An Investigation of the Effects of the Official Development Assistance on GDP Per Capita in Pakistan

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Abstract   *The paper investigates the influence of official development support on Pakistan GDP per capita making use of time series yearly data from 1991 to 1917. ADF has been used for examining the level of integration of the data. After that, ARDL has been used for discovering the short and long-run relationship of the official development assistance and the GDP per capita. The results uncover that official assistance relationship with GDP per capita became negative in the short run in addition to a long-run period. In similar manner inflation also became negatively significant in the short and long run. Additionally, lag GDP per capita is positively significant. Population growth turned positively significant in the long run. In addition, it has become negatively significant in the short-run period of time. Furthermore, the Error Correction coefficient is –0. 83% and remained significant*

Key Words
Official Development Assistance, GDP per capita, ARDL

Introduction

Official development assistance (ODA) represents the financial aid inflows from the developed countries to the developing countries for the speeding of their economic growth and overall welfare of the people in society. The aid assistance can be acquired by the poor nations around the world directly from the federal government of donors countries or perhaps through multilateral development firms i. e. United Nations around the world and the World Lender. The OECD produces a new set of developing countries in addition to regions around the planet. The checklist includes more as compared to 150 countries and areas with a per household income of below $12, 276. Financial aid which can be received by these nations around the world will only be called official development assistance. Established Development Assistance (ODA) is usually considered a considerable supply of income by several developing countries (Pallage & Robe, 2001). The ODA has for various functions including agriculture, health care education, environment protection, governance, lessening poverty and promote economic growth. However, keeping look at the economical conditions regarding the developing countries that are still not very clear whether or not the effects of overseas aid are positive, bad or non-existent (Moreira, 2005). There is no opinion between researchers and coverage makers (Moolio as well as Kong, 2016). Since the 1960s, many economists, including Rosenstein-Rodan (1961) and Chenery and Strout (1968) have done scientific studies within the foreign aid performance inside the monetary growth regarding developing countries. Although, following that large number regarding studies are conducted regarding various countries however that is still controversial of which official development assistance stimulates monetary growth (Tezanos, 2013). On the other palm if we look for typically the aid flow to developing countries since the 1970s it increased significantly. It is improved from $6. 836 billion in 1970 to $49. 673 billion in 2000, and as much as $1, 061. 75 billion in 2014 (World Bank, 2015). This increased inflows of foreign aid during last few years shows its significance in enhancing physical capital through domestic savings (Baldé, 2011).

The previous research on foreign aid and growth can be categorized into two separate parts. The empirical findings of some researcher showed that foreign aid accelerates financial growth(Kim, 2017). Others do not support this view (Mallik 2008; Herzer & Morrissey, 2013). However, in addition to all these efforts, governments and policymakers in developed countries

have not seen whether foreign aid flows to less developed countries effectively promoted financial growth. This research aims to answer this question by carrying out an empirical study for Pakistan.

Literature Review

Many research works are cited in the discussion of the foreign aid and its effects for macroeconomic performance of developing countries. Specifically, the focuses of majority of all these studies are recorded to investigate whether international aid put expansionary or contractionary effects on the macroeconomic performance of a country. Despite all these studies conducted, the problem whether external aid flows motivated or discouraged economic progress is still a question. Gounder (2001) analyzed the influence of overseas aid in promoting the economic expansion of Fiji. The results portrayed that external aid favorably impacted Fiji's economic performance. In another study of Irandoust and Ericsson (2005) questioned the impact of foreign aid on the economies of Togo, Senegal, Niger, Nigeria, Rwanda. The bottom line was that foreign aid promoted the growth in all countries

Karras (2005) undertook research for 71 aid obtaining countries and found that foreign support plays an active role in deciding GDP per capita in 71 nations around the world getting aid from 1960 to 1997. Similarly, Kimura et al. (2012) analyzed whether aid accelerated economic progress in South Africa? The particular results of the investigation were that foreign aid inflows in Africa significantly contributed to the overall growth of the economy. The final outcome was that foreign aid absolutely the economic growth positively in Nepal. Another study was carried out by Fasanya et al. (2012) studied whether foreign aid supported the economic growth in Nigeria over the time period 1970 to 2010. The results depicted that foreign aid accelerated economic growth in Nigeria.

Mekasha and Tarp (2013) learned that foreign aid marketed economical growth. These kinds of findings were also related to the outcomes of typically Sharma and Bhattarai (2013). Another evidence of good relationship between foreign support and economical growth had been proven by Kargbo andSen (2014) also supplied one more evidence regarding the positive relationship in between foreign aid and economic growth for Sierra Leone. Nwaogu and Ryan (2015) conducted study for 53 African countries and thirty-four of Latin America in addition to the Caribbean. Their effects showed that foreign support contributions to growth have been positive in both typically the regions.

However, the effects of numerous studies are in preferred of the negative results regarding foreign aid upon the overall economy. Bräutigam and Knack (2004) analyzed the foreign assistance, organizations and governance nexus within 32 countries sub-Saharan in the African continent. They recognized that international aid have damaged the standard of governance in this region. Ali and Isse (2005) carried out research in order to measure the effect of international support on financial growth. The study came to the conclusion that international aid experienced an unfavorable impact on financial progress. Rajan plus Subramanian (2008) also carried out empirical research and arrived at similar findings. Khan and Ahmed (2007) found a way that the effect of international aid on financial development was negative inside Pakistan. Similarly, Malik (2008) outcomes also supported the unfavorable linkages of international support with monetary performance. Sarwar et al. (2015) likewise concluded that overseas support effects on Pakistan overall economy were negative. In typically the same way, Aakif et al. (2018) conducted analysis for selected SAARC nations around the world Pakistan, India, Bangladesh in addition to Sri Lanka found out there that foreign aid in a negative way influenced the monetary progress of associated countries. Sothan (2018) for Cambodia likewise uncovered that foreign support put contractionary influences about economic growth.

Methodology

This section presents the methodology of the study.

Empirical Model

Following Dewan and Hussein (2001) and Aakif et al. (2018), the following empirical model has been used

$$GDPP = \beta_0 + \beta_1 ODA_t + \beta_2 EDU_t + \beta_3 GCF_t + \beta_4 INF_t + \beta_5 POPG_t + \varepsilon_t \qquad (3.1)$$

In equation (1) GDPP is the dependent variable. Whereas, ODA, EDU, GCF, INF, and POPG are the independent variables. Moreover, β_0 is the constant term. And β_0, β_1, β_2, β_3 and β_4 are the relevant coefficients of the respective variables. While ε_t is the random term.

Estimation Methods

This section highlighted the estimation techniques applied for the analysis of the data.

Unit Root Test

ADF has applied for checking the unit root in data and selection of appropriate test.

Co-integration Test

ARDL bound test (See, Pesaran et al. 2001) has been used in light of the order of integration provided by the results of ADF test. Based on the results, ARDL bounds test has been selected for the investigating the cointegration between the variables. "*The bounds test is more flexible in its application to the mixed order of series, as compared to the other conventional co-integration tests that require a unique order of integration*". The is given in equation 2 as below.

$$\Delta GDPP_t = \beta_0 + \sum_{i=0}^{p} \beta_i \Delta\ GDPP_{t-i} + \sum_{k=0}^{q} \beta_k \Delta\ ODA_{t-k} + \sum_{i=0}^{r} \beta_l \Delta\ EDU_{t-l} + \sum_{m=0}^{s} \beta_m \Delta\ GCF_{t-m}$$

$$+ \sum_{m=0}^{t} \beta_m \Delta\ INF_{t-m} + \sum_{m=0}^{u} \beta_m \Delta\ POPG_{t-m} + \lambda_{GDPP} GDPP_{t-1} + \lambda_{ODA} ODA_{t-1}\ (3.2)$$
$$+ \lambda_{EDU} EDU_{t-1} + \lambda_{GCF} GCF_{t-1} + \lambda_{INF} INF_{t-1} + \lambda_{POPG} POPG_{t-1} + \upsilon_t$$

Data Collection

The time period of the present is from 1991 to 2017. All the variables description has been given in table 1 as follows.

Table 1. Variables Explanation

Variables	Symbol	Measurement	Descriptions	Source
GDP Per Capita	GDPP	GDP per capita	%age change in GDP Per Capita	World Development Indicators, World Bank
Official Development Assistance	ODA	Net ODA received by Pakistan in Pak Rupees	Net Official Development Assistance (ODA)	
Education	EDU	Gross Enrollment Ratio at Secondary level consisting of both sexes)	It is the percentage of population (Male & Female) with secondary education	
Gross Capital Formation	GCF	Gross Capital Formation is Pak Rupees	GCF is consisted of outlay to the fixed assets and sum of all changes in the inventories.	
Inflation	INF	Inflation Rate	The inflation rate is "the annual percentage change in Consumer Price Index (CPI)"	
Population	POPG	Population Growth Rate of Pakistan	"Population growth rate refers to the annual percentage in the population"	

Results and Discussions

For estimating the results various econometric techniques have been used. Table 2 below shows the ADF test findings.

Table 2. Stationarity Test Results

Variables	Trend and intercept				Order of Integration
	Level		First Difference		
	t-values	p-values	t-values	p-values	
ODA	-4.580981	0.0064	-	-	I(0)
EDU	-5.012541	0.0023	-	-	I(0)

GCF	-4.36775	0.1762	-3.892931	0.0272	I(1)
GDPP	-3.027577	0.1441	-6.391783	0.0001	I(1)
INF	-4.396075	0.0122	-	-	I(0)
POPG	-3.447027	0.0697	-	-	I(0)

The ADF test results given in table 2 depicted that all the variables order of integration is mixed. ODA, EDU, INF, and POPG are stationary at level. Whereas, GDPP and GCF turned Stationary at first difference. Hence, the overall results showed that GDPP the dependent variable is integrated of order one. Also the integration order of all the variables are mixed and no variable was integrated of order 2.These results show that the traditional co-integration test is not applicable and fulfill the conditions of application of ARDL test proposed by the Pesaran et al. (2001) for investigating the variables long run association. The results are placed in table 3 as below.

Table 3. Bound Test Estimation Results

Bounds Test

Test Stat	Value	k
F-stat	7.151343	5

Critical Values		
Significance	Lower	Upper
10 percent	(2.26)	(3.35)
5 percent	(2.62)	(3.79)
2.5 percent	(2.96)	(4.18)
1 percent	(3.41)	(4.68)

The cointegration between the factors has been analyzed through the bounds test. The results are put in table 3. It truly is concluded that F-statistic computed value is high than top bounds critical values. Hence, centered on the results the null hypothesis of the nonexistence of cointegration has been turned down and it is found out that long-term association between the variables is present. Similarly, the optimal lag length through AIC criterion has been found for all the variables.These results are given in Table 4 .

Table 4. Lag Selection

Lag	LogL Crit.	LR Crit.	FPE Crit.	AIC Crit.	SC Crit.	HQ Crit.
0	-566.3219	NA	3.09e+12	45.78575	46.07828	45.86689
1	-463.7163	147.7520	1.64e+10	40.45730	42.50502	41.02525
2	-400.9849	60.22219*	3.47e+09*	38.31879*	42.12168*	39.37355*

shows the lag length order chosen by the criterion

From table 4 it is clear that according to AIC criterion showed 2 optimal lag length. Table 5, indicates both the short and long run parameters of the model.

Table 5. Short and Long Run Results

Variables	Coefficient	Standard Error	P-Values
Long Run Results			
LGDPP	0.243403	0.097006	0.0310
ODA	-1.333593	0.666923	0.0653
EDU	-0.000000	0.000001	0.7708
GCF	0.077802	0.052390	0.1597
INF	-0.432930	0.164675	0.0198
POPG	1.474049	2.088810	0.4920
C	4.679741	3.696397	0.2262
Short Run Results			
D(ODA_)	-1.107968	0.505482	0.0458

D(EDU)	-0.000000	0.000001	0.7260
D(EDU(-1))	-0.000001	0.000001	0.2238
D(GCF)	0.064639	0.051041	0.2260
D(INF)	-0.359684	0.096304	0.0022
D(POPG)	-9.434353	26.162924	0.0021
D(POPG(-1))	-3.284047	22.089973	0.0051
CointEq(-1)	-0.830814	0.165712	0.0002

Table 5 showed the estimated results. The results showed that the lag GDP per capita remained significant positively. This shows that if the lag GDP per capita is increased by the GDP per capita increases by 24%. Moreover, it is found that official development assistance turned significant but with a negative sign. This showed that the 1% rise in official development assistance brings 1.33% decrease in GDP per capita. Moreover, inflation also showed a negative effect on GDP per capita. However, other variables including education, population growth, and gross capital formation remained insignificant.

In the same way, the short-run effects showed that official development assistance showed a bad and important relationship together with GDP per capita. Typically the other variables inflation in addition to population growth showed bad influence on GDP each capita. While gross capital formation and education stayed insignificant.

The error correction coefficient value is −0. 83 and turned negatively significant. It indicates the rate of adjustment from the short run towards the long-run equilibrium path. Overall, these findings showed that official development assistance inflows effects within the GDP per capita negatively inside Pakistan. Figure 1 shows the diagnostic test CUSUM stability test results. The figure depicts that the blue line is within the 5% bound i.e. red lines. Hence the parameters of the model are stable.
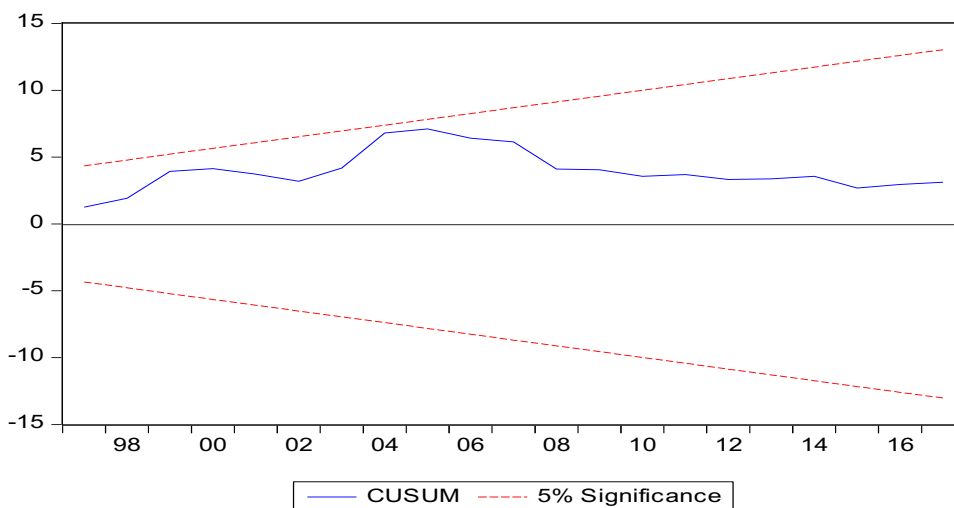

Figure 1. CUSUM Test Results

Conclusion

The study analyzed the short and long-run association between the official development assistance and GDP per capita for Pakistan during the period of time 1991 to 2017. The data has been analyzed by using ADF analyze, ARDL test. CUSUM stability test has been used for the robustness of the results. The computed results revealed that official development assistance and inflation remained significant with negative signs both in the short run in addition to long-run periods. Whereas, population remained negatively significant only in the short run. However, other variables education and gross capital formation remained insignificant. The CUSUM test showed that parameters of the model are stable.

These findings suggested that official development assistance is not effective in promoting the GDP per capita in Pakistan.

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