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Foreign Aid, Economic Growth, and Policies

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FOREIGN AID, ECONOMIC GROWTH, AND POLICIES

by

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A Research Paper

Submitted in Partial Fulfillment of the Requirements for the

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The aid-growth relationship has been reviewed under various macroeconomic policy environments. This paper analyzes similarities and differences in the sources of data, types of data, and various types of methodologies used in some of the most recent and widely debated literature regarding the relationship between foreign aid and economic growth under various fiscal, monetary, and trade policies. Different studies have ended up with different outcomes. Some studies find positive aid-growth relationship under good policy environment; some find non-existent aid-growth relationship whereas some others find positive aid-growth relationship without being conditional on any kind of policy.

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INTRODUCTION

The transfer of resources from public sector in the form of grants and concessional loans to developing countries is called Official Development Assistance (ODA). Also known as foreign aid, official development assistance may serve several commercial, humanitarian as well as strategic interests of the donor countries. However, the main objective of official development assistance, henceforth called aid or foreign aid, is considered to be the reduction of poverty and promotion of economic growth and welfare of developing countries. Whether this objective has been achieved or not is one of the mostly debated issues among the academic scholars.

There are different views and vast amount of literature about the effectiveness of foreign aid in achieving economic growth. Empirically, some studies find evidence of positive impact of foreign aid on economic growth; some studies find negative impact of foreign aid on economic growth whereas some other studies find no impact of foreign aid on economic growth of the developing countries at all.

The aid-growth relationship has been analyzed from different angles in the literature. These include the analysis of aid-growth relationship across different time periods, different time lags, different time horizons such as short, medium and long terms, different data contexts such as time series, cross-section and panel data, different types of aids such as economic and social aids, different sources of aid such as multilateral and bilateral aids, and aids under different macroeconomic policies. In addition, the aid-growth relationship has been studied from different perspectives of the donor countries as well as the receiver countries.

LITERATURE REVIEW

Studies on aid growth relationship have different results. The differences exist due to the lack of a standard model to evaluate the impact of foreign aid on economic growth. Burnside and Dollar (2000), Collier and Dollar (2002), and Hansen and Tarp (2001) support the idea that foreign aid has positive impact on economic growth whereas Rajan and Subramanian (2008) provide the evidence that foreign aid has no robust positive impact on economic growth. On one hand, Burnside and Dollar (2000) provide evidence that foreign aid is effective conditional on good economic policies whereas Collier and Dollar (2002) show that the effectiveness of foreign aid does not only depend upon the quality of economic policies but also on the level of poverty. Furthermore, Hansen and Tarp (2001) indicate that foreign aid is effective without any sorts of conditionality on good policy at all. On the other hand, Easterly (2003) critically analyzes the results of Burnside and Dollar (2000) and provides the evidence that the results of Burnside and Dollar (2000) do not hold if applied to an extended sample or even within their original sample but with different definitions of "aid", "growth", and "policy". Furthermore, Arndt et al. (2010) criticize the results of Rajan and Subramanian (2008) and provide the evidence that foreign aid is effective in promoting economic growth.

Burnside and Dollar (2000) analyze the role of foreign aid, economic policies, and economic growth using a panel data of 56 countries and six four-year time periods from 1970-73 until 1990-93. Using ordinary least squares and two stage least squares techniques, their results indicate that the effectiveness of foreign aid depends on the quality of economic policies and state institutions. Foreign aid is more effective in accelerating economic growth in countries with sound fiscal, monetary, and trade policies and institutions and it is not or less effective in countries with poor economic policies and institutions. In addition, multilateral trade is generally

allocated in favor of good policies whereas bilateral aid is mostly used for government consumption. Foreign aid is usually effective when it is used for investment. Hence, it is an indication of why foreign aid is not always playing a positive role in promoting economic growth. Their general findings received a greater attention from media as well as from many international agencies advocating foreign aid. Also, their paper was used as a basis of policy recommendation to increase foreign aid, without further testing their results. Collier and Dollar (2002) more broadly support the idea of Burnside and Dollar (2000) and explain that the effectiveness of foreign aid does not only depend on the quality of economic policies but also on the level of poverty. Using a non-linear growth model for an expanded panel data set of four-year averages of 56 countries covering periods 1974-77 until 1994-97, Collier and Dollar (2002) develop a poverty efficient allocation of aid and compare it with actual allocation of aid. Making foreign aid more efficient in poverty reduction requires reallocating among countries to equalize their marginal productivities. They conclude that the productivity of foreign aid would almost double if it were allocated more efficiently. Also, their findings support the results of Burnside and Dollar (2000) of positive and statistically significant aid policy interaction term within the extended sample. Hansen and Tarp (2001) try to evaluate aid-growth relationship using a panel data of 56 countries and five four-year time periods from 1974 until 1993 as well as the same sample size as the one used by Burnside and Dollar (2000). Using a non-linear growth model, their paper provides the evidence that, in general, foreign aid is effective in promoting economic growth without any conditions of good policy as established by Burnside and Dollar (2000). In addition, using ordinary least squares and generalized method of moments, Hansen and Tarp (2001) show that foreign aid is effective in promoting growth via investment only. Based, on the two-gap model developed by Chenery and Strout (1966), foreign aid is used either for filling the

investment-saving gap or for imports-foreign exchange earnings gap. Hansen and Tarp (2001) provide the evidence that foreign aid fills the investment-saving gap. It actually finances investment rather than consumption and then that investment increases growth.

In contrast, Easterly (2003) tries to expand the ideas of Burnside and Dollar (2000) on two grounds: (a) what happens to their results when the dataset is expanded to include more recent evidence and (b) how their results are affected within their original dataset by using different definitions of "aid", "good policy", and "growth". In the expanded sample covering the period 1970 to 1997, the coefficient of the aid policy interaction term was found insignificant. Similarly, when the definition of aid used by Burnside and Dollar (2000) is changed from effective development assistance, which includes grants only, to official development assistance, which includes both grants and concessional loans, the interaction term remains no longer significant, indicating no support of the idea that aid works only in a good policy environment. Hansen and Tarp (2001) also support this result. Hence, on both grounds, the aid-growth relationship found by Burnside and Dollar (2000) had shaky results theoretically as well as empirically. In addition, the financing gap model used by Hansen and Tarp (2001) also has various failings. It works only when investment is liquidity constrained and incentives to investment are favorable. If incentives to investment are poor, then foreign aid will not increase investment. Easterly (2003) suggests that foreign aid should have more modest goals, like helping some of the people some of the time, rather than trying to be the catalyst for the society wide transformation. In addition, improving the quality of foreign aid should be given priority over increasing the quantity of foreign aid.

Rajan and Subramanian (2008) provide the evidence that there is no robust positive relationship between foreign aid and economic growth and their conclusion holds true across

different time horizons, different time periods, different time lags, different sources of aid, and different types of aid. It is difficult to find out any systematic aid growth relationship, which could be due to the existence of noise in the data. Recent studies by Burnside and Dollar (2000) and Collier and Dollar (2002), which use four-year averages, are prone to be affected by business cycles, which are hard to control for. Therefore, at first, Rajan and Subramanian (2008) apply the basic ordinary least squares technique to four different time period samples from 1960 to 2000, using combination of all explanatory variables used in the papers by Burnside and Dollar (2000), Collier and Dollar (2002), and Hansen and Tarp (2001) along with a measure of geographical location and a measure of health. The results indicate negative aid growth relationship in both long run and medium run time horizons. Due to the problem of endogeneity, these results could not be taken seriously. Then, different instrumentation strategy for aid and different explanatory variables including measure of colonization are used. The new set of regression results indicates statistically insignificant aid-growth relationship. After considering for different types of factors affecting aid-growth relationship, Rajan and Subramanian (2008) find no systematic and robust relationship between foreign aid and economic growth. In contradiction, Arndt et al. (2010) critically analyze the findings of Rajan and Subramanian (2008) and explain that foreign aid does have a positive and statistically significant causal effect on economic growth in the long run. Arndt et al. (2010) developed a better instrumentation strategy, an improved specification and a preferred estimator. Following the data samples used by Rajan and Subramanian (2008), their results support the idea that foreign aid has positive impact on economic growth in long run data samples of 1960-2000 and 1970-2000 periods. Though it is difficult to find out some systematic aid-growth relationship in short run data samples of 1980-2000 and 1990-2000, the long run evidence is sufficient to create a case for aid effectiveness. There is no micro-macro paradox.

CRITICAL ANALYSIS

The focal point of this paper is to study the similarities and differences in the types of data, sources of data, and various methodologies used in some of the recent and widely known literature regarding the relationship between foreign aid and economic growth under various fiscal, monetary, and trade policies. Here, the concentration is allocated to the mostly cited papers of Burnside and Dollar (2000), Hansen and Tarp (2001), Collier and Dollar (2002), Easterly (2003), Rajan and Subramanian (2008), and Arndt et al. (2010).

From the perspective of data specification, all the papers of Burnside and Dollar (2000), Hansen and Tarp (2001), Collier and Dollar (2002) and Easterly (2003) use panel data but with different number of countries and different time periods. The papers of Rajan and Subramanian (2008) and Arndt et al. (2010) use both panel data as well as cross-section data in their analyses. The number of countries covered by these papers ranges from 56 to 78 and the overall time period covered by the papers is from 1960 to 2000 with over-lapping samples.

Burnside and Dollar (2000) use panel data of 56 countries and six four-year time periods from 1970-73 until 1990-93. Hansen and Tarp (2001) use panel data of 56 countries and five four-year time periods from 1974-77 until 1990-93 as well as the same sample size as the one used by Burnside and Dollar (2000). Collier and Dollar (2002) use panel data of 56 countries and six four-year time periods from 1974-77 until 1994-97. For poverty-efficient allocation of aid, they use the data of 59 countries. All of these papers use four-year averages in their samples.

However, the use of such four-year periods is criticized on the ground that such short periods may capture cyclical fluctuations and may not be long enough to set up the beneficial effects of aid. Therefore, to capture the real effects of aid, longer periods should be used. So, Easterly (2003) uses panel data of 56 countries averaged over 8-years, 12-years and 24-years

from 1970 to 1997 as well as the same sample size as the one used by Burnside and Dollar (2000). In a slightly similar way, Rajan and Subramanian (2008) and Arndt et al. (2010) use both panel and cross section data for a total of 78 countries averaged over a decade from 1960 to 2000.

From the perspective of the sources of data, most of these papers share the World Development Indicators (WDI) from the database of World Bank as their main source of data. Specifically, the sources of data for Burnside and Dollar (2000) are Penn World Table as well as World Bank Debt Reporting System whereas the source of data for the papers of Hansen and Tarp (2001), Collier and Dollar (2002) and Easterly (2003) is World Bank. Sources of data for Rajan and Subramanian (2008) and Arndt et al. (2010) are World Bank and Organization for Economic Cooperation and Development.

Now, regarding the main focus of this analysis, whether foreign aid works in promoting economic growth of the developing world with relatively better macroeconomic policies, these papers have different conclusions. The idea that aid works in a good policy environment is supported by the papers of Burnside and Dollar (2000) and Collier and Dollar (2002), but rejected by the papers of Easterly (2003) and Rajan and Subramanian (2008). Moreover, Hansen and Tarp (2001) find that aid works in promoting growth irrespective of any type of policy. They provide the evidence that policy does not matter in aid-growth relationship. Similarly, Arndt et al. (2010) provide the evidence that aid works in promoting economic growth and there is no micro-macro paradox. The main focus of Arndt et al. (2010) is the critical analysis of Rajan and Subramanian (2008), which find that there is no systematic and robust relationship between aid and growth. Arndt et al. (2010) reject their conclusion and find robust aid-growth relationship.

Let's start with the paper of Burnside and Dollar (2000) as their paper received a very wide recognition from world community and international organizations. Burnside and Dollar

(2000) find that foreign aid has a positive influence on economic growth in developing countries that follow good fiscal, monetary, and trade policies but has little effect in the presence of poor economic policies. Good policies are defined as policies that are themselves important for economic growth. Generally, their hypothesis about foreign aid is that aid does affect growth but its influence is conditional on the same policies that affect growth. They explain that foreign aid acts like an income transfer, which may or may not produce growth. The outcome depends on whether aid is invested or consumed. To the extent that it is invested, it will be effective in promoting growth. This idea arises from the basic Harrod-Domar model, which is based on the assumption of stable linear relationship between investment and growth. Theoretically, there are sound reasons to doubt such a simplistic assumption.

Burnside and Dollar (2000) develop a model with a range of institutional and policy distortions. They form an index of policies that have a considerable weight in their model equation. The index is comprised of three policies: fiscal policy as budget surplus following Easterly and Rebelo (1993), monetary policy as inflation rate following Fischer (1993) and trade policy as the openness dummy developed by Sachs and Warner (1995). They treat this index as a composite policy measure. They also include many other exogenous variables in their model. They find that if the interaction term of aid and policy is omitted from the model, the estimates are never statistically significant. However, when the aid-policy interaction term is added, they consistently find that the impact of aid is greater in a good policy environment than in a poor policy environment. Their result holds true whether outliers are included or excluded, and whether middle-income countries are included or excluded. Concerning the aid allocation, they find no tendency to allocate more aid to countries with good policies. Further, bilateral aid seems to be influenced by the donor's interest whereas multilateral aid depends on the level of income,

the population size and policy. Aid associated with donor interests, mostly bilateral aid, has very strong correlation with government consumption. This idea is also partly supported by Collier and Dollar (2002) since they argue that aid is given partly as an inducement to policy reform and partly for a variety of historical and strategic reasons. Such type of behavior leads to a pattern of inefficiencies in which aid is targeted to weak policy environments and to countries that do not have severe poverty problems. Therefore, this indicates the reason for why aid is not always promoting growth in an average recipient country.

Their regression results were passed on from one source to the next without any concerns about the robustness and wider applicability of their results. Also, their paper was used as the basis of a policy recommendation to increase foreign aid. Many papers have reacted to the results of Burnside and Dollar (2000) by conducting different variations to their model. Some of the papers confirm their results, while others do not. Easterly et al. (2003) use the exact same model specification with four-year averages and the same control variables as Burnside and Dollar (2000), but simply adding more data that had become available since their study was performed as well as searching for more data within their original sample period of 1970 – 1993, but they find the aid-policy interaction term statistically insignificant, indicating no support of the idea that aid works in a good policy environment.

Further, Easterly (2003) criticizes the paper of Burnside and Dollar (2000) on the basis that their results are not robust to using alternative definitions of “aid”, “policies”, and “growth”. First of all, as per the definition of “aid” is concerned, Burnside and Dollar (2000) use effective development assistance (EDA) as their definition of aid, which includes grants only and excludes concessional loans whereas the standard definition of aid according to Development Assistance Committee of the Organization for Economic Cooperation and Development (OECD) includes

grants as well as concessional loans net of repayment of previous aid loans. This measure of aid is known as official development assistance (ODA). Though the correlation between EDA and ODA is around 0.93 but using ODA as a measure of aid in Burnside and Dollar (2000) model, the aid-policy interaction term becomes statistically insignificant.

Second, related to the definition of “policy”. Burnside and Dollar (2000) construct an index for good policy that includes budget surplus, inflation rate and a measure of openness of the economy developed by Sachs and Warner (1995). Based on the Sachs-Warner measure of openness, an economy is treated as closed if it has very high tariff or nontariff barriers or a high black market premium or a socialist economy system or a state monopoly of key exports. This method has been criticized for two reasons: one it is subjective for how it classifies a socialist economy and two it is ambiguous since a closed economy have different meanings. Hence, Easterly (2003) uses a combination of alternative measures of policy such as trade to GDP ratio, black market premium and financial depth. Using these alternative measures of policy, Easterly (2003) finds that each variant of the policy index is still significantly correlated with economic growth, which suggests that the alternative measures of policy are capturing some real effects of aid on growth. But the aid-policy interaction term remains no longer statistically significant in any of the alternative definitions of the policy index.

Last but not the least, as per the definition of “growth” is concerned, Burnside and Dollar (2000) define growth as real per capita GDP growth over four years. However, as stated earlier, four-year period may capture cyclical fluctuations. Therefore, Easterly (2003) uses periods of 8 years, 12 years and the whole sample of 24 years. In the 12-year and 24-year specifications, the policy variable remains positively and significantly correlated with economic growth. However, the aid-policy interaction term remains no longer significant. It remains significant when using

the 8-year specification only when the sample includes all developing countries, but not when the sample is restricted to low income countries. Therefore, the result of the paper of Burnside and Dollar (2000) that aid boosts economic growth in a good policy environment is not robust to different definitions of growth, aid, and policy. Care should be taken regarding the usage of such results for policy recommendations before testing for robustness.

Easterly (2003) explains that the impediment for the empirical literature regarding aid-growth relationship is the lack of a clear theoretical model. For many years, the standard model used to justify aid-growth relationship was the two-gap model of Chenery and Strout (1966). In this model, the first gap is between investment and savings, while the second gap is between imports and foreign exchange earnings. At any moment in time, one gap is binding and foreign aid fills that gap. Easterly (2003) focuses on investment-saving gap. Based on this model, also known as financing-gap model, economic growth depends on investment as a share of GDP, adjusted by a factor that reveals the quality of investment. This factor is known as incremental capital-output ratio (ICOR). The model of financing-gap is based on two key assumptions. First, it assumes a stable linear relationship between investment and economic growth. Theoretically, there are many doubts regarding the linear relationship between investment and growth and whether ICOR necessarily represents the quality of investment. Second, the model assumes that aid actually finance investment rather than consumption. This assumption will hold true only if investment is liquidity-constrained and incentives to invest are favorable. If either of these conditions is violated, then aid will finance consumption rather than investment. The finding of Burnside and Dollar (2000) that aid only affects growth in the presence of good public policies can be expressed as an argument that aid will not necessarily raise investment. The financing-gap model in which aid increases investment and then that investment increases economic growth

has doubtful theoretical foundations and numerous empirical failings, but so far no other relatively better substitute for this model has been found.

One of the important themes of foreign aid, which is also partly inspired by Burnside and Dollar (2000), is the issue of selectivity. Aid should be given to a country where it can play more effective role. Regarding the issue of how aid can be directed from less successful projects towards more successful ones, aid agencies have two tools: imposing conditions on loans and aid before they are granted and evaluating the effect of loans and aid after they are completed. The conditions include macroeconomic stability, free market, privatization of state-owned enterprises and openness to international trade. Almost all observers of aid agencies agree that they give too little attention either to insuring that loans conditions were actually met or to later evaluation of the loan effectiveness. In addition, developing countries have an incredible variety of institutions, cultures and histories. The idea of aggregating all this diversity into a single term of “developing world” whose development prospects will be enhanced with foreign aid is too much simplifying of the real world scenario. Easterly (2003) suggests that the appropriate goal of aid is helping some of the people some of the time rather than a society-wide transformation.

Collier and Dollar (2002) support the results of Burnside and Dollar (2000) that aid works in a good policy environment. They go one step further claiming that the effectiveness of aid also depends on the level of poverty. Collier and Dollar (2002) develop a poverty efficient allocation of aid and compare it with actual allocation of aid. They define the poverty-efficient allocation as one where marginal influence of additional million dollars in aid is equalized across aid-receiving countries. To minimize the poverty, aid should be allocated to countries that have large amount of poverty along with good economic policy. The presence of large-scale poverty is

necessary for aid to have a larger effect, and the existence of good economic policy ensures that aid has a positive impact.

Collier and Dollar (2002) further elaborated the findings of Burnside and Dollar (2000). The study of Burnside and Dollar (2000) has two limitations. Firstly, Burnside and Dollar (2000) confined their measurement of policies to three readily quantifiable macroeconomic indicators. It is implausible that these are the only policies that matter for growth. To get rid of this problem, Collier and Dollar (2002) use World Bank's Country Policy and Institutional Assessment as their measure of policy environment. This measure has 20 different equally weighted components covering macroeconomic issues, structural policies, public sector management, and policies for social inclusion. Secondly, Burnside and Dollar (2000) covered only 56 countries with 275 observations in total, and so cannot provide comprehensive guidance on aid allocation. In order to address this issue, Collier and Dollar (2002) use a more expanded data set covering a larger number of observations totaling to 349 observations. Using the ordinary least squares method, Collier and Dollar (2002) find the aid-policy interaction term positive and statistically significant. This further confirms that the results of Burnside and Dollar (2000) are robust to the inclusion of more data, and it contradicts the results of Easterly et al. (2003).

In addition, Collier and Dollar (2002) test their results with many types of sensitivity analysis. They add three other policy-related variables to their model. They are: inflation rate as a measure of monetary policy following Fischer (1993), government consumption as a measure of fiscal policy following Easterly and Rebelo (1993) and exports plus imports as a measure of openness following Frankel and Romer (1999). However, none of these variables adds any extra information and the results remain almost the same.

As per the poverty-efficient allocation of aid is concerned, Collier and Dollar (2002) find that for a given level of poverty, in a range between bad policies and moderate policies aid is positively related to policies whereas in a range between moderate policies and good policies aid is negatively related to policies. Therefore, just as policy improves into a level in which aid turns out to be effective, aid starts to be phased out. The actual aid allocation is vastly different from the poverty-efficient allocation. While poverty-efficient allocation of aid requires that aid should gradually increase with policy reform, actual aid allocation gradually decreases with policy reform. They conclude that the productivity of foreign aid in promoting economic growth would almost double if it were allocated more efficiently.

Hansen and Tarp (2001) reject the results of Burnside and Dollar (2000) and Collier and Dollar (2002). Hansen and Tarp (2001) find that in general foreign aid is effective in promoting economic growth without being conditional on the quality of macroeconomic policy or the level of poverty. However, they support the idea of Burnside and Dollar (2000) in a sense that aid influences growth only when it is used for investment rather than consumption.

Hansen and Tarp (2001) criticize the previous studies of Burnside and Dollar (2000) and others regarding aid-growth literature for their narrowly defined model specifications and so they use a relatively stronger empirical model where it encompasses quadratic aid and policy terms along with aid-policy interaction term. Along with the differences in the sources of data, Hansen and Tarp (2001) find the same results as those of Burnside and Dollar (2000). However, there is a possibility of the problem of endogeneity, country specific factors and conditional convergence that may lead to the biasedness of the regression results. In order to get rid of such problems, Hansen and Tarp (2001) use the generalized method of moments (GMM) estimator, which offers reasonably robust solution to the problems of mis-specification. They use two different samples:

one whole sample of 56 countries and another sub-sample of 45 countries. The results indicate positive and statistically significant aid-growth relationship along with diminishing returns to aid. Furthermore, comparing the results from OLS and GMM for both samples, Hansen and Tarp (2001) provide the evidence that the choice of estimator matters a great deal, so that one should be cautious when the model is used for policy recommendations. Further, aid affects growth via investment. When investment and human capital are added to the model, then using different measures of OLS, GMM, and fixed effects (FE), they find that aid has no impact on economic growth. Aid is effective in promoting investment and investment affects growth.

To the surprise of all the previous studies of Burnside and Dollar (2000), Hansen and Tarp (2001), Collier and Dollar (2002) and Easterly (2003), the paper of Rajan and Subramanian (2008) provide the evidence that there is no robust positive relationship between foreign aid and economic growth. They also find no evidence that aid is effective in better policy or geographical environments. Their conclusion holds true across different time horizons, different time periods, different time lags, different sources of aid, and different types of aid. Essentially, Rajan and Subramanian (2008) contribute to the vast literature regarding aid-growth relationship in two ways. First, most papers examine aid effectiveness in a typically narrowly defined setting while Rajan and Subramanian (2008) attempt to examine, using one common framework, aid-growth relationship under a variety of settings. Second, Rajan and Subramanian (2008) examine the issues of endogeneity and spurious correlation between aid and growth.

Regarding the model specification, Rajan and Subramanian (2008) explain that both cross-section and panel data regressions have well-known problems. Cross-sectional regressions have the problem of unobservable heterogeneity. Panel estimations can address this issue by incorporating country-specific fixed effects using two different ways. They are Arellano-Bond

(AB, 1991) and Blundell-Bond (BB, 1998) GMM estimators, which address the potential endogeneity of the regressors, and incorporate implicitly fixed effects.

Starting with OLS model, the sample of Rajan and Subramanian (2008) includes all developing countries that have received aid during the postwar period and their model includes all of the explanatory variables used by Burnside and Dollar (2000) and Collier and Dollar (2002) along with a measure of geographical location and a measure of health. One common difference is that Burnside and Dollar (2000) and Collier and Dollar (2002) include a composite index of policy measure that combines trade policy, inflation, and budget balance while Rajan and Subramanian (2008) include them separately. They report the OLS results for the following four time periods: 1960-2000, 1970-2000, 1980-2000 and 1990-2000. The OLS estimates indicate negative and statistically significant relationship between aid and growth but these estimates may have the problem of endogeneity.

In order to solve this issue, Rajan and Subramanian (2008) use a different instrumentation strategy, which is to model the supply of aid based on donor-related rather than recipient-specific characteristics. Donors are likely to depart from economically motivated aid allocation for at least two reasons: history and influence. The greater the extent of historic relationships between a donor and a recipient, the more likely it is that a donor will want to give aid. They capture such historic relationships through colonial links and commonality of languages. To capture the effect of influence, Rajan and Subramanian (2008) use the assumption that donors are more likely to want to give aid, the more they expect to have influence over the recipient. They capture such effect by including the interaction between relative size and colonial links to the model. The model estimates indicate that the new instrumentation strategy accounts for a reasonable share of the donor allocation decision. Then using these new instrumental variable specifications under

cross-section data, Rajan and Subramanian (2008) find that the coefficient of aid is statistically insignificant in all the three long run periods of 1960-2000, 1970-2000 and 1980-2000, while it is negative and significant in the period of 1990-2000. They further check their results with different variations of aid based on motives, donor types, purpose of aid, and timing of its impact, but still the results almost remain the same. They also mention that a general problem with making distinctions between the categories of aid is fungibility. If aid is fungible, then dividing aid into subcategories of good and bad aid is useless. Further, using both types of AB and BB GMM estimators for panel data specifications, Rajan and Subramanian (2008) find that the results of aid remain broadly unchanged. Hence, they conclude that it is hard to find out any systematic positive relationship between foreign aid and economic growth.

Arndt et al. (2010) critically examine and reject the results of Rajan and Subramanian (2008) of non-existent aid-growth relationship. Arndt et al. (2010) provide the evidence that there is no micro-macro paradox regarding the aid-growth relationship. Instead, there is a positive and statistically significant relationship between foreign aid and economic growth over the long run. Arndt et al. (2010) suggest strengthening the aid instrument, improving the model specifications and employing a new more robust estimator to Rajan and Subramanian (2008) model. Once these modifications are incorporated the empirical aid-growth relationship conforms to theoretical priors and the micro-macro paradox disappears once again.

First of all, as per the improvement of instrumentation strategy of Rajan and Subramanian (2008) is concerned, several issues should be addressed. First, from a theoretical point of view, the validity of using colonizer dummies and their interactions as instruments is questionable. Second, there are errors in the calculation of average aid to GDP ratio in all stages of Rajan and Subramanian (2008) regressions. Some of the missing values of the OECD aid data set represent

null values. Rajan and Subramanian (2008) incorrectly treats them as missing. Third, in Rajan and Subramanian (2008) strategy, recipient GDP occurs in the denominator of the dependent variable in zero stage regressions. Inappropriate use of the ratio variables may lead to substantial misinterpretation in ordinary least square estimates. This may arise if the denominator of the dependent variable is correlated with the right-hand-side variables. Fourth, individual donor countries exhibit distinct attitudes to giving aid, which reflect cultural and historical factors. These time-invariant influences can be understood as fixed effects and may be included in the explanatory variables of the zero stage regression.

Second, to improve the specification of Rajan and Subramanian (2008), it should be mentioned that given the small sample of 78 countries the inclusion of redundant variables may lead to a loss of efficiency or may contribute to multicollinearity. In the case of Rajan and Subramanian (2008), the three macroeconomic conditions of inflation, money supply, and budget balance as well as ethnic fractionalization are insignificant and so they should be excluded. Further, Arndt et al. (2010) suggest that it is appropriate to include additional variables that reflect initial socioeconomic conditions such as education and health indicators as well as additional geographic characteristics such as trading distances. It is also helpful to consider the appropriate role and inclusion of regional dummies.

Last but not the least, to use a more robust estimator, Arndt et al. (2010) suggest the use of limited information maximum likelihood (LIML) instead of the two stage least squares (2SLS) used by Rajan and Subramanian (2008). Further, Rajan and Subramanian (2008) use both types of AB and BB GMM estimators for their panel data. Each estimator has its limitations. On one hand, the AB estimator often leads to a weak-instruments problem because lagged levels are typically not highly correlated with their differenced counterparts. On the other hand, the BB

estimator generates large upward biases in the right-hand-side variables. Also, under the BB estimator the instruments for the level equation are valid only if they are orthogonal to the fixed effects. Addressing all the issues mentioned above, Arndt et al. (2010) find, in contrast to Rajan and Subramanian (2008), robust and statistically significant empirical support for a positive relationship between aid and growth over the long run that includes both 1960-2000 and 1970-2000 periods. In the short run, their analysis indicates that the impact of aid is difficult to recognize. However, when the long run macro evidence is combined with the micro level evidence, then the aid effectiveness emerges, and so there is no micro-macro paradox.

It should be noted that one of the contributing factors to such kind of different outcomes from the aid-growth literature is the non-availability of a standard model. Another factor is the choice of construction of the policy index. Different authors have used different combinations of fiscal, monetary, and trade policies as their choice of policy index that have contributed to the different outcomes of the overall empirical literature.

CONCLUSION

Despite the development of different kinds of sophisticated econometric techniques, no consensus among the scholars has been achieved so far regarding the impact of foreign aid on economic growth under various macroeconomic policy environments. Using different types and different sources of data accompanied by different types of methodologies, different results have been found about the impact of foreign aid on economic growth. Some studies show positive aid-growth relationship under good policy environment, some show non-existent aid-growth relationship whereas some others show positive aid-growth relationship without being conditional on any kind of policy.

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