Fiscal Decentralization and Economic Growth in South Asian Countries

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Abstract

Fiscal decentralization in south Asian region is taken up as tool to settle economic inefficiencies. The reliance of present study is to locate for the fact that either it is true in case of such economies. To do so, non-stationary panel data analyses was used for the period from 1990 to 2016. Empirical findings backed at panel pooled mean group of Auto Regressive Distributed Lag came along with the findings that expenditure and revenue decentralization had significant positive and negative effects on economic growth. Similarly, gross fixed capital formation and foreign direct investment were found to have significant positive effect on the economic growth of selected South Asian economies. For short run, the diagnostics showed positive follow-ups of economic growth in response to education decentralization, however, revenue decentralization was traced for negative spell-outs on economic growth. Policy implications are underlined for increasing revenue decentralization for meeting the goal of economic growth.

Keywords: fiscal decentralization, South Asia region, expenditure decentralization, revenue decentralization, auto regressive distributed lag.

1. Introduction

1.1 The Contextual of Study

Fiscal decentralization is practiced for macroeconomic stability. The positive outcomes of such policy norms are evident among China, Russia, Asia, Latin America, and Africa. In view of Bahl and Linn (1992) and Richard and Christine (1993), fiscal decentralization enhances working efficiency of public sector and leads to gain economic growth. Utilization of resources done on equality promises economic growth. Fiscal

decentralization addresses macroeconomic aspects. It is a transfer of responsibilities to the lower positioned government bodies, (Rondinelli, 1981; Thiessen, 2003; Akai & Sakata, 2002), and to gain public sector efficiency (Richard & Christine, 1993). Fundamentally, there are two assumptions that clarify the perchance favors of fiscal decentralization. It creates mechanism of competition among subnational government bodies to raise their performance and also acts a curator to achieve macroeconomic efficacy (Tiebout, 1956; Bilin, 2005). Fiscal decentralization is a subject matter embedded with a potential of materializing economic challenges and a guiding principle to overcome economic failures. However, needful resource allocation can be achieved if government authorities are stronger with appropriate width of flexible available resources (Richard & Christine, 1993).

The World Bank Report (2016) recites that; economies of South Asian countries have grown at 6.2% to 7.0% within 2013 to 2016. However, developing economies of the world have had a growth mark of 1% to 3%. Given that most of the countries benefited from low petroleum prices, such economic gains are also got off-settled from severe energy crisis altogether with political instability. Meanwhile, Fiscal decentralization is spotted to discourse base of economic growth. However, the matter is still debatable of how might be the fallouts of fiscal decentralization − particularly in South Asian region.

1.2 Fiscal Decentralization and South Asian Countries: A Trend

Over the last decades, South Asian countries are recorded as fastest growing region in the world (World Bank Report, 2016). The main pillar that unlocks their economic growth in nonetheless investment. These countries understand benefiting their labor force as requisites of improving their economic stature. For particular in Sri Lanka, India, and Bangladesh, quality of infrastructure in health and education has significantly improved. In case of Pakistan, the situations are found trudging and precarious, akin to Nepal. However, among the selected seven countries (Selected countries are;1, Pakistan 2, Nepal 3, India 4, Bangladesh 5, Sri Lanka 6, Bhutan 7, Maldives), India is found to lead in this respect and for instance in the group of G20 countries.

Table 1 represents that GDP growth of Maldives is the highest within the range of countries and Pakistan is looked for the least value of GDP growth recorded during given time period. Of Nepal, GDP growth is not that away from that of Pakistan. However, Bhutan has second highest rank, followed by India, Sri Lanka, and Bangladesh. On the contrary, highest GDP per capital is recorded for Bhutan with Pakistan at the least figure of the same. Inflation figures are analogues in case of Pakistan and Sri Lanka. Maldives is recorded for least inflation rate. Importantly, Nepal portrays highest labor force followed by Bangladesh and Maldives. In case of rest, available labor force in Pakistan is at the bottom line.

Table 1: An Economic View of South Asian Countries During 1990 To 2014

Countries	Inflation Rate %	Labor Force (% of GDP)	GDP Growth	GDP Per Capita
India	6.84	58.76	6.51	4.75
Nepal	8.85	84.76	4.46	2.67
Pakistan	10.60	51.78	4.06	1.71
Bangladesh	5.72	71.91	5.33	3.53
Sri Lanka	10.12	56.20	5.44	4.55
Maldives	3.24	58.27	8.36	3.49
Bhutan	6.90	68.16	6.75	5.18

Table 2 shows the population and budgetary allocation of the South Asian countries. By the fiscal year 2016, India has highest budget and population among the rest. Maldives has low population and also low budget allocation during 2015-16 among countries of South Asia.

Table 2: Populations and Budget (2015-16)

Countries	Population (2016) In Thousands	Budget (2015-16) (Billions US dollars)
Pakistan	193,203	16.8
India	1,378,665	611
Nepal	28,983	10
Bangladesh	162,952	38
Bhutan	798	9.3
Sri Lanka	21,203	80.6
Maldives	417	1.7

The extent of fiscal decentralization in South Asian countries, it can be viewed with multiple lenses. The averaged revenue and expenditure part of fiscal decentralization is summarized in Table 3. India is imparted for maximum decentralization of revenue and expenditure as well as Maldives unlike Bhutan and Sri Lanka. Pakistan is accounted for least revenue decentralization and second lowest expenditure decentralization after Bhutan, followed by Nepal. After view of macroeconomic figures of South Asian countries analogous to beneficial outperforms of fiscal decentralization, the general determination of the study is to discover effects of fiscal decentralization on economic growth in South Asian countries from period of 1990 to 2014.

Table 3: Fiscal Decentralization and South Asian Countries from 1990 to 2014)

Countries	Revenue Decentralization	Expenditure Decentralization
India	33.04	45.48
Nepal	2.91	2.44
Pakistan	1.10	2.92
Bangladesh	3.03	3.77
Sri Lanka	4.97	3.46
Maldives	5.33	5.33
Bhutan	1.75	3.27

Fiscal decentralization is of due significance to economic growth and particularly at South Asia, therefore, after view of macroeconomic figures analogous to beneficial outperforms of fiscal decentralization, the general determination/objective of the study is to discover effects of fiscal decentralization on economic growth in South Asian countries. The study comprises Section 1 of Introduction and Section 2 that is to briefly illustrate an Empirical Review. Section 3 describes the Analytical Frame Work. Empirical Results are exposed in Section 4 and last Section is written for the Conclusion and Policy Recommendation.

2. An Empirical Review

Studies related to the empirical review of fiscal decentralization and economic growth are diverse however concluded for different results on account of direction and intensity of effects.

Xie et al. (1999) analyzed fiscal decentralization and growth. This study showed long run association within the decentralization and economic growth for U.S. They measured the decentralization at three level (local, state, and federal). They showed that increase in federal level spending indicates the lower level of decentralization and rise in the local level spending leads to increase the decentralization. They suggested that excess decentralization is harmful to growth.

Remy (1995) suggested that fiscal decentralization increases the growth rate at developed countries but not for developing or poor. To Remy (1995), economic growth is moderately promoted on account of decentralization − specifically, at developing or poor countries. Gong and Zou (2003), Martinez et al. (2014), Shen et al. (2012) and Shen et al. (2014), Lin and Liu (2000) investigated the fiscal decentralization and economic growth at the midterm of 1980's of China and found that decentralization have progressive impact on the growth rate of China, contrary to Ding et al. (2019).

Habibi et al. (2003) examined Argentina's provincial government decentralization in the perspective of expenditure. The results explored substantial and converse connection to infant mortality rate. Moreover, looked that higher income (OCED) countries are more decentralization then others.

Iimi (2004) showed positive relationship of fiscal decentralization and growth. He recommended that decentralization should be promoted in spite of centralization and especially on part of local governments' expenditure that promotes the growth rate.

Meloche et al. (2004) observed fiscal decentralization to size of public sector. Findings suggested no significant connection among economic growth and spending ratio of net grants (Davoodi and Zou (1998) had dissimilar results for developing countries). Similarly, Ebel and Yilmaz (2002) clarified that non tax as well as local tax revenue autonomy exhibit unbiased positive effects onto the growth.

Bilin (2005) exposed significant positive effect on economic growth. They estimated the panel data, within 1975 to 2001, at 17 OECD countries. The results showed significant effects of expenditure decentralization which reduce the public debt however, tax decentralization came along insignificant results and thereby show vertical government fiscal imbalances.

Malik et al. (2006) explained fiscal decentralization and economic growth for case study of Pakistan. They came up with mixed results because some variable of decentralization showed positive impact but some showed negative impact.

Hammond and Tosun. (2009) captured region of US employment, growth, and population. Study found significant positive employment and metropolitan population influence by the government spending per square mile. However, insignificant effect to that of non-metropolitan countries.

Bodman et al. (2009) used the Bayesian Model averaging approach to investigate the fiscal decentralization and economic growth. They found no evidence of relationship within fiscal decentralization and economic growth. Meanwhile, intraregional decentralization within the system of intergovernmental relations were also found in slowing down the economic growth (Yushkov, 2015).

Faridi (2011) investigated positive relationship of fiscal decentralization and economic growth in Pakistan, akin to Asghar et al. (2016) and Sun et al. (2017). Some scholar's investigated fiscal decentralization and economic growth for cross countries analysis or panel data. Davoodi and Zou (1998) investigated fiscal decentralization and economic growth for the analysis of 46 countries. They found inverse relationship between decentralization and economic growth in the developing countries but positive relationship for developed countries (Thiessen, 2003).

Zhang and Zou (1998) analyzed fiscal decentralization, public spending and economic growth for China. The outcome showed that public spending between local and central government promote economic growth. Iimi (2005) used the panel data for his investigation and found the positive impact (Ebel and Yilmaz, 2002).

At recent, He and Sun (2018) in-captured China since focused for the fiscal decentralization. Resting on provincial level panel data for the range of 1995-2010 and worked with least squares dummy variables and generalized method of moments, the results did show mixed effects of revenue and expenditure decentralization, however on physical capital investment. Similarly, Ganaie et al., (2018) explored same mixed results, however, on economic growth of India.

3. Analytical Framework

3.1 Theoretical Modeling and Model Specification

The present study is based on the Solow Growth Theory (Solow, 1956). Following the assumptions of Solow Growth Model, we construct the theoretical model to investigate the relationship between fiscal decentralization and economic growth. The Cobb-Douglas production function is considered.

Following the Solow Growth Model, the production function has two inputs; labor and capital. By Solow Growth Model, Cobb-Douglas Production Function is:

$$Y_t = A_t K_t^\alpha L_t^{1-\alpha} \tag{1}$$

Y_t = real GDP, K_t = physical stock of capital.

L_t = labor stock, A_t level of technology.

Following the assumptions of Solow Growth theory the production function takes from as

$$Y_t = f(k_t^\alpha) \times A_t \tag{2}$$

Where Y_t = output-per worker, k_t = capital per-worker.

The fundamental equation of the Solow Growth model is given hereunder.

$$\dot{\kappa}_t = s_t^k \kappa_t^\alpha - (n+d)\kappa_t \tag{3}$$

When actual investment is equal to the break-even investment, κ_t becomes zero.

$$s_t^k \kappa_t^\alpha - (n+d)\kappa_t = 0$$

$$s_t^k \kappa_t^\alpha = (n+d)\kappa_t$$

$$\frac{\kappa_t}{\kappa_t^\alpha} = \frac{s_t^k}{(n+d)}$$

$$\kappa_t^{1-\alpha} = \frac{s_t^\kappa}{(n+d)} \text{ and}$$

$$\kappa_t = \left[\frac{s_t^\kappa}{(n+d)}\right]^{\frac{1}{1-\alpha}} \tag{4}$$

Substitute equation [4] in equation [2]

$$y_t = \left[\left(\frac{s_t^\kappa}{(n+d)}\right)^{\frac{1}{1-\alpha}}\right]^\alpha \tag{5}$$

Now, we have extended the Solow Growth Model in line with Zhang and Zou (1998) by introducing fiscal decentralization as an additional input factor in the production function.

$$y_t = \kappa_t^\alpha \times FDC_t^\beta \times A_t \qquad [6]$$

Now the fundamental equation of Solow Growth model takes the form

$$\dot{FDC}_t = s_t^F FDC_t^\beta - (n+d)FDC_t \qquad [7]$$

Where s_t^F is the fraction of output used as fiscal decentralization.

If $FDC_t^\beta = 0$, then steady state equation is

$$s_t^F FDC_t^\beta - (n+d)FDC_t = 0$$

$$\frac{FDC_t}{FDC_t^\beta} = \left[\frac{s_t^F}{(n+d)} \right]$$

$$\frac{FDC_t}{FDC_t^\beta} = \left[\frac{s_t^F}{(n+d)} \right]^{\frac{1}{1-\beta}} \qquad [8]$$

Comparing the equation [5] and [6], the extended Solow Model takes the form.

$$y_t = \left[\left\{ \frac{s_t^F}{(n+d)} \right\}^{\frac{1}{1-\alpha}} \right]^\alpha \times \left[\left\{ \frac{s_t^F}{(n+d)} \right\}^{\frac{1}{1-\beta}} \right]^\beta \times A_t \qquad [9]$$

Taking natural log both sides of equation [9] and solving the equations, we get;

$$\ln y_t = \ln \left[\left\{ \frac{s_t^F}{(n+d)} \right\}^{\frac{1}{1-\alpha}} \right]^\alpha \times \ln \left[\left\{ \frac{s_t^F}{(n+d)} \right\}^{\frac{1}{1-\beta}} \right]^\beta \times \ln A_t$$

$$\ln y_t = -\left(\frac{\alpha}{1-\alpha} + \frac{\beta}{1-\beta} \right) \ln(n+d) + \frac{\alpha}{1-\alpha} \ln s_t^\kappa + \frac{\beta}{1-\beta} \ln s_t^\kappa + \Pi Z_t$$

$$\ln y_t \beta_0 + \beta_1 \ln s_t^\kappa + \beta_2 \ln s_t^F \Pi Z_t + \mu_t \qquad [10]$$

where

$$\beta_0 = -\left(\frac{\alpha}{1-\alpha} + \frac{\beta}{1-\beta} \right) \ln(n+d), \beta_1 = \frac{\alpha}{1-\alpha}, \beta_2 = \frac{\beta}{1-\beta} \text{ and } \ln A_t = \Pi Z_t$$

Z_t represents the vectors of variables that determine the per capita growth and Π shows the parameter of vectors.

Equation [10] indicates the econometric specification of augmented Solow Growth Model. For further classification, two variables for Fiscal decentralization i.e. expenditure decentralization and Revenue decentralization are used. The control variables like literacy rate, foreign direct investment and trade openness are including in Z.

The specification form of our Model is given below;

$$GDPPC = f(GFCF, EDC, RDC, LIT, FDI, OPP) \tag{11}$$

The descriptions and measurement of the variables in the respective models are briefly elaborated in Table 4.

Table 4: Description and Measurement of Variables

Variables	Description	Measurement	Hypothetical Relationship
GDP Per Capita	(GDPPC)	GDP Divided by total Labor Force.	Positive
Gross Fixed Capital	(GFCF)	Per Capita Gross Fixed Capital Formation.	
Literacy Rate	(LIT)	Number of Literate (15 year and above).	Positive
Expenditure Decentralization	(EDC)	Ratio of Sub-national Expenditure to Sum of Total Government Expenditure (provincial and local).	Negative
Revenue Decentralization	(RDC)	Ratio of Sub-national Revenue to Sum of Total Government Revenue (provincial and local).	Positive
Foreign Direct Investment	(FDI)	Net Inflow of Investment in Reporting Economy.	Positive
Trade Openness	(OPP)	Sum of export and import as a percentage of GDP.	Negative

3.2 Source of Data and Methodology

The data from 1990 to 2016 is collected from the Economic Survey of Pakistan. Following Saif-alyousfi, Md-rus, and Mohd (2018) and Saif-Alyousfi, Saha, and Md-Rus (2018), data for the macroeconomic factors are collected from the World Bank Economic and social Data Base, International Monetary Fund, Government Finance Statistics, and World Development Indicator (WDI), respectively. The different economic survey of South Asian countries are also used.

3.3 Econometric Estimation

Step-wise econometric estimations are detailed below:

3.3.1 Unit Root Analyses

The growth model for South Asian countries given in [11] is to be checked for stationarity for all the variables. Varied unit root tests are used to detect order of integration on each variable. The test of Levin, Lin, and Chu (2002) is begun with ADF equation.

$$\Delta y_{it} = \beta_0 y_{it-1} + \sum_{p=1}^{ki} \beta_{1ip} \Delta y_{it-p} + k_{it}\chi + \mu_{it} \qquad [12]$$

$\beta_0 = k - 1$, that involves common process of unit root existence with allowance of differing lag order in cross sections of panel. The Null hypothesis (H_0) depicts non-stationarity against the Alternate Hypothesis (H_1) of stationary series.

In case of Im, Pesaran, and Shin ((IPS), 2003), panel unit root analyses involves separate ADF in each cross section of panel to give panel specific statistics by measuring averaged t-statistic of ADF statistics of $\bar{t}_{NT}$. With the lag order of zero in the equation of ADF, IPS (2003) simulate the critical values in case of each cross section and that of the length of respective series as well as for the equations that embed constant or constant with time trend. For the nonzero lags, the IPS (2003) shows the follow up of standard normal distribution for $\bar{t}_{NT}$ that is given in [13].

$$X_{\bar{t}_{NT}} = \frac{\sqrt{N}\left[\bar{t}_{NT} - N^{-1}\sum_{i=1}^{N} E(\bar{t}_{it}(P_i))\right]}{N^{-1}\sum_{i=1}^{N} Var(\bar{t}_{it}(P_i))} \qquad [13]$$

Where, $E(\bar{t}_{it}(P_i))$ and $Var(\bar{t}_{it}(P_i))$ are mean and the variances of ADF regression of t-statistic those are rendered by IPS (2003) in respect of numerous lags, the series lengths, and assumption based on different test equations.

3.3.2 Pooled mean group auto regressive distributed lag model

If mixed orders of integration at I(0) and I(1) are came up on the board, Pooled Mean Group Auto Regressive Distributed Lag (PMG/ARDL) approach is to be applied to find out long run and short run parameters.

3.3.3 Bound Test

Within the procedure, F-statistics obtained from Wald test are to determine whether long run relationship is fixed. It is done by the H_0 of no cointegration and $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$ against H_1 of cointegration where $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq 0$. Finding out F-statistics, lag length selection is done on Akaike Information Criteria (AIC) and Schawrtz Bayesian Criteria (SBC). Due to unavailable upper and lower bound prescribed values, significant Wald Test F-statistic is considered to sufficiently evident for the restoration of cointegration.

The regression based on ARDL technique of estimating long run relationship is adopted by Pesaran and Shin (1999) and is written as:

$$Y_t = \beta_0 + \beta_{1t} + \sum_{i=1}^{r} \phi_i Y_{t-1} + \delta' X_t + \sum_{i=0}^{s-1} \delta_i \Delta X_{t-1} + u_t$$

[14]

ΔXt = R1ΔXt-1 + R2ΔXt-2 +…………+RiΔXt-i +εt   [15]

Main purpose is to find the relationship between fiscal decentralization and economic growth for South Asian countries. The Unrestricted Error Correction Model (UECM) of ARDL model for short run and long run is given below:

$$GDPPC_{it} = \beta_0 + \beta_1 GDPPC_{it-1} + \beta_2 GFCF_{it-1} + \beta_3 LIT_{it-1} + \beta_4 EDC_{it-1} + \beta_5 RDC_{it-1} + \beta_6 FDI_{it-1} \beta_7 OPP_{it-1} +$$

$$\sum_{i=1}^{p_1} \lambda_1 \Delta GDPPC_{it-i} + \sum_{i=1}^{p_2} \lambda_2 \Delta GFCF_{it-i} + \sum_{i=1}^{p_3} \lambda_3 \Delta LIT_{it-i} + \sum_{i=1}^{p_4} \lambda_4 \Delta EDC_{it-i} +$$

$$\sum_{i=1}^{p_5} \lambda_5 \Delta RDC_{it-i} + \sum_{i=1}^{p_6} \lambda_6 \Delta FDI_{it-i} + \sum_{i=1}^{p_7} \lambda_7 \Delta OPP_{it-i} + \mu_{it}$$

[16]

Where β_i and λ_i are long run and short run coefficients and Δ is a sign of first difference. p_i are the ARDL order where $i = (1 \text{ to } 7)$.

d. Estimation of Long Run and Short Run Coefficients

After cointegration is found, models for estimating long run and short run parameters are given in [25] and [26].

$$GDPPC = \beta_0 + \sum_{i=1}^{p_1} \lambda_1 GDPPC_{it-i} + \sum_{i=1}^{p_2} \lambda_2 GFCF_{it-i} + \sum_{i=1}^{p_3} \lambda_3 LIT_{it-i} + \sum_{i=1}^{p_4} \lambda_4 EDC_{it-i}$$

$$\sum_{i=1}^{p_5} \lambda_5 RDC_{it-i} + \sum_{i=1}^{p_6} \lambda_6 FDI_{it-i} + \sum_{i=1}^{p_7} \lambda_7 OPP_{it-i} + \mu_{it}$$

[17]

$$GDPPC = \beta_0 + \sum_{i=1}^{p_1} \lambda_1 \Delta GDPPC_{it-i} + \sum_{i=1}^{p_2} \lambda_2 \Delta GFCF_{it-i} + \sum_{i=1}^{p_3} \lambda_3 \Delta LIT_{it-i} + \sum_{i=1}^{p_4} \lambda_4 \Delta EDC_{it-i}$$

$$\sum_{i=1}^{p_5} \lambda_5 \Delta RDC_{it-i} + \sum_{i=1}^{p_6} \lambda_6 \Delta FDI_{it-i} + \sum_{i=1}^{p_7} \lambda_7 \Delta OPP_{it-i} + \chi ECM_{it-1} + \mu_{it}$$

[18]

The β_0 are the intercepts with λ_i that show long run and short run coefficients in respective Equations in country i at time t. χ is the coefficient of Error correction term and error term is shown as μ.

4. Estimation Results

4.1 Statistical Analysis

Central objective of the study is of sighting relationship between fiscal decentralization and economic growth in South Asia. Table 5 shows that mean value of GDPPC of South Asian countries is 3.70 and standard deviation is 2.98 and mean value of EDC is 9.26 and standard deviation is 14.85 that indicates higher dispersion. The mean value of FDI is 1.51 and its standard deviation is 2.34. The RDC has mean value of 7.16 with standard

deviation of 10.69. The mean values of GFCF, OPP, and LIT are 26.80, 70.73, and 60.09, respectively that exhibit wider dispersion since standard deviation are diverse from mean value. All variables are positively skewed and Skewness statistics of the model shows satisfactory state. The central peak of the variables show wider peak and thicker tail i.e. Leptokurtic, except LIT. Therefore, it confirms that much of the values are concentrated around mean.

Table 5: Descriptive Statistics

	GDPPC	GFCF	LIT	EDC	RDC	FDI	OPP
Mean	3.70	26.80	60.09	9.26	7.16	1.51	70.73
Median	3.47	23.82	55.66	3.47	3.02	0.82	58.33
Maximum	16.31	68.02	96.32	47.58	35.76	17.29	209.00
Minimum	-11.17	12.52	27.90	1.62	0.32	-0.19	-35.27
Std. Dev.	2.98	10.88	18.52	14.85	10.69	2.34	45.62
Skewness	0.23	1.79	0.42	2.03	1.98	3.75	1.31
Kurtosis	8.84	6.37	2.11	5.17	5.06	20.03	4.23
Jarque-Bera	250.50	176.10	10.98	155.01	145.64	2523.62	61.25
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The correlation matrixes are expressed in Table 6. It is found no problem of multicollinearity, except in case of EDC and RDC.

Table 6: Correlation Matrix

	GDPPC	OPP	EDC	GFCF	RDC	LIT	FDI
GDPPC	1						
OPP	0.11	1					
EDC	0.16	-0.02	1				
GFCF	0.23	0.38	0.01	1			
RDC	0.16	-0.01	0.99	-0.02	1		
LIT	0.10	0.66	-0.02	0.13	0.01	1	
FDI	0.11	0.66	-0.05	0.05	-0.05	0.54	1

Furthermore, entire variables exhibit weak correlation among each other excluding OPP, LIT, and FDI, where state of correlation is moderate.

4.2 Unit root analyses

Panel unit root tests results are given in Table 7. The results of these tests show that variables are stationarity at level exclusive of LIT that is integrated of order 1. So these results enable to apply ARDL under pooled mean group method.

539

Table 7: Unit Root Analyses

	Level		1st Difference		Conclusion
Unit Root Test (Based on Levin, Lin, and Chu (2002))					
Variables	Constant	Constant with Trend	Constant	Constant with Trend	
GDDPC	-4.49*	-4.39*	-	-	I(0)
GFCF	-1.61**	0.63	-	-	I(0)
LIT	4.92	4.92	-2.43**	-3.88**	I(1)
EDC	-1.26***	-0.48	-	-	I(0)
RDC	-0.85	-0.85**	-	-	I(0)
FDI	-1.26***	-2.04**	-	-	I(0)
OPP	-4.71*	-8.54*	-	-	I(0)
Unit Root Test (Based on IPS (2003))					
GDDPC	-4.99*	-4.37*	-	-	I(0)
GFCF	-1.37***	-0.45	-	-	I(0)
LIT	1.48	1.41	-4.14*	-2.73*	I(1)
EDC	-2.11*	-1.08	-	-	I(0)
RDC	-1.99**	-3.66*	-	-	I(0)
FDI	-1.87**	-3.10*	-	-	I(0)
OPP	-4.19*	-5.94	-	-	I(0)

Note: *, **, & *** show significance at 1, 5, & 10 percent, respectively.

4.3 Long run and short run parameters

Computed significant Wald Test F-statistic is 300.08 that confirms of the long run cointegration.

To determine the relationship of fiscal decentralization and economic growth, we used the panel PMG/ARDL technique for estimation of short run and long run coefficients' results. The long run results are given in Table 8.

Table 8: Long Run Panel PMG/ARDL Results GDPPC as Dependent Variable

Variables	Coefficient	Standard Error	*t*-Statistic	Prob.
GFCF	0.44*	0.03	16.56	0.00
LIT	0.80*	0.01	6.00	0.00
EDC	-1.83*	0.13	13.96	0.00
RDC	2.04*	0.13	15.74	0.00
FDI	0.23***	0.13	1.79	0.07
OPP	-0.03**	0.00	-3.28	0.01

Note: *, **, & *** show significance at 1, 5, & 10 percent, respectively.

Dissimilar however significant results are found on fiscal decentralization. Expenditure component has negative but revenue part is found for positive impact on economic growth (Malik et al., 2006; Zhang & Zou, 1998). Results follow the findings of Lin and Liu (2000), Ebel and Yilmaz (2002), Akai and Sakata (2002), and Thiessen (2003) that economic growth is influenced by fiscal decentralization.

The results on revenue decentralization, contrasting to Ganaie et al. (2018), are aligned to Thiessen (2003). Such findings indicate that it promotes the economic growth because the local government produces public goods more efficiently due to the competition of the local governments (Brennan & Buchanan, 1980). So government revenue is invested at productive place.

EDC is negatively but significantly related to economic growth, similar to earlier findings of Davoodi and Zou (1998). Long run coefficient on GFCF indicates that relationship between GDPPC and GFCF is positive and significant, akin to Chaudhry et al. (2013). The results on LIT clarify positive and highly significant effect on economic growth, similar to Faridi (2011).

FDI is positively related to economic growth in South Asian countries. FDI fills the deficits (budgetary and trade) of the South Asian countries. These gaps are of savings, foreign exchange, government revenues, and managerial skills. Hence, FDI promotes economic growth for these developing countries. OPP and economic growth are negatively related, analogue to Remy (1995), but significant.

It has been observed that South Asian countries are developing economies and their exports are less than import thus trade balances are negative. Therefore, OPP is inversely related to economic growth. These countries import consumer products which destroy their local industry, hinder economic growth, and are also of high cost.

Table 9 shows the short run estimation of the model. The coefficient of ECT that shows the speed of adjustment is valued at -0.85 (though correctly signed however, insignificant). It indicates of no long run adjustment towards equilibrium path.

Table 9: Short Run Panel PMG/ARDL Results GDPPC as Dependent Variable

Variables	Coefficient	Standard Error	*t*-Statistic	Prob.
ECT	-0.85	0.59	-1.44	0.16
D(GDPPC(-1))	0.19	0.36	0.54	0.59
D(GFCF)	-0.13	0.22	-0.59	0.55
D(GFCF(-1))	-0.06	0.19	-0.30	0.76
D(LIT)	0.13**	0.07	1.84	0.07
D(LIT(-1))	0.08	0.22	0.38	0.71
D(EDC)	1.51*	0.48	3.13	0.00
D(EDC(-1))	1.35	0.96	1.41	0.16
D(RDC)	-1.34	1.62	-0.83	0.41
D(RDC(-1))	-1.56	1.81	-0.86	0.39
D(FDI)	0.03	0.47	0.07	0.95
D(FDI(-1))	0.08	0.59	0.14	0.89
D(OPP)	-0.02	0.06	-0.33	0.74
D(OPP(-1))	-0.05	0.04	-1.18	0.24
C	-1.23	1.40	-0.88	0.38

Note: * & ** show significance at 1 and 10 percent, respectively.

The coefficient of LIT and EDC are found significant at first difference. Long run result of EDC is opposite to short run thereby following the state of positive out spells on economic growth nevertheless in short run.

4.4 Country-Wise Short Run Parameters

The cross sectioned short run coefficients are given in Table 10. The coefficient value of Pakistan is 0.19 which shows divergence situation. The ECT coefficient of India is -0.27 that reflects the situation of convergence. Furthermore, it indicates that adjustment towards equilibrium path in the long run is with the speed of 27 percentage. The coefficient value of ECT at Bangladesh is -0.22 which shows that adjustment of disequilibrium is restored at the speed of 22 percentage points. ECT coefficient at Bhutan also explains the convergence situation toward the equilibrium path with 18 percentage points.

Table 10: Short Run Panel PMG/ARDL Results GDPPC as Dependent Variable

Variables	Pakistan	India	Bangladesh	Bhutan
ECT	0.19*	-0.27*	-0.22*	-0.18*
D(GDPPC(-1))	0.02**	0.11*	0.17*	-0.19*
D(EDC)	-1.41**	1.84*	0.19	2.19
D(EDC(-1)	-0.01	0.37*	-1.02*	3.51**
D(FDI)	1.03*	-2.37*	-0.03***	1.26*
D(FDI(-1))	0.09	-0.21	-0.67**	-0.48
D(GFCF)	0.29**	0.20*	0.89*	0.08*
D(GFCF(-1))	0.07	-0.60*	-0.24**	-0.09*
D(OPP)	-0.35*	0.05**	-0.00*	0.06*
D(OPP(-1))	-0.11*	-0.23*	-0.00*	-0.03*
D(LIT)	0.02	-0.22*	-0.02*	-0.28
D(LIT(-1))	0.43*	0.07*	0.06*	-0.12*
D(RDC)	0.31	-0.63*	2.56*	-1.29
D(RDC(-1))	2.05**	-0.63*	3.03**	-0.69
C	-0.38**	-0.49**	-0.49**	-1.51

(Note: *, **, & *** show significance at 1, 5, & 10 percent, respectively)

5. Conclusion and Policy Recommendation

The main objective of our study was to check impact of fiscal decentralization (taken as sub national expenditure and revenue) on economic growth of South Asian countries. Our study showed mixed but significant results i.e. revenue decentralization had positive impact but expenditure exhibited negative impact on economic growth. The results shows that Foreign Direct Investment, Gross Fixed Capital Formation and Literacy rate have significant positive effect on economic growth. However, impact of trade openness is negative but significant towards that of economic growth. For future research prospect, economic growth can be checked against varied measurement of fiscal decentralization for robust results.

Study suggests policies options which are;

➢ The South Asian countries are to pay attention towards increasing productivity of human capital which may accumulate labor force and generate economic growth.

➢ These countries are import depending countries therefore should import capital goods and reduced the consumer products because these products destroy the local industry.

➢ The effective stream lining of fiscal decentralization is inevitable for South Asian countries because fiscal decentralization improves the adeptness of public sector nevertheless this, it is one of the major source of economic growth.

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