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# An Empirical Analysis of Impact of Foreign Aid on Economic Growth: The Case of Pakistan

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**Abstract:** The objective of this study is to analyze the effects of foreign aid on economic growth of Pakistan. The time series data for the period 1980-2008 is used by applying OLS regression model and two diagnostic methods namely Breusch-Pagon and Durbin-Watson tests. Results depict that foreign aid is insignificantly related to the economic growth to Pakistan for short-run and long-run. By excluding the foreign direct investment, results are significant but still a negative relationship exists. This study will help to government organizations by recognizing about the impact of foreign aid on economic growth.

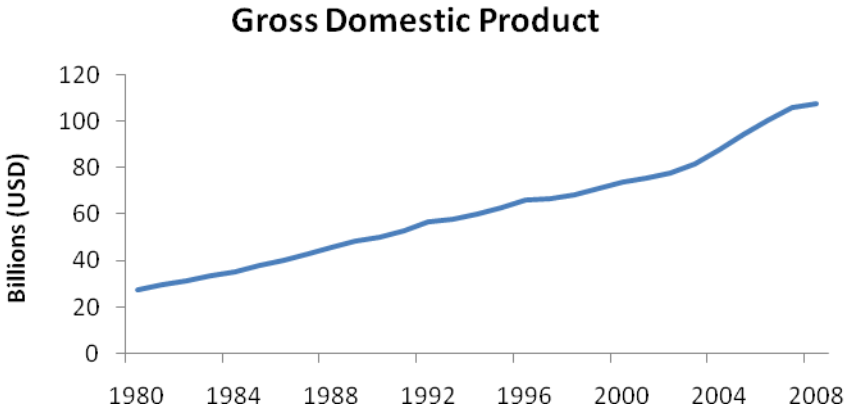
**Keywords:** *Foreign aid, economic growth, Breusch-Pagon, Durbin-Watson, Pakistan.*

## 1. Introduction

The foreign aid has crucial impact on the growth of developing countries. The organization for Co-operation and Development (OECD) divides the foreign aid into three categories that are: (a) Official Development Assistance (ODA) – development aid provided to the development of the developing countries; (b) Official Aid (OD) – development aid provided to the developed countries; and (c) Other Official Flows (OOF) – it consist of loan rather than grant. Furthermore, important role of foreign aid is to remove the poverty from the less developed countries. There are many international institutions such as World Bank (WB), United Nations (UN) and International Monetary Fund (IMF) that provide aid to the third world countries. Here question arises whether foreign aid is an effective approach to increase the growth and development in developing countries? Previous studies shows mixed results in this regard. For example Gupta and Islam (1983); Burnside and Dollar (2000); and Karras (2006) found positive impact of foreign aid on economic growth. Whereas, Brautigam and Knack (2004) argued that aid has negative impact on the growth. While Boone (1996); and Jensen and Paldam (2003) found that aid has no impact on growth.

The function of foreign aid in encouraging economic growth is to increase home sources of investment such as savings, hence increasing the amount of investment and capital stock. The less developed countries do not have enough funds to provide public goods (i.e. education, transportation system and clean water) and private investors are unwilling to invest these goods due to uncertain economic rate of return. Foreign aid is used as alternate of private capital, and provides the funds for investment in public goods. Pakistan received four types of foreign aid i.e. project assistance, commodity assistance, food aid and technical assistance.Pakistan received large amount of foreign aid in the form of project assistance. It is concerned with both sources and utilisation. Due to this type of aid particular development missions like communication and industrial networks or irrigation projects are undertaken. The second most common type of aid received by Pakistan is commodity assistance. It is in most cases belong to sources but not with utilisation giving some level of elasticity to the country. For this purpose it has been given preference over project assistance in Pakistan. Third type of aid received is food aid and it ranges from wheat to ripe oil. Technical assistance is the fourth type of aid that Pakistan received because Pakistan has the shortage of entrepreneurial skill, skilled labour and technical knowledge. So this type of aid is considered as much important for Pakistan. It is helpful in enhancing the indescribable value of the labour in a significant projects like high rise buildings, construction of sea ports, underground railway system etc.

The reason for carried out this study is to look into the impact of foreign aid on economic growth. The graph for the GDP growth of Pakistan for the period 1980-2008 is as follows:




*Source:* World Development Indicators, (WDI-WB), Mark 2010

The remaining portion of the paper is organized as follows: literature review is discussed in section 2, data and methodology is described in section 3, econometric model is demonstrated in section 4, empirical findings are presented in section 5, interpretation of results is made in section 6, and conclusion is explained in section 7.

## 2. Literature Rview

Foreign aid is closely related to the economic growth. This issue is discussed for many years because most of the developing and underdeveloped countries depends on foreign aid for development of various sectors and reducing the poverty. Many articles have been written on this issue and mixed results are found i.e. positive, negative and insignificant impact of Foreign aid on Economic growth. Dowling and Hiemenz (1983) conducted a test to see the relationship between aid and growth for 13 countries of the Asian region by using pooled data and found that the impact of aid on growth is positive and significant. They also obtained results by controlling a number of policy variables such as government intervention, finance and trade. Singh (1985) found the similar results for a sample of 73 countries for the period of 1960-70 and 1970-80. Levy (1988) found a positive and significant relationship between aid and growth including the variable of income per capita for the period of 1968-82 for Sub-Saharan Africa. In the same manner, Hadjimichael et al. (1995) conducted a research on a sample of 41 countries from 1986 to 1992 and reported a positive relationship between aid and growth. They used a more complicated model by examining the prospective side effects of foreign aid such as 'Dutch-Disease' effects and use of some policy variables that can effect the growth.

McGillivray (2005) approved a research on African countries in a time series data of 1968-1999 periods and concluded that the aid is positively and significantly related to growth and also reduces poverty. He also pointed out that the poverty will reduce to half from 1990 to 2015 and the policies of every country such as trade openness and inflation reflects the amount of aid which is received. Addison et al. (2005) investigated relationship of aid and growth in Africa for the period of 1960-2002 and found that the aid has a significant impact on growth and it reduces the poverty. Aid also contributes towards the higher public spending and lowers the domestic borrowings. But they also suggest that the development goals cannot be achieved only through aid, infact other sources of finance for the development should be explored too.mGomanee (2005) examined the relationship between aid and growth in a sample of 25 Sub-Saharan African countries over the period of 1970 to 1997 and institute a positive relationship. So still a poor record of growth in Africa is due to other factors instead of ineffectiveness of aid. Karras (2006) examined the aid-growth relationship for the 71 developing countries during the period of 1960-1997 without considering the effects of policies and found a statistically significant, positive and permanent relationship.

Durbarry et al. (1998) investigated the impact of foreign aid on growth for the sample of 68 developing countries during the period of 1970-93 by using Augmented Fischer-Easterly model and found the positive impact of aid on growth in the conditions of stability of macroeconomic policy environment. But

when the number of policy variables is included such as geographical location, levels of aid allocation and income levels, these results varied. The evidence is accumulating that the effectiveness of foreign aid is less in initially low income countries as compared to initially middle income countries. They also found that the countries which receive high amount of foreign aid shows positive impact on growth whereas low aid receivers have shows statistically very weak positive impact of aid. Burnside and Dollar (2000); Collier and Dollar (2001); Collier and Dollar (2002) proposed that the aid only facilitates when the policies are 'good'. Some studies showed the negative or insignificant relationship between aid and growth. The reason for this relationship presented in the literature is the use of aid in nonproductive activities or the wastage of aid in the countries that do not have the technical or managerial ability to understand and use it in the suitable way and sometimes the policies of the government are not appropriate that how to use the aid in a best manner that contributes towards growth.

Burnside and Dollar (1997) conducted a research on the LDCs by considering a number of policy variables and found that the aid has no significant impact on growth in LDCs. Similarly, Boone (1996) has also found no impact of aid on either the investment or income growth. Gupta (1975); Gupta and Islam (1983) demonstrated that the negative relationship of foreign capital can be reversed by including the indirect effects of economic growth. But Mosley (1980) found a negative and weak relationship among aid and growth by using a simultaneous equation model. Cassen et al. (1986) examined the relationship at the micro as well as macro level and concluded that at the micro level in most cases 'aid works' but at the macro level the results are uncertain and shows insignificant growth effects. Ouattara (2006) carried out research regarding the effects of aid flows on key fiscal aggregates in Senegal by using the data for the period of 1970-2000. He found a statistically insignificant impact of aid flows on domestic expenditures and significant negative effect of debt servicing on domestic expenditures. So he suggests that it is better not to take additional loans and a more successful policy is to take steps for the reduction in debt.

Ekanayake and Chatrna (2010) investigated the impact of foreign aid on economic growth of group of 85 developing countries which include the countries of Caribbean, Latin America, Africa and Asia. They exercise the annual data for the period of 1980-2007 and judge the effect of foreign aid from three perspectives i.e. for regional differences in these countries, differences in income levels and for different time periods. They have found a mixed collision of foreign aid on economic growth. When analyzed through different time periods, the results demonstrated negative and insignificant results in developing countries. When considered through different regions, the outcome is negative for three countries except for African regions where foreign aid has a positive relationship with economic growth. And finally when it is scrutinized for different income levels, then it illustrated a positive relationship except for low middle income countries which explained a negative affiliation between foreign aid and economic growth. Quazi (2005) applied the co-integration method and found the effect of foreign aid on GDP growth and fiscal behavior in Bangladesh. He used the time-series data for the period of 1973-1999. The results indicated the marginal effects of aid on GDP growth. But when he divides the foreign aid into grants and loans, it showed that the grants have no effect on GDP growth but loans appreciably elevated GDP growth as foreign loans finance human capital building programs and public investment projects which directly contributes towards the economic growth but grants sponsor non-productive civil expenditures.

## 3. Methodology

The main objective of this study is to analyze the impact of foreign aid on GDP growth. The variables used for this research are GDP, Net official development assistance and official aid received, gross capital formation, labor force, volume of trade and Foreign direct investment. Time-series data with yearly frequency covering the 1980-2008 periods are used and also the data is divided into 3 parts with respect to timing i.e. 1980-1989, 1990-1999, 2000-2008 periods in estimating the model by using the Ordinary least square method. The data is also examined without the variable of foreign direct investment. Data on these variables are taken from world development indicators.

**Net Official Development Assistance and Official Aid Received:** Foreign aid provide funding to non-productive public expenditures, as well as finance public investment projects and human capital building programs, which ultimately guide to higher output growth. Research conducted by Quazi (2005) on GDP growth and foreign aid of Bangladesh, concluded that aid has insignificant effects on GDP growth, but when aid is separated into loans and grants, it is found that loans extensively raise GDP growth, while grants do not. Graham and O'Hanlon (1997) suggested that countries that received greater amount of

foreign aid have less growth as compared to those countries that received less grants. Proxy used for Net official development assistance and official aid received is (constant 2008 US$). Our expectation of result from this variable is insignificant i.e. no effect on GDP growth both in the long run and short run because Pakistan is a developing country and most of the aid is used for non-productive public expenditures or the ineffective policies made by the government for its consumption.

**Gross Capital Formation:** Gross capital formation is the countries expenditures as well as the fixed assets of the economy including net amount of changes in the level of inventories. Fixed assets contain machinery, plant, land improvements, private residential dwellings, construction of roads and railways, commercial and industrial buildings etc. Inventories consist of stocks of goods which are detained by firms to meet momentary or unforeseen ups and downs in "work in progress", production and sales. The gross capital formation and economic growth has a positive and significant relationship found by (Pavelescu). Proxy applied for GCF is (constant 2000US$). Our anticipation is that the GCF is positively and significantly related to economic growth in the long run.

**Labor Force:** The increase in economic growth is significantly related to the increase in human capital. (Zhao, 2005; Sheng, 2007) found that there is a positive correlation between labor force migration from rural areas and the growth in income or similarly negative relationship is demonstrated between rural labor force migration and poverty of household before the time when China attain the level of medium income country. Proxy employed for LF is (number of total labor force) and we hope that the labor force is positively and significantly related to economic growth in Pakistan.

**Volume of Trade:** According to many economists of 1960s and 1970s, involvement in international trade and contribution towards export performance could be very much desirable movement for economic growth in the developing economies. Expansion in trade enhances productivity through increased capacity utilization, positive externalities on non-exports and increased economies of scale in the export sector. According to Mahadevan (2007), by specialization and improved efficiency in the allocation of resources, exports may affect productivity and consequently it generates dynamic comparative advantage by reduction in costs for a country. It enables the country to import capital and other transitional inputs which are necessary for the production of goods that will be exported by promoting the capital accumulation and accumulation of foreign exchange. And through meeting with the international markets, efficient management techniques and more diffusion of knowledge is facilitated which will in turn effect positively to the economy and it enhances the overall economic productivity. So Bhagwati and Srinivasan (1978); Krueger (1978); and Kavoussi (1984) found that the export growth has been considered as the engine of economic growth. Proxy used for this variable is (constant 2000US$) and we expect that there is insignificant relationship between volume of trade and economic growth in Pakistan due to the exportation of raw material to the other country.

**Foreign Direct Investment:** Foreign direct investment (FDI) is an important variable for economic growth in the developing countries. It affects the economic growth by increasing domestic investment, human capital formation and by assisting the transfer of technology in the host countries. Gregario (1992); and Fry (1992) concluded that the FDI has a positive significant relationship with GDP growth. Proxy used for this variable is (bop, current US$/GDP deflator). And we hope that our findings will show insignificant relationship with GDP growth due to not proper utilization of FDI. The proxy for GDP growth is (constant 2000US$).

**Econometric Model:** The theoretical model used for this study is

$$GDP = \beta_o + \beta_1 ODA \& OA + \beta_2 GCF + \beta_3 LF + \beta_4 VOT + \beta_5 FDI + \mu_t$$

GDP stands for GDP growth which is our dependent variable, ODA&OA is a Net official development assistance and official aid received, GCF stands for gross capital formation whereas LF is a labor force, VOT means volume of trade, and FDI represents foreign direct investment are our independent variables.

## 4. Empirical Results

**Table. 1 Effect of Foreign Aid on Economic Growth in Pakistan**

| Variables | | 1980-89 | 1990-1999 | 2000-2008 | 1980-2008 | 1980-2008 |
|---|---|---|---|---|---|---|
| Constants | | -5.74e+10 | -1.65e+10 | -2.60e+10 | -2.24e+10 | -1.98e+10 |
| | | (0.001)*** | (0.087)* | (0.149) | (0.000)*** | (0.000)*** |
| ODA & OA | | 0.0533 | -0.859 | -0.887 | -1.131 | -1.713 |
| | | (0.928) | (0.462) | (0.389) | (0.189) | (0.023)** |
| GCF | | -0.230 | 0.887 | 0.367 | 1.472 | 1.391 |
| | | (0.737) | (0.455) | (0.402) | (0.001)*** | (0.002)*** |
| LF | | 3451.358 | 1711.126 | 2406.852 | 1807.338 | 1818.695 |
| | | (0.001)*** | (0.001)*** | (0.018)** | (0.000)*** | (0.000)*** |
| VOT | | 0.281 | 0.388 | -0.234 | 0.172 | 0.090 |
| | | (0.313) | (0.344) | (0.545) | (0.457) | (0.685) |
| FDI | | -26.724 | 13.457 | 5.538 | -6.190 | ----- |
| | | (0.348) | (0.516) | (0.297) | (0.220) | |
| No of Observations | | 10 | 10 | 09 | 29 | 29 |
| R-Square | | 0.92 | 0.91 | 0.90 | 0.89 | 0.88 |
| Adjusted R-Square | | 0.89 | 0.87 | 0.86 | 0.84 | 0.83 |
| Heteroscadasticity | | (0.9863) | (0.8674) | (0.2715) | (0.0192) | (0.1785) |
| Autocorrelation | Original Value | 3.204 | 1.846 | 1.292 | 1.297 | 0.862 |
| | Transformed | 2.892 | ----- | 1.368 | 1.467 | 1.840 |

**Dependent Variable:** GDP Growth
**Note:** ***, ** and * significance at the 1%, 5% and 10% levels, respectively.

**Interpretation & Discussion:** Results are very much the same according to expectation. Foreign aid is negative in three of the four periods and also statistically insignificant in all the periods which indicate that it has no effect on economic growth in Pakistan but if FDI is excluded from the analysis then ODA&OA becomes significant at 5% level of significance but still shows negative relationship with GDP. In case of gross capital formation, in the short time period it has no significant effect on economic growth but in the long run it is not only significant at 1% level of significance but also shows positive relationship with economic growth and similar results shown by GCF if FDI factor is not considered in analysis i.e. significantly positive relationship with GDP. Labor force is at 1% level of significance in all the four time periods except in 2000-2008 where it is significant at 5% level of significance and demonstrates positive relationship which means it contributes very much towards economic growth. The same results have shown in the 6$^{th}$ column i.e. positive and significant at 1% level of significance. Volume of trade which is considered as a variable of "openness of economy" is not showing considerable association with economic growth of Pakistan neither in the short-run nor in the long-run. Even if the factor of FDI is not included then the same results are given. Foreign direct investment is also not only negative in two time periods but also statistically insignificant in all the four time periods.

A value of R-Square ranges from 0.88 to 0.92 and it means that our model has a good explanatory power. In order to test the heteroscadasticity which shows the relationship between errors and the independent variables Breusch-Pagon test is applied and it demonstrates that there is no heteroscadasticity in any of the periods as the p-values are greater than the α-values i.e. 1%, 5% and 10% and it fails to reject the null hypothesis which is "no heteroscadasticity". So our model is free from heteroscadasticity. For testing the autocorrelation or serial correlation which demonstrates the relationship between errors Durbin-Watson test is used. If the values of this test range from 1.5-2.5 then it is considered as there is autocorrelation which is ignorable. So in only the second time period it shows no serial correlation but in another time periods it has a problem of serial correlation. To remove the problem of autocorrelation, Prais-Winsten method is used and autocorrelation has removed except in first and third time period where minor autocorrelation still exists.

## 5. Conclusions

Most of the developing countries depend on foreign aid and Pakistan is one of them. The basic purpose of foreign aid is o from these countries. Foreign aid assists countries in human capital building programs and financing public investment projects as well as for poverty alleviation and to make productive public expenditures. Foreign aid has also a relationship with the economic growth but mixed results are found in different countries e.g. in Bangladesh there is insignificant relationship found between aid and economic growth but when grants and loans are separately evaluated then grants have no effect on GDP growth whereas loans have a considerable and positive correlation with GDP growth. Results are also considered without the effect of the foreign direct investment from 1980-2008. Importance of this article is that it considers the constant effect of the variables for shorter in addition to for longer time periods. In this article the part of the foreign aid is used i.e. official development assistance and official aid received.

Results indicate that in three out of the four periods foreign aid represents negative relationship and it is statistically insignificant in the short and in the long run. Whereas it is significant at 5% level of significance when FDI is excluded from the model but negative relationship is still there with GDP growth. The model shows no heteroscadasticity and autocorrelation is found but it is removed by using Prais-Winsten method. So this paper predominantly represents the same results as the earlier studies shows.
Practically the results of this study are useful for the government agencies who deal with the foreign aid. Foreign aid can effect the economic growth positively and significantly if the reasonable policies will be made for the distribution of foreign aid. This study is also useful for future research as extension in this study can be made by adding other economic variables like gross domestic savings, inflation with GDP in current US$, health conditions, transportation, information technology etc because these variables have a strong relationship with the growth of the economy of any country. Furthermore, results of this study should not be generalized to other developing countries as Pakistan has its own local dynamics.

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