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OFFICIAL DEVELOPMENT ASSISTANCE AND ECONOMIC GROWTH IN PAKISTAN: A TIME SERIES ANALYSIS

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Abstract. Official development assistance is crucial for development, providing essential resources to address poverty and promote sustainable economic growth. This study aims to investigate the impact of official development assistance (ODA), trade openness, investment ratio, employment rate, and education on economic growth of Pakistan during 1980-2017. Augmented Dickey-Fuller (ADF) unit root test shows that time series data is stationary at first difference. An augmented autoregressive distributed lag (ARDL) bounds cointegration test confirms the existence of cointegration among the series. According to ARDL estimates, there is statistically significant relationship of factors that effect the economic growth in Pakistan. The results show that ODA, employment rate and education have positive and significant long run effect on GDP growth of Pakistan. Whereas, investment ratio and trade openness have significantly negative relationship with the economic growth. In short-run all the variables are negatively associated to economic growth in Pakistan. The findings show foreign resources like ODA contributes more in economic growth as compare to domestic resources like investment and trade openness. It is recommended to enhance the effectiveness of ODA by aligning it with national development priorities, ensuring transparent allocation, and focusing on projects that promote sustainable economic growth and poverty reduction in Pakistan.

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I. INTRODUCTION

The developing world is striving hard to match with the growth figures of the developed nations and for the purpose policy makers and researchers are exploring different significant determinants of growth (Ali, 2014). Official development assistance (ODA) in developing nations considered main booster of economic growth and development. The ODA inflows improve the economic growth by increasing productivity through reducing the gap in saving-investment and transforming modern technology. In the developing world since the 1970s, the developed world has been rapidly increasing development assistance (Alvi et al., 2008). Several nations like Sierra Leone and South Korea have used external assistance more efficiently to boost economic growth (Kargbo & Sen, 2014; Kim, 2011) but some are unable to do so like Cambodia (Sothan, 2018) and Philippines (Mitra & Hossain, 2013). ODA is an association created by DAC of the organization of economic cooperation and development (OECD). It is a governmental aid intended to encourage the economic sustainability and affluence of developing countries. Such supports may comprise social infrastructure and economic infrastructure, aid to the services and assistance to the manufacture sector (Ang, 2010). In this case, social substructure covers health care, water sources and hygiene, for augmenting human development and ultimately leading to economic growth for long term (Addison &Tarp, 2015). In addition, infrastructure assistance strengthens the recipient countries electricity, transportation and communications systems. On the other end, assistance from the manufacturing sector is directed at agriculture, forestry, fishing, trade, mining, construction, commerce and tourism (Bhavan et al., 2011).

Official assistance and GDP growth factor has been assumed to subsidize affectively to growth and improvement and development for the developing economies, but then again for various reasons, observed results on the development effect of foreign assistance are contentious. These reasons are different in terms of country aspect (Burke & Ahmadi-

Esfahani, 2006). History shows that through the direct and reliable use of official assistance, countries with strong positive policies, governance and macroeconomic indicators are sponsored for growth (Yiew & Lau, 2018; Kargbo & Sen, 2014; Kim, 2011; Asteriou, 2009; Chaudhry et al., 2009; Feeny, 2007; Karras, 2006; Dalgaard et al., 2004). While many countries which relies entirely on foreign aid and used it with weak policies and governance do not move in the direction of growth (Sothan, 2018; Mitra et al., 2015; Mitra & Hossain, 2013, Liew et al., 2012; Hye et al., 2010; Khan and Ahmed, 2007, Easterly & Pfutze, 2008). It can be inferred from this outlook that there is not any specific confirmation to confirm the role of external assistance on economic growth.

History shows that to finance its economic growth, Pakistan has also depended heavily on foreign borrowing. As of 2017, the latest total was $2,283,270,000 for official development assistance and official funding provided in Pakistan. The value for this measure has fluctuated over the past 57 years from $3,754,000,000 in 2015 to $252,740,000 in 1961 (Birdsall et al., 2005). Pakistan provided approximately US$ 73.14 billion as foreign assistance for the period of 1960 to 2002 (Anwar & Michaelowa, 2006), but the assistances derived from these aid movements did not affect society as a whole, indicating that external aid did not contribute towards improving Pakistan's growth conditions. The literacy rate is still not successful and there is also no encouraging image of other common determinants, like employment rate, health facilities and education rate, infrastructure, development (Chishti et al., 1992).

FIGURE 1

Official development assistance (ODA) in Pakistan

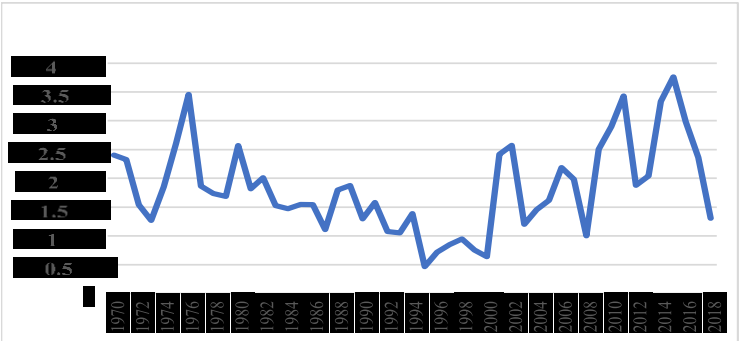

Figure 1 shows the disbursements official development assistance to Pakistan from of 1970 to 2018 (WDI). The movement of ODA recorded higher in 2015 which is 3.76 billion dollars and lowest of 465.6 million in 1995. Foreign assistance started to come in Pakistan shortly after freedom. Throughout the 1950s, support movements were very lesser. Yet at the period of 1960s and 1970s, external assistance endured an important source of growth for Pakistan. Pakistan, for instance, received around 6.6% of GDP in foreign aid during the year of 1960. Over this period of time, big ventures like Tarbala and Mangla dams were built. During the early 1970s, support inflows picked up steam and up to around 4.2% of GDP. In 1976, aid inflows to Pakistan reached a level of 7.6%, and by that time the proportion of aid to GDP had reached its higher position1. The control has introduced public speculation initiatives like bridges, energy, increased public and other projects of the large inflow by foreign aid. Gross aid disbursements declined in 1980s as the US condensed (Malik et al., 1994). Nevertheless, the foreign assistance during the 1980s are 4.6% of GDP due to its conflict over Afghanistan between America and the Soviet Union. Foreign aid reached an annual level of 2% for the period of 1980 to 1990 and reached at higher level of 3% of GDP in 1988. The aid flows for the time period 1991-2000 remained under 2% of the GDP and reached at low level 0.95% in 2000. Over the period of 2001 to 2010 the ratio still remain under 3% of the GDP and reached its high level of 2.9% in 2002 and low level of 0.88% in 2008.Over the years from 2011 to 2017, the composition of aid to GDP ratio remain low from 2% and record higher in 2014 for 1.4% of GDP and lower in 2017 of just 0.74% of GDP.[2] Pakistan is still trying to keep mobilizing further aid through different channels to tackle common suffering, inequality, poverty, and supplement public spending. However, there is still limited empirical evidence in Pakistan about the nexus between ODA and economic growth. Consequently, the present study seeks to analyze the effect of official development assistance on the economic situation of Pakistan, asking the research question: How has Official Development Assistance (ODA) impacted the economic growth of Pakistan, and what role do investment ratio, trade openness, and

[1] https://www.pbs.gov.pk/

[2] https://databank.worldbank.org/source/world-development-indicators

education play in this context? The study hypothesizes that ODA could have played a vital role in growth in Pakistan because the economy is largely dependent on foreign inflows for economic growth. The paper also aims to analyze the contribution of investment ratio and trade openness in the GDP of Pakistan, along with the education variable, both in the short and long run, as these are relevant indicators of economic progress. The novelty of this study lies in its comprehensive approach, which not only examines the direct impact of ODA on economic growth but also considers the interconnected roles of investment ratio, trade openness, and education. By extending the analysis over a 37-year period, this study provides a long-term perspective that captures the evolving dynamics of Pakistan's economy. Moreover, it fills a critical gap in the literature by offering empirical evidence from Pakistan, a country with unique economic challenges and dependencies, thus providing insights that are both context-specific and applicable to other developing nations facing similar issues. The study's findings could significantly contribute to policy formulation, offering guidance on how to better leverage ODA, optimize investment, and enhance trade and education strategies to drive sustainable economic growth in Pakistan.

Section II of the study highlights the literature review. Section III consist of data and methodology. Whereas section IV contains results and discussion while section V concludes the study.

II. LITERATURE REVIEW

Sothan (2018) investigated the consequences of foreign inflows and economic growth for Cambodia for time period of 1980-2014. The study used ARDL bound testing approach and found that foreign assistance not resulted in long-term GDP growth, but in the short term it is very affective. The findings showed that reliance on foreign assistance would hinder long-term investment and growth.

Yiew and Lau (2018) explored relationship of official development assistance and economic growth on ninety-five nations for the period of 2005 to 2013. The study concluded the U-shaped effect of ODA on GDP growth which indicated that initial adverse effect of ODA, but with passage of time significant influence of ODA when it is used more effectively. The reason behind this U-shaped impact is that at the

beginning assistance receiving countries enjoy leisure so initialy it weakens economic growth. The study also came out with the result that FDI and population have more positively impacted and more beneficial for GDP growth.

Mitra et al. (2015) found short term and long-term negative affiliation among foreign assistance and growth for thirteen countries from Asia. They suggested a rise in foreign aid of 1% is encouraged declinined of 0.18%.

Kargbo and Sen (2014) investigated association of foreign inflows on economic growth of Sierra Leone. They came out with positive effect of official assistance on the poor development of Sierra Leone.

Mitra and Hossain (2013) analyzed associaition in Philippines and came out with negative impact. They found that 1% rise in foreign assistance contributed to 0.51% decrease in economic growth.

Liew et al. (2012) discovered the affect of foreign aid on economic growth in East African countries from 1985 and 2010 by implementing the pooled ordinary least squares, random effect and fixed effect models. The results showed negative association.

The nexus is investigated by Kim (2011) on assistance for economic growth in South Korea, indicated that a development assistance has been widely used to resolve numerous national concerns and to provision development projects by state in South Korea to improved the economy as a whole. The study also highlighted the points that the government's strong commitments played a dynamic part for effective use of foreign assistance.

Hye et al., (2010) studied about association offoreign capital inflows upon economic growth for Pakistan from 1975 to 2007. ARDL test was applied to specify the outcomes. They valuate, FDI subsidize positively with economic growth but foreign aid backed negatively but statistically significant presenting about the long run effectiveness can be accomplished

Asteriou (2009) analyzed the effect of assistance over economic growth of five south Asian economies namely Pakistan, India, Bangladesh, Srilanka, Nepal. The study used the ARDL technique and

data for the time span of 1975-2002 to find the relationship over that period. The long as well short run outcomes of assistance are examined, results concluded the vigorous positive influence of foreign aid upon GDP among these nations.

Chaudhry et al. (2009) explored how foreign debt influences savings and investments in Pakistan. They incorporated data of period from 1973 to 2006. The estimation technique of ARDL was used and found the result that foreign debt contributes positively to investment and savings.

Iqbal and Zahid (1998) studied to identify the connection among Pakistan GDP growth with other macroeconomic determinants. Regression techniques found that foreign assistance also contributed positively to primary education, while the budget deficit had an adverse effect on economic growth.

Khan and Rahim (1993) interrogated affiliation among foreign aid, national savings and economic progression for Pakistan from 1960 to 1988. The study used OLS estimation and concluded that the association among foreign assistance, economic growth and savings are positive.

RESEARCH GAP

The extant literature on the influence of foreign aid and economic development reveals heterogeneous and frequently contradictory findings across various geographical areas and temporal intervals. Several studies, like Sothan (2018) and Kargbo and Sen (2014), suggest that foreign assistance has a beneficial influence in the short term. However, other studies such as Mitra et al. (2015) and Liew et al. (2012) demonstrate negative or inconsequential long-term effects. Multiple studies, including Yiew and Lau (2018), indicate that the effectiveness of Official Development Assistance (ODA) is influenced by its utilisation over time, showing a U-shaped relationship. On the other hand, Asteriou (2009) and Kim (2011) highlight the importance of governance and institutional quality in maximising the benefits of ODA. Nevertheless, despite the extensive body of research on Official Development Assistance (ODA) and its impact on economic growth, there is a lack of exploration into the specific relationship between ODA, trade openness, investment ratio, employment rate, and education in Pakistan. This gap is particularly

evident when considering the use of a contemporary Autoregressive Distributed Lag (ARDL) framework across a prolonged time span, such as 1980-2017. This study fills gap by examining these variables collectively, providing new insights into their combined effects on Pakistan's economic growth.

III. DATA AND METHODOLOGY

DATA

The purpose of study is to find the long run as well as short run impact of official development assistance on the economic growth of Pakistan. The study also encompassed the other economic growth indicators like trade openness, investment ratio, education and employment rate in the model to find the better view in both time periods on the economic growth. The yearly data of 1985 to 2017 is gathered to find the nexus in this research. The study focused on this specific time period due to the availability of essential data for the key variables analyzed in the research. The data is retrieved from world development indicators (WDI).

In this paper dependent variable GDP growth is dignified by real GDP per capita (constant US$ 2010) (Sothan, 2018; Bulir & Hamann, 2006; Collier & Dollar, 2002). Official Development Assistance (ODA) is measured by net official development assistance in percentage of GDP (Collier & Dollar, 2002; Gomanee et al., 2005). Trade openness is the trade by percentage of GDP (Sothan, 2018; Shahbaz, 2012; Salman et al., 2012). Investment ratio is taken as gross fixed capital formation as a percentage of GDP per year (Herzer & Morrissey, 2013; Gounder, 2001; Dollar & Easterly, 1999). Employment rate is taken as number of persons engaged in employment (Irandoust & Ericsson, 2005; Islam, 2003). Education is measured as log of human gross enrolment ratio and secondary level of education (Loxley & Sackey, 2008; Kharas, 2007; Fayissa & El-Kaissy, 1999).

EMPIRICAL MODEL

In empirical studies, most of the researchers like (Sothan, 2018; Kargbo & Sen, 2014) considered economic growth as a dependent variable. Many prior studies like (Sothan, 2018; Trejos & Barboza, 2015; Herzer & Morrissey, 2013; Asteriou, 2009; Ali & Isse 2005)

considered the economic variables of official development assistance, trade openness, investment ration, employment rate and education as a regressors for economic growth. Following the given studies, empirical model of the study is formulated as:

$$\ln GDP_t = \beta_0 + \beta_1 \ln ODA_t + \beta_2 \ln TRAD_t + \beta_3 \ln INV_t + \beta_4 \ln EMP_t + \beta_5 \ln EDU_t + \varepsilon_t \quad (1)$$

In equation (1), lnGDP, lnODA, lnTRAD, lnINV, lnEMP and lnEDU denotes logs of real GDP per capita, official development assistance, trade openness, investment, employment, and education. The conversion of above-mentioned variables to logarithmic forms is to evade the problem like non-normality, functional form non-linearity, growing error variance and explosive roots (Rauf et al., 2018). β0 is the constant and εt is the error term. β1, β2, β3, β4 and β5 are coefficients of regressors, respectively.

EMPIRICAL STRATEGIES

In the methodology section before going through ARDL approach, the study incorporated unit root properties of variables. To check stationarity properties of variables, The Augmented Dickey-Fuller (ADF) test presented by Dickey and Fuller (1981) is performed that either variables are stationary at level or may be at first difference. The Augmented Dickey-Fuller (ADF) test is valuable in time series analysis because it helps determine if a series is stationary, which is essential for reliable modeling. It can handle autocorrelation by including lagged differences and offers flexibility in testing with or without trends and constants. As a widely accepted and straightforward tool, it provides clear statistical results and is supported by many software packages, making it an essential step for ensuring accurate time series analysis and modeling (Sharma & Bhattarai, 2013).

ARDL estimation method is then used to find out association between the variables which have a benefit of finding both the long and short run impact. Pesaran et al. (2001) implemented ARDL method on the way to integrate level I (0) or first difference I (1) variables in same calculation. The ARDL cointegration approach has numerous benefits for different cointegration techniques such like Johansen cointegration method by Johansen and Juselius (1990). This method accommodates

different lag lengths for each variable, which can enhance model flexibility and accuracy in capturing temporal relationships. Unlike other methods, ARDL does not require pre-testing for unit roots in the variables, simplifying the modeling process and reducing potential errors from incorrect unit root testing ARDL can be robust to different model specifications and does not necessarily require the variables to be perfectly specified, making it more adaptable to various contexts (Shirazi et al., 2009). To investigate the correspondence among official development assistance with GDP growth ARDL bound testing approach is castoff to observe the long run and short-term association between the variables. ARDL bound approach delivers simultaneously the long and short run results which is it's another benefit. It can be applied regardless of whether the underlying variables are I (0) (stationary) or I (1) (integrated), making it versatile for different data types. The test is particularly useful for small sample sizes and can estimate both short-run and long-run relationships simultaneously. Additionally, it allows for the inclusion of variables with different optimal lags, which can improve model fit. The ARDL bound approach also facilitates the assessment of dynamic relationships between variables, providing a comprehensive view of their interactions over time (Gries et al., 2009). The following form of model examine the long run relationship under ARDL test estimation approach:

$$\Delta \ln GDP_t = \alpha_1 + \alpha_2 t + \alpha_3 \ln GDP_{t-1} + \alpha_4 \ln ODA_{t-1} + \alpha_5 \ln TRAD_{t-1} + \alpha_6 \ln INV_{t-1} + \alpha_7 \ln EMP_{t-1}$$
$$+\alpha_8 \ln EDU_{t-1} + \sum_{i=0}^{l} \gamma_i \Delta \ln GDP_{t-i} + \sum_{j=0}^{l} \gamma_j \Delta \ln ODA_{t-j} + \sum_{k=0}^{l} \gamma_k \Delta \ln TRAD_{t-k} + \sum_{m=0}^{l} \gamma_m \Delta \ln INV_{t-m}$$
$$+\sum_{p=0}^{l} \gamma_p \Delta \ln EMP_{t-p} + \sum_{q=0}^{l} \gamma_q \Delta \ln EDU_{t-q} + \varepsilon_t \qquad (2)$$

Where, in equation (2)

H_0:$\alpha_3=\alpha_4=\alpha_5=\alpha_7=\alpha_8$

H_1:$\alpha_3\neq\alpha_4\neq\alpha_5\neq\alpha_7\neq\alpha_8$

H_0 shows the null hypothesis and H_1 means alternative hypothesis

The bound test for co-integration rejects the null hypothesis that there is no co-integration if the F-statistic value is greater than the upper bound value established by Pesaran et al. (2001). ARDL establishes the error correction model (ECM) after the presence of long-term

relationships among variables of the model. ECM is useful for determining both the model's long-run equilibrium and short-run parameters, and its equational form can be written as follows:

$$\Delta \ln GDP_t = \alpha_1 + \alpha_2 t + \sum_{i=0}^{l} \gamma_i \Delta \ln GDP_{t-i} + \sum_{j=0}^{l} \gamma_j \Delta \ln ODA_{t-j} + \sum_{k=0}^{l} \gamma_k \Delta \ln TRAD_{t-k} + \sum_{m=0}^{l} \gamma_m \Delta \ln INV_{t-m}$$
$$+ \sum_{p=0}^{l} \gamma_p \Delta \ln EMP_{t-p} + \sum_{q=0}^{l} \gamma_q \Delta \ln EDU_{t-q} + \varphi ECT_{t-1} + \varepsilon_t \qquad (3)$$

In Equation (3), the term ECT_{t-1} represents the one-period lagged error correction term. The Error Correction Model (ECM) quantifies the speed at which the system adjusts from short-run deviations back to long-run equilibrium. The parameter, φ which denotes the coefficient of the ECM, is expected to be negative, indicating the direction and speed of adjustment. Additionally, diagnostic tests were conducted to verify the structural integrity of the model, including tests for residual normality, the ARCH test for heteroscedasticity, and the LM test for serial correlation. For conformity that ARDL model is well defined, diagnostic tests, functional form of the model, white test and CUSUM and CUSUM of square Brown, Durbin, and Evans (1975) are conducted.

IV.RESULTS AND DISCUSSIONS

Table 1 is demonstrations summary of descriptive data statistics indicating mean, median, maximum, minimum and standard deviation for variables. The mean value of GDP growth is 4.89 with maximum value of 7.07 and minimum of 1.01 and mid value is 4.26 and standard deviation value is 2.09. Official development assistance mean value is 3.03 and SD value is 2.26 with maximum of 5.63 and minimum of 0.74. The results show normal distribution of all variables.

TABLE 1

Descriptive Statistics

	lnGDPt	lnODAt	lnTRADt	lnINVt	lnEMPt	lnEDUt
Mean	4.895841	3.030935	33.46144	16.07509	37.68893	1.561869
Median	4.260088	1.449434	33.69653	16.48396	35.18783	1.529512
Maximum	7.701573	5.6343012	38.90949	19.23542	60.87498	1.799724
Minimum	1.014396	0.741169	25.30623	12.52063	25.09152	1.323529
Std. Dev.	2.097291	2.264293	3.270134	1.670944	11.53166	0.200439

Table 2 display the stationary test of variables. The stationarity of variables at level and first difference is performed by ADF test. All the variables founds non-stationary on level but stationary at first difference level is confirmed by unit root. The same integrating order of all variables, it is suitable now to perform the ARDL bounds testing approach to explore the long run association.

TABLE 2

ADF Unit Root Test

Variables	@Level	@ First difference
lnGDPt	-3.529587	-3.63346**
lnODAt	-4.827699	-6.08762***
lnTRADt	-2.284135	-7.60996***
lnINVt	-2.399558	-5.325361***
lnEMPt	-1.991430	-7.375816***
lnEDUt	-1.761620	-5.698680***

Note: *** and ** denotes 1% and 5% level of significance respectively.

Before continuing to ARDL approach, an appropriate lag length of the series is better to be chosen. The Akaike Information Criterion (AIC) is used to determine lag length, number of chosen lags is 4. In addition, optimal lag length is found to be 2.

TABLE 3

Lag Selection Criteria

Lag	LL	LR	FPE	AIC	HQIC	SBIC
0	-305.234		1.7e-09	5.83252	5.92002	5.0518
1	2345.78	3753.4	3.2e-31	-33.719	-32.9225	-31.7455
2	2345.88	642.93*	3.8e-33*	-37.0085*	-36.5039*	-34.3707*
3	1600.63	56.704	8.2e-33	-37.5349	-34.9012	-31.7317
4	1456.8	76.648	2.7e-32	-36.5349	-33.6143	-29.2985

Note: * optimal lag

Table 4 consist of the results of bound test performed on ARDL model to inspect long run relationship. The value of the computed F-statistics exceeds then upper critical bound value of 4.68 at 1% level of

significance in table which confirms that there is the long run association among dependent variable of GDP with other variables lnODA, lnTRAD, lnINV, lnEDU and lnEMP.

TABLE 4

ARDL Bound Test

Estimation model	lnGDP = f (lnODA, lnTRAD, lnINV, lnEDU, lnEMP)	
Test statistics	Value	
F-statistics	281.3494	
Critical Value Bounds		
Significance	I(0) bound	I(1) bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Note: Critical values are taken from Pesaran et al. (2001).

***Significant at 1% level.

TABLE 5

Diagnostic test

lnGDP = f (lnODA, lnTRAD, lnINV, lnEDU, lnEMP)	
R-squared	0.999
Adj. R-squared	0.998
DW	1.8327
SE	0.0014
Jarque–Bera normality test	0.822(0.662)
Breusch–Godfrey serial correlation LM test	0.249(0.816)
Heteroscedasticity test: White test	0.952(0.614)
Ramsey's RESET test for the functional form	1.453(0.351)

Note: Parenthesis values are the P values.

The diagnostic tests are performed to check the model in which serial correlation, normality, heteroscedasticity, functional form and CUSUM and CUSUM of square is checked in the model. Table 5 demonstrate the diagnostic test of model in which Jarque-Bera test of

normality, Breusch–Godfrey for serial correlation LM test, white test for heteroscedasticity, Ramsey RESET test for functional form are performed. The parenthesis P values of all test confirm the non-stationarity of these test because it is higher than 5 percent. So empirical model is well defined because it passes all the diagnostic test. Figure 2 show the plot of CUSUM, CUSUM of square. Which is perform to confirm stability in the model. The line in the figure show stability of model at 5% significance level and there is no sign of instability in the model.

FIGURE 2

Plot of the Cumulative Sum of Recursive Residuals and Squares

Recursive Residuals

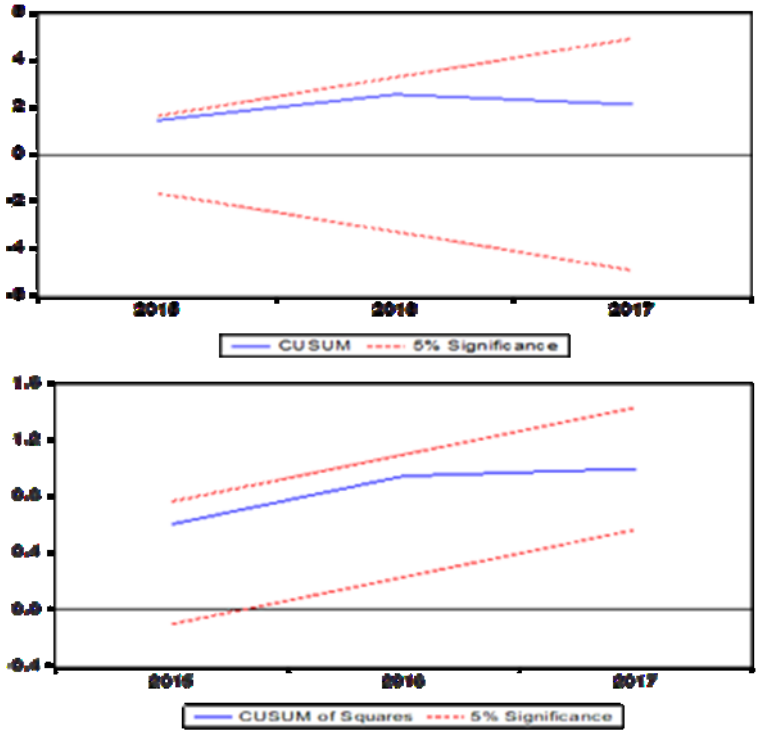

Table 6 shows short run results. The error correction coefficient indicates how rapidly the variables return to long run equilibrium after a shock, it has negative sign and it is statistically significant to confirm that a long run equilibrium can be achieved. The coefficient value of -0.26 for

equation (3) indicates that previous period level of disequilibrium corrects by system with 26% after each year. This proposed a long run stable affiliation among variables. This showed that both independents and growth are affecting. The coefficient value 0.26 of ECT proposes a comparatively fast rate of adjustment procedure to restore equilibrium in the dynamic model following a disturbance.

TABLE 6

Short run Results

Variable	coefficient	Std. Error	t-statistic	Probability
lnGDPt-1	-0.430721***	0.069522	-6.195475	0.0085
lnODAt-1	-0.059402***	0.002352	-25.257827	0.0001
lnTRADt-1	-0.047487**	0.014262	-3.329631	0.0447
lnINVt-1	-0.074285***	0.010907	-6.810597	0.0065
lnEMPt-1	-0.040617	0.035463	-1.145340	0.3352
lnEDUt-1	-0.307011	0.136373	-2.251264	0.1098
ECTt-1	-0.260862**	0.021209	-12.299646	0.0012

Note: ***, and ** denote significant levels at 1% and 5%, respectively.

Following the results in Table 6, coefficient value of variable ODA finds positively related to the economic growth but one-year lag value shows the negative impact of ODA but statistically both these values are significant. The coefficient value of trade openness found negatively linked to the economic growth but statistically significant at 1% and one year lagged value at 5%. Turning to the investment it also finds negatively related to the economic growth of Pakistan in short run but statistically significant at 1%. The coefficient value of employment variable is found positive but one year lagged value is negatively impacted and both the values are find statistically insignificant. The education variable is also negatively impacted in short run and one year lagged value is also found statistically insignificant. Therefore, it can be concluded that ODA is positively related to the economic growth in short run but one year lagged value shows the negative impact and all the variables of trade openness, investment, education and employment found negatively associated to economic growth of Pakistan in short run.

TABLE 7

ARDL Long Run Results

Variable	Coefficient	Std. Error	t-statistic	Probability
lnODAt	0.702069***	0.058127	12.078237	0.0012
lnTRADt	-0.112158	0.085104	-1.317891	0.2791
lnINVt	-0.880670***	0.115289	-7.638824	0.0047
lnEMPt	1.700665***	0.023221	73.237502	0.0000
lnEDUt	7.076305***	0.367278	19.266901	0.0003
C	22.370868***	0.628380	35.600874	0.0000

Note: ***, and ** denote significant levels at 1% and 5%, respectively.

The result on the long run associations of lnODA, lnTRAD, lnINV, lnEMP and lnEDU are demonstrated in the Table 7. lnODA is found positive also statistically significant value of coefficient of 0.70 at 1% level, signifies that 1% increase in lnODA brings 0.70% in GDP growth of Pakistan. The results show the dissimilar effect of ODA by Sothan (2018), Moyo and Tsakata (2017) and Herzer and Grimm (2012) but similar effect with Yiew and Lau (2018), Juselius et al. (2014), Karras (2006) and Hye et al. (2010). The positive influence of Official Development Assistance (ODA) on the economic growth in Pakistan can be attributed to the strategic allocation of foreign aid in key sectors such as infrastructure, healthcare, and education. These sectors generate multiplier effects that spread throughout the economy. Over the course of time, these investments most certainly enhanced productivity and the quality of life, thereby playing a role in the continuous growth of the economy. In addition, implementing efficient management of aid allocation, such as giving priority to projects with significant social benefits and encouraging collaborations with international organizations could have improved the effectiveness of Official Development Assistance (ODA).

The empirical results show that lnTRAD coefficient is negatively related to GDP growth and also statistically insignificant. This is due to the higher import bills of Pakistan and less numbers of export, trade openness is not performed effectively to the GDP growth. The results show the dissimilar association of trade with economic growth with

Trejos and Barboza (2015), Sothan (2018) and Bhattarai (2009) but corroborated with Kargbo and Sen (2014) and Shahbaz et al. (2008). The adverse effects of trade openness on economic growth in Pakistan may be attributed to the country's structural trade imbalances. These imbalances arise from the economy's heavy reliance on imports, particularly in important sectors such as energy and machinery, while struggling to diversify and compete worldwide in terms of exports. This disparity might worsen the existing deficit in the current account and restrict the anticipated positive effects of foreign trade.

The variable of investment ratio coefficient is also find negatively related to the economic growth. The coefficient value of -0.88 signify, 1% increase in investment brings 0.88% decrease in GDP growth of Pakistan. The results of the study show similar effect with Fenny (2005) and Loxley and Sackey (2008) but dissimilar with Sothan (2018), Herzer and Morrissey (2013) and Balde (2011). The negative relationship may be attributed to the inefficiencies present in Pakistan's investment climate, such as elevated levels of corruption, regulatory obstacles, and a dearth of investor trust. These obstacles could result in the inefficient deployment of resources and less-than-ideal investment choices, which in turn could hinder the potential for economic growth despite an increase in capital inflows.

The coefficient value of employment variable is 1.70 which is significant at 1%, showing that 1% increase in employment variable bring 1.70% increase in GDP growth. Which shows that the employment variable is contributed positively to economic growth. Results are similar to the study of Asteriou (2009) and Young and Sheehan (2014). The reason behind the good impact of employment is most likely the significant contribution of Pakistan's workforce to productive industries, such as agriculture and services, where more labor participation directly results in improved output. As the labor markets expand and incorporate additional people, the overall production capacity of the economy grows, leading to economic growth.

Education is also positively related to the GDP growth and it is significant at 1%. The coefficient value of 7.07 demonstrates the 1% increase in lnEDU brings 7.07 increase GDP growth of Pakistan. Results shows the similar positive effect of education like Nwaogu and Ryan

(2015), Fayissa and El-Kaissy (1999). Education has a positive effect on boosting productivity and promoting innovation by emphasizing the important role of human capital. Pakistan's enhancement of education access and quality is likely to have resulted in increased labor efficiency, innovation, and capacity to embrace new technology. These factors are crucial for driving long-term economic growth.

V. CONCLUSIONS AND POLICY RECOMMENDATIONS

Official development assistance considered as one of the highly importance source of growth and development in aid receiving countries. This paper proposed an effort to find the impact of different economic growth indicators like investment, trade openness, education, employment and specially ODA that how these indicators impacted the short run and long run GDP growth of Pakistan. Based on the data from WDI, ODA inflows increased in Pakistan recently and record highest of 3.7 billion dollar in 2015. Pakistan receives significance amount of foreign assistance through different channels in form of aid, grant and loans. The government of Pakistan still efforts to organize more inflows of foreign through different agreements for the wellbeing of Pakistan. However, it is not discovered till date that either foreign aid is prominently used in Pakistan to promote growth. So, this an effort to observe the growth impact of ODA on Pakistan with purpose to fill the existing gap in literature. The study hypothesized foreign inflows have significant contribution in economic sustainability of Pakistan because economy is seemed to have been dependent on external inflows approximately from its partition as well from five decades since the development assistance committee create the ODA for development in developing countries. The time period of 1985-2017 and ARDL estimation technique is used in this study. Different appropriate econometric techniques are engaged in this study to concede out the analysis. The data for the variables in the study is gathered from world development indicator.

The main drive for this attempt is to estimate the short and long run effect on economic growth of Pakistan by ODA. Most variables are found positively correlated to the economic growth but all of the variables found negatively related in long and in short run, respectively. The statistically significant value of ODA at 1% in long run and short run

is found positively related with the long run economic growth but one year lagged value show the negative impact of ODA in short run. Openness and investment are also the basic indicators of GDP but they found negatively associated with the economic growth of Pakistan in both the long and short time period. The variable of investment in found statistically significant but trade openness variables are insignificant. Employment is found highly significant statistically and impacted positively on the GDP growth in long term but one year lagged value in short run implies the negative association of employment with the GDP growth of Pakistan. Education variables found significant statistically and positively associated to the growth in long time period with the higher coefficient value in the model indicating a dominant role but short run values found insignificant and negatively linked with the economic growth.

The study findings emphasize various crucial domains for policy action in Pakistan. Initially, the favorable and noteworthy influence of Official Development Assistance (ODA) implies that persistently attracting and efficiently using foreign aid could boost economic expansion, particularly by concentrating on areas where aid optimizes gains, such as infrastructure and education. While trade openness may not have a big impact on your model, it is nevertheless important to carefully foster it by improving trade logistics, decreasing tariff barriers, and strengthening export competitiveness. The inverse correlation between investment and the need for structural reforms indicates the necessity of enhancing the business environment and optimizing investment effectiveness. This can be achieved by measures like streamlining administrative procedures and fostering transparency. The robust and beneficial influence of employment highlights the need of generating jobs through enhancing skills and implementing reforms in the labor market. Similarly, the substantial influence of education underscores the necessity of ongoing investment in high-quality education at every level to promote sustainable growth. Strategically crafted policies that are based on reason and designed by professionals can effectively promote sustainable development in these specific areas.

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