51)	(2.22)
Initial Ln(Fertility)	-0.0245**	-0.0307**	-0.0265	-0.0598***	-0.0418***	-0.0281***	-0.0318**	-0.0278	-0.0645***	-0.0413***	-0.0269***	-0.0325***	-0.0101	-0.0560***	-0.0402***
	(2.57)	(2.08)	(1.08)	(4.13)	(3.26)	(3.29)	(2.46)	(1.34)	(3.88)	(3.32)	(3.25)	(2.96)	(0.43)	(3.14)	(3.30)
Period Average Rate of Change of TOT	0.1521***	0.2162*	0.1297	0.1529	0.1797*	0.1474***	0.2328**	0.1206	0.1163	0.1808*	0.1509***	0.2232**	0.1101	0.1094	0.1788*
	(2.68)	(1.84)	(1.57)	(1.35)	(1.80)	(2.74)	(2.12)	(1.52)	(1.10)	(1.88)	(2.88)	(2.47)	(1.65)	(1.29)	(1.87)
Ln(1 + Period Average Inflation/CPI)	-0.1132***	-0.0731	-0.1122**	-0.1322***	-0.0477***	-0.1064***	-0.0660	-0.1024**	-0.1313***	-0.0414	-0.0806**	-0.0162	-0.1715***	-0.1006*	-0.0336
	(4.38)	(1.25)	(2.57)	(3.55)	(0.89)	(3.93)	(1.17)	(2.35)	(3.61)	(0.88)	(2.31)	(0.72)	(4.09)	(1.98)	(0.69)
Period Average Aid/GDP#	0.0099*	0.0024	0.0068	0.0145**	0.0004	0.0017	0.0001	0.0015	0.0042**	-0.0003	0.0004	-0.0003	0.0008	0.0004	-0.0005
	(1.73)	(0.27)	(0.93)	(2.68)	(0.07)	(0.99)	(0.05)	(0.72)	(2.35)	(0.14)	(0.74)	(0.27)	(0.88)	(0.52)	(0.62)
Regional Dummy EAP	-0.0056	-0.0093	-0.0129			-0.0042	-0.0096	-0.0139			-0.0051	0.0056	-0.0106		
	(0.78)	(0.98)	(1.13)			(0.61)	(0.98)	(1.32)			(0.76)	(0.66)	(1.28)		
Regional Dummy SSA	-0.0102*	-0.0091	-0.0111			-0.0079	-0.0088	-0.0083			-0.0098**	-0.0075	-0.0237		
	(1.85)	(0.98)	(1.03)			(1.66)	(0.93)	(0.77)			(2.09)	(1.12)	(1.65)		
FSU Dummy	0.0259**	0.0025	0.0394			0.0254*	-0.0007	0.0401			0.0246*	0.0376	0.0228		
	(1.96)	(0.14)	(1.32)			(1.89)	(0.06)	(1.34)			(1.84)	(1.29)	(0.69)		
Crises Dummy	-0.0025	0.0021	-0.0038	-0.0038	-0.0046	-0.0026	0.0022	-0.0037	0.0085	-0.0044	-0.0026	-0.0016	-0.0019	0.0016	-0.0048
	(0.61)	(0.29)	(0.49)	(0.49)	(0.89)	(0.60)	(0.31)	(0.46)	(1.13)	(0.83)	(0.67)	(0.25)	(0.22)	(0.19)	(0.86)
No. of Observations	99	42	43	43	60	100	42	44	25	61	112	52	44	35	61
R-squared	0.49	0.44	0.57	0.57	0.44	0.47	0.44	0.55	0.62	0.44	0.45	0.60	0.41	0.46	0.43

Notes: i) Absolute value of t-statistics calculated with White-corrected standard errors is in parentheses. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

ii) Panel two-stage least squares methods is used for these analyses.

iii) # denotes variables are instrumented with the period average rate of the previous spell.

iv) Samples were divided by different conditions of institutional quality: (i) countries whose initial level institutional quality is high (more than the sample mean) (In_Inst>Ave); (ii) countries whose initial level institutional quality is low (less than the sample mean) (In_Inst=<Ave); (iii) countries whose institutional quality is improving (the change ratio is positive) (Avg_Inst>0); and (iv) countries whose institutional quality is not-improving (the change ratio is zero or negative) (Avg_Inst=<0).

Source: Author's compilation

Appendix 1 Construction of Data Set

Variables	Data Source	Notes
Period Average Growth Rate of Per Capita Income	WDI 2012	Compound average growth rate of per capita GDP during each period; constant 2000 USD.
Initial Ln(Per Capita Income)	WDI 2012	Natural logarithm of per capita GDP for the first year of each period, constant 2000 USD.
Initial Ln(Fertility)	WDI 2012	Natural logarithm of total fertility rate (births per woman) for the first year of each period..
Period Average Rate of Change of TOT	WDI 2012	Compound average rate of change of net barter terms of trade index during each period.
Initial Government Consumption/GDP	WDI 2012	General government final consumption expenditure (% of GDP) for the first year of each period; nominal terms.
Ln(1 + Period Average Inflation/CPI)	WDI 2012	Natural logarithm of average inflation rate during the period; ln (1+inflation rate); calculated based on consumer price index; 2005=100.
AVG of Trade/GDP	WDI 2012	Period average growth rate of trade to GDP during the period; real terms; calculated based on exports + imports of goods and services (constant local currency unit [LCU]).
Initial/Period Average Rate of Change of Institutional Quality (ICRG Capacity)	PRS Group's ICRG	ICRG capacity-related indicator; generated from five indicators- government stability, investment profile, corruption, law and order and bureaucracy quality indicators for the first year of each period/ period average rate of change.
Period Average Economic Aid/GDP	OECD-DAC CRS	Period average economic aid, which is categorized '200: Economic Infrastructure and Services, Total' in OECD-DAC Creditor Reporting System, gross inflows (% of GDP).
Period Average Social Aid/GDP	OECD-DAC CRS	Period average social aid, which is categorized '100: Social Infrastructure and Services, Total' in OECD-DAC Creditor Reporting System, gross inflows (% of GDP).
Period Average Aggregate Aid/GDP	OECD-DAC CRS	Period average official development assistance received (that meet the DAC definition of ODA), net inflows (% of GDP).
Regional Dummy EAP	Set by Author	A regional dummy variable for East Asia & Pacific in accordance with World Bank (2012) Classification
Regional Dummy SSA	Set by Author	A regional dummy variable for Sub-Saharan Africa in accordance with World Bank (2012) Classification
FSU Dummy	Set by Author	A dummy variable attached to the Former Soviet Union countries
Crises Dummy	Set by Author	A dummy variable attached to the period of Debt Crisis (1982-83), Asian Financial Crisis (1997-98), and Global Financial Crisis (2008-09). For the value of 1, both of the two years for any one of the designated crises should be in that growth spell.

Source: Author's compilation

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