The Effect of Foreign Aid on the Economic Growth of Bangladesh

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Abstract

Bangladesh is a recipient of foreign aid since its independence in 1971 and receives about $56.5 billion till 2012. This paper estimates 33 years data on foreign aid for 1980-2012 periods and analyzes the effects of foreign aid on the economic growth of Bangladesh. To examine the effects of aid more precisely, this study estimates eight separate models including three for the last three decades (1980-1990, 1991-2001, 2002-2012), four for the four different government period namely, Military government (1982-1990), BNP (Bangladesh Nationalist Party) government (1991-1995, 2002-2006) , BAL (Bangladesh Awami League) government (1996-2001, 2009-2012) and the Whole Democratic government period (1991-2012) and one for the entire period (1980-2012). This research finds that, foreign aid has positive effect on the economic growth of Bangladesh and it is statistically significant in two models out of eight models. This paper also reveals that the aid generates decreasing returns in Bangladesh because of capacity constraint of Bangladeshi institutions to utilize the foreign aid effectively. This finding is consistent with previous findings of different researches.

1. Introduction

1.1. Background of the Study

Foreign aid is one of the important sources to finance the development program in developing countries.

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Bangladesh is not exception to this. Foreign aid can be defined as the economic assistance from one country to another country, intended either to provide humanitarian relief in emergencies, to promote economic development or to finance military expenditures (Black, 1997, pp.09). Aid may take the form of outright gifts of money, which may be tied to purchase from the donors, or untied and available for expenditure anywhere. Aid may also be given in form of food, commodity, project or technical assistance. Aid fund is divided into two parts, namely, grants and interest based loans. Bilateral aid is given directly by a donor to a recipient country whereas multilateral aid is channeled through an international organization, without direct contact between donors and particulars recipients.

Bangladesh is considered as one of the poorest and most densely populated countries in the world. More than 154 million people lives in this country with 47 million poor people. The current (2014) GDP of this country is $116.4 billion with per capita GDP $ 859. Bangladesh is a low income country with yearly 6.03 percent GDP growth and most of its income is generated from the industrial sector followed by agricultural sector (GOB 2013). The life expectancy at birth its people is only 65 years, and the adult literacy is only 57.91 percent (BBS, 2010). Different democratic governments have been ruling this country since 1991, namely, BNP (Bangladesh Nationalist Party) government for two terms (1991-1995, 2002-2006), BAL (Bangladesh Awami League) government for two terms (1996-2001, 2009-2012). While a Military government ruled this country for eight years (1982-1990).

Bangladesh is a foreign aid recipient country since its independence in 1971. It receives foreign assistance mainly to finance the budget or trade deficit and the annual development program (ADP) over the period of time (Akash, 2003, pp. 129-132). Moreover, it also gets external assistance in form of food and commodity aid for various purposes in different years from the donors. Mainly for, reconstruction of the newly independent country, to overcome the various natural disasters such as flood, famine, cyclones etc.

Over the period of time, this is a topic of intense debate that, whether the foreign aid has any positive effect on the economic development of the recipient countries.

The aim of this paper is to examine the effect of foreign aid on the economic growth of Bangladesh. This paper estimates eight separate models by investigating the 33 years data for 1980-2012 periods in Bangladesh.

The results of the empirical analysis are presented in Tables 1 and 2. At first, four econometric models have been estimated for four different time periods: 1980-1990, 1991-2001, 2002-2012 as well as for the entire period of 1980-2012. The results of this analysis are presented in Table 1.

Then the last four models were estimated for four different political government period, namely, Military government (1982-1990), BNP (Bangladesh Nationalist Party) government (1991-1995, 2002-2006) , BAL (Bangladesh Awami League) government (1996-2001, 2009-2012) and the Whole Democratic government period (1991-2012) accordingly. The results of this analysis are presented in Table 2.

1.2. Foreign Aid in Bangladesh: An Overview

Bangladesh received about $56.5 billion foreign aid from the donor countries during 1971-2012 periods. While this figure recorded as $51.12 billion for the period of 1980-2012. This paper scrutinizes the 33 years data from 1980 to 2012 through econometric model. Moreover, In order to better understand the effect of aid on growth as well as any change of its effect over time, three separate models for shorter time periods, namely, 1980-1990, 1991-2001, and 2002-2012 were also estimated. During 1980-1990, it receives $15.342 billion while it increases to $16.984 billion in the period of 1991-2001 and in the last 11 years (2002-2012), the received amount was $18.789 Billion (GOB 2013).

Bangladesh receives the foreign assistance from both the multilateral and bilateral donors. Three development partners – World Bank-International Development Agency (IDA), Asian Development Bank (ADB) and Japan provide 52.71 percent of the total disbursed aid. The biggest multilateral donor is the World Bank, which provided 23.11 percent of the total aid, ADB ranked second with a contribution of 16.09 percent and UN Agency secured third position by disbursing 5.34 percent of total aid in Bangladesh. Multilateral donors provide these amounts of aid almost entirely in the form of loans.

Japan is the biggest bilateral donor, accounting for almost 13.51 percent of the total aid, almost evenly split between loans and grants. United States contributes 6.29 percent while United Kingdom provides 4.01 percent of the total foreign assistance as the bilateral donors to Bangladesh.

The foreign assistance received by Bangladesh is constituted mainly by the grants and interest based Loans. During 1971 - 2012 periods, loans occupied the large portion (58.22 percent) of the total external assistance while grants made up 41.78 percent of all foreign assistance. Conversely, the share of grants and loans in total aid changed over time. In the first decade after Independence (1971-1980), the amount of grants was more than half (51 percent) of all foreign aid and this share goes down consistently over the next three decades (1981-2012) and recorded as less than one-third (31 percent) of total aid during 2001-2012. Alarmingly, the share of loans in total aid rose from 49 percent in 1971 to 69 percent in 2012 respectively.

Bangladesh receives its external assistances mainly in three forms as food aid, commodity aid and project aid accordingly. More than two-third (67.7 percent) of the total aid was disbursed in the form of project aid during 1971-2012 period while commodity and food aid accounted for 21 percent and 12 percent respectively. Likewise share of Loan-Grants, the shares of the three forms of aid have changed over time. In the first decade (1971-1980) after independence, the donors provided the highest amount of Commodity aid (42 percent) and food aid (32 percent) for the poor people of Bangladesh. Over the period of time the dominant figure of Commodity and food aid steadily declined due to the reduction of dependency on these forms of aid and both together recorded as only 5.17 percent of total assistances in 2001-2012. On the contrary, the share of project aid progressively increases over the years, from 26 percent during 1971 to 94.83 percent in 2012.

Bangladesh spends the foreign assistance in almost twenty sectors including agriculture, rural development, water, oil, gas, mineral resources, transport, education, planning, power, industry, infrastructure and health sector. Most of the aid has been spent in power, education, transport, rural development and agriculture sector respectively.

2. Literature Review

Several research works have been done to examine the effect of foreign aid on the economic growth of Bangladesh for different shorter period of time. The researcher found mixed result in their studies.

Islam (1992, 1999) analyzes 27 years (1972-1998) data and exposed that the effects of aid on GDP growth are barely positive, but highly insignificant.

On the other hand, Ahmed (1992) showed that aid has negative effect on growth due to institutional constraints. Quazi (2005) scrutinizes the 27 years data from 1973 to 1999 and found a little positive effect of aid on GDP growth. Abu-Obaydullah (2007) showed that, aid has little impact on the country's socioeconomic development of Bangladesh. Recently, the study of Quibria (2010) has described that; Bangladesh achieved mixed (both positive and negative contributions) results in aid effectiveness.

From the above discussion, it can be said that, this study is different from the earlier research in a sense that, it analyzes 33 years data from 1980 to 2012 for a long period of time. In addition, this paper includes a new variable in the analysis to represent the "absorptive capacity constraints to utilize aid of Bangladeshi institution" through a "squared term", which has not yet been used in the previous research on foreign aid.

3. Methodology and Data

3.1. Derivation of the Model

It is needed to specify a model to show the relationships between foreign aid and per capita GDP growth. The conventional production function, $Y \square\square f(L, K,)$ has been used here by adding the Foreign Aid as an input. So the new function is

$$Y \square\square f(L, K, A)\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{ (1)}$$

Where Y is gross domestic product (GDP) in real terms, L is labor input, K is domestic capital stock, and A is stock of foreign aid.

It is assuming that, equation (1) to be linear in logs, taking logs and differencing, the following expression describing the determinants of the growth rate of real GDP is obtained:

$$y \square\square\square\square\square\square\square l \square\square\square k \square\square\square a\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{ (2)}$$

Where -

y denotes the per capita GDP growth rate

k denotes the rate of growth of the capital stock is approximated by the share of investment in GDP. Since the data on gross capital formation as a share of GDP is not available for 1980-2012 periods in Bangladesh, the investment/GDP ratio is used to represent the growth of capital stock.

l denotes the rate of change in labor input is also replaced by the growth rate of population.

a denotes the share of foreign aid in GDP

Furthermore, sometimes aid generates diminishing returns if the recipient country has absorptive capacity constraints. Absorptive capacity exposes the ability of recipient country to employ the foreign aid fund effectively (Feeny and McGillivray 2008, pp.1031–1050). A square term of AID-GDP ratio has been included into the model to determine this effect. These changes presented the following growth equation:

$$GGDPt = \beta_0 + \beta_1(GPOP)_t + \beta_2\left(\frac{INV}{GDP}\right)^0_t + \beta_3\left(\frac{AID}{GDP}\right)_t + \beta_4\left(\frac{AID}{GDP}\right)^2_t + \beta_5INF + et \ \ldots\ldots\ldots\ldots (3)$$

Where GGDPt is the growth rate of real GDP per capita of Bangladesh in year t, GPOPt is the growth rate of population in year t, INV is the investment in year t, AID is the foreign aid in year t, and INFt is the inflation rate in year t. e*t* is the stochastic error term in year t. This model has been estimated by using panel least squares estimation method.

The economic growth rate is measured in this study as the growth of real GDP per capita in constant (2000) U.S. dollars. Since the labor force growth data of Bangladesh is not available for the period of 1980-2012, the growth rate of population is used as a proxy for the growth rate of the labor force. The investment/GDP ratio is used to represent the growth rate of the capital stock, because, the data on gross capital formation as a share of GDP is not available for these period in Bangladesh. Inflation rate is defined as the annual percentage change in Consumer Price Index (CPI).

The hypothesis is that, foreign aid has no effect on economic growth of Bangladesh and tested through the above mentioned models. The key objective of this analysis is to inspect whether the marginal effect of foreign aid on economic growth of Bangladesh (β3), is positive or negative and statistically significant. The expected signs of the coefficients β1 and β2 are positive and that of β3 either positive or negative, β4 and β5 are negative.

Ekanayake and Chatrna (2010) uses the same method and models to expose the effects of foreign aid on the economic growth of 85 developing countries in their paper (Ekanayake and Chatrna, 2010, pp. 140-155). Islam (1999) and Quazi (2005) applied the same method with changing variables to determine the effects of foreign aid on the economic growth of Bangladesh in their papers.

3.2. Data Sources

To examine the implication of these models, a panel of aggregate data of Bangladesh on real GDP growth, foreign aid, investment/GDP ratio, population growth and inflation has been collected for 1980–2012 periods. This 33 years data has been analyzed to show the effect of foreign aid on the economic growth of Bangladesh. The data on real GDP, investment/GDP ratio and inflation are collected from the International Monetary Fund (IMF 2013), World Economic Outlook (WEO) 2013 database. The data on Foreign Aid and population growth has been taken from the different issues of Bangladesh Economic Review, Ministry of Finance, Government of Bangladesh (GOB, 2000-2013).

4. Empirical Results and Discussion

The findings of the empirical analysis are presented in Tables 1 and 2. The results of first four econometric models that have been estimated for four different time periods: 1980-1990, 1991-2001, 2002-2012 as well as for the entire period of 1980-2012, presented in Table 1.

Then, Table 2 presents the findings of the last four models which are estimated for four different government period, namely, Military government (1982-1990), BNP (Bangladesh Nationalist Party) government (1991-1995, 2002-2006) , BAL (Bangladesh Awami League) government (1996-2001, 2009-2012)   and the Whole Democratic government period (1991-2012) correspondingly.

In Table-1, the adjusted R^2 values vary in a range from 0.739 to 0.836. This is the good indicator for reliable data sources in the sense that, R^2 values show that about 73 percent to 83 percent of variation of dependent variable (GDP Growth) is explained by the independent variables in these models.

Table 1: Effects of Foreign Aid on the Economic Growth in Bangladesh
Dependent Variable: Real GDP per Capita Growth

Variable	1980-1990	1991-2001	2002-2012	1980-2012
Constant	-66.79182 (-3.60)	5.897308 (0.70)	-26.98439 (-4.34)	-5.296597 (-1.00)
Labor Growth	9.743605 (1.91)	-.5394451 (-0.29)	2.411042 (1.56)	.3621807 (0.23)
Capital Growth	.9329385** (3.89)	.0116448 (0.05)	1.150163*** (5.46)	.4310246*** (2.79)
AID/GDP	10.2441** (2.95)	.1015523 (0.23)	1.699052** (3.47)	.5493307 (1.02)
(AID/GDP)^2	-.613666** (-2.83)	-.0255637 (-0.63)	-.4297674** (-3.68)	-.0432482 (-1.05)
Inflation	-.7856391*** (-5.00)	-.0337032 (-1.20)	-.0063625 (-0.13)	-.0803071 (-1.46)
Number of country	1	1	1	1
Number of observations	11	11	11	33
Adjusted R^2	0.8361	0.7804	0.8013	0.7399

Note: Figures in parentheses are t-values. ***, ** and * indicate the statistical significance at the 1 percent, 5 percent and 10 percent level, respectively.

The coefficients of the first two variables, namely Labor Growth and Capital Growth in the first four models are expected to be positive and the results are consistent except for the coefficients of Labor Growth during 1991-2001. This result implies that Labor Growth and Capital Growth have positive impact (except one case of labor growth) on Real GDP growth of Bangladesh. Although the capital growth variable is statistically significant in three models out of four models, labor growth variable is not statistically significant in any of the four cases.

The estimated result is fully consistent as it shows the positive relationship between Capital Growth rate and GDP Growth rate. Investment is the source of capital formation. However, after independence, during 1971-1979 periods, the GDP-investment ratio was only 3 to 4 percent, while it rises to 16.52 percent during1980-1990 periods. At the same period, GDP growth rate was only 3.39 percent. With the course of time, GDP growth rate rises to 6.05 percent with a 24.41 percent investment in the period of 2002-2012 correspondingly. The data illustrates that, the average population growth rate in Bangladesh was 2.23 percent in 1980s and was declining to 1.44 percent in 2000s.

Foreign aid variable has positive sign in all cases, indicating that foreign aid has positive effect on the economic growth of Bangladesh. This coefficient is statistically significant in two cases out of four cases. It is not found statistically significant for the entire period 1980-2012. This result is consistent with data. The data shows that Foreign Aid has the on average 7.38 percent contribution in GDP of Bangladesh in 1980s. While this figure positively declining in the last two decades and recorded as average 4.05 percent and 1.8 percent of GDP in 1990s and 2000s respectively.

The square term has the expected negative sign and the results are consistent in all of four cases.

It is found statistically significant in two cases among the four cases. This finding indicates that there are diminishing returns to aid due to recipient country's having absorptive capacity constraints. Absorptive capacity relates to an aid recipient's ability to utilize foreign aid inflows effectively.

Inflation rate variable has the expected negative sign and it is statistically significant at the 1 percent level of significance in the first case but not found significant in the rest three cases. This result depicts that Inflation rate has negative role on the economic growth rate of Bangladesh. This finding has represented the inflation data of Bangladesh. After independence, in 1970s, Bangladesh experienced a double digit inflation rate. While in 1980s, this figure rose to 11.19 percent of GDP and the average GDP growth rate was 3.39 percent only at the same time. On the other hand, GDP growth rate increases over the last two decades (1991-2012) with the declining of average inflation rate.

The average inflation rate and GDP growth rate during 2002-2012 was figure recorded as 6.85 percent and 6.05 percent correspondingly.

Table-2: Effects of Foreign Aid on the Economic Growth in Bangladesh in Different Government Period

Dependent variable: Real GDP per capita growth

Variable	Military government (1982-1990)	BNP government (1991-1995, 2002-2006)	BAL government (1996-2001, 2009-2012)	Whole Democratic government (1991-2012)
Constant	-76.75248 (-2.20)	-28.75935 (-2.49)	-16.54524 (1.65)	-5.809827 (-1.56)
Labor Growth	12.10823 (1.36)	8.244215* (2.27)	3.693156 (1.65)	1.649832 (1.43)
Capital Growth	1.27053 (1.24)	.8659924** (3.38)	.6292013* (2.50)	.3697521*** (3.84)
AID/GDP	10.07466 (2.31)	.86031 (1.27)	1.477596 (1.64)	.2663335 (0.68)
$(AID/GDP)^2$	-.596263 (-2.17)	-.0908101 (-1.42)	-.1959558 (-1.14)	-.0319429 (-0.86)
Inflation	-.8416047 (-2.13)	.012037 (0.20)	.034407 (0.69)	.0139492 (0.46)
Number of country	1	1	1	1
Number of observations	9	10	10	22
Adjusted R^2	0.3543	0.8412	0.6354	0.7823

Note: Figures in parentheses are t-values. ***, ** and * indicate the statistical significance at the 1 percent, 5 percent and 10 percent level, respectively.

Table-2 illustrates the results of last four estimated for four different government period, namely, Military government (1982-1990), BNP (Bangladesh Nationalist Party) government (1991-1995, 2002-2006) , BAL (Bangladesh Awami League) government (1996-2001, 2009-2012) and the Whole Democratic government period (1991-2012) accordingly.

The adjusted R^2 value is 0.354 for Military government while this figure fluctuates between 0.635 and 0.841 for others democratic governments period. The resulted R^2 values show that about 35 percent, 84 percent, 63 percent and 78 percent of variation in dependent variable (Real GDP Growth) is explained by the five independent variables in these models respectively.

The estimated coefficients of the Labor Growth and Capital Growth have the expected positive sign in the four models and indicate that these two variables have also constructive contribution to the economic growth as we found in the first four models in table 1. Labor Growth variable is statistically significant at the 1 percent level of significance for only the BNP government period. Conversely, the capital growth variable is statistically significant in three models except Military government period.

Similarly, as previous findings, the Foreign aid variable have also positive sign for all government periods in table 2, which again exposes the positive role of foreign aid on the economic growth of Bangladesh. But it is not found statistically significant for any of the four cases. The square term represents the negative sign in all of four cases like the first four models. It is not statistically significant for any of the four models. Inflation rate variable generates the expected negative sign only for Military government. It does not found significant in any of the four cases.

5. Key Findings and Recommendation:

Foreign aid variable has positive sign in all estimated model as presented in table-1 and table-2 respectively. This indicates that foreign aid has positive effect on the economic growth of Bangladesh. This coefficient is statistically significant in two cases out of four cases in table-1and not found statistically significant for any of the four cases in table-2.

This result is consistent with data. The data shows that Foreign Aid is declining over the period of time. It has 7.38 percent, 4.05 percent, 1.8 percent and 4.43 percent contribution to GDP of Bangladesh during 1980-1990, 1991-2001, 2002-2012 and 1980-2012 correspondingly. The square term depicts that, the return of aid is diminishing for a country having the absorptive capacity constraints. Bangladesh is not exception to this.

Still now, Bangladesh depends on external aid to finance the development budget. This research concludes that, foreign aid has positive effect but diminishing return on the economic growth of Bangladesh. Aid mobilizing and executing institutions of Bangladesh including public administrations have capacity constraints, mainly for, poor structure and planning, corruption and political instability.

The government must take initiative to overcome these shortcomings to gain the maximum and efficient output from aid.

6. Limitations and Scope of Further Research

This research estimates the 33 years data for 1980-2012 periods to show the effect of foreign aid on the economic growth of Bangladesh. The data for 1971-1979 periods was not included in this research because of low reliability of data sources. Moreover, this study estimates the whole data without separating it into the loans, grants, bilateral and multilateral aids. So there is a good scope to conduct further research on different types of aid to show their individual effect on the economic growth of Bangladesh.

Concluding Remarks

This study explores that foreign aid has positive role on the economic growth of Bangladesh and it is statistically significant in only two cases out of eight cases. This finding is not statistically significant for the entire period (1980-2012). The estimated results also indicate that, due to the lower level of capacity constraint of Bangladeshi institutions to use the foreign aid effectively, the aid provide diminishing returns in Bangladesh. Foreign aid can contribute to the national economy more effectively, if the Bangladesh government utilizes its aid funds more efficiently by reforming its institutions and policies.

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