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The Role of Stock Exchange and Public Spending on Economic growth in Selected SAARC Countries: A Panel data Analysis

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Abstract

The study empirically analyzes the impacts of public spending and efficiency of stock market on economic growth in selected five SAARC countries using panel data from 1994 to 2018. Three unit root tests are applied to check the stationarity of the variables. Pedroni test, Kao-test and Maddala and Wu tests are used for testing co-integration which confirms long run relations in variables of the empirical model. FMOLS, DOLS and ARDLestimators are used toestimatelong run relationship. Market capitalization to GDP ratio shows worth of stock trading in the economy; higher value indicates higher ability to mobilize capital and diversification of risk which leads to growth.Government expenditure is one of the prime tools of fiscal policy which shows important role in achieving the goals of growth and stability in the economy in many developing countries. When there is rise in government expenses, it results in creation of jobs, provision of better infrastructure and improvement in services by government in the economy.

1. Introduction

Economic growth of a country is used to gauge the progress of any country. Classification of countries also depends upon economic growth. Keeping in view their circumstances and geographical conditions, all countries make a plan so that the target of economic growth may be achieved (Acemoglu, 2012; Denison, 2010; Kuznets, 1955). "Growth is a process by which output of the country increases over time" (Todaro, 1977). Many researchers of the world have discussed the concept and theories of economic growth. Classical school of thoughtrepresents the idea of economic growth on the basis of investment and production. Production process is associated with the factor of production, for example labor and capital stock. Classical paradigm focused on labor activity. Due to efficiency of labor, production increases and it results in increase in economic growth (Eltis, 2000). The followers of Neo classical school of thought say if there is a higher utilization of factors of production, it results in higher economic growth. The idea of technical progress was introduced by Solow (1957). He extended the model with technical progress along with other factors of production (Hoover, 1992).

Schumpeter (1934) presents the idea of economic growth and finds that creativity and innovation are the main forces of economic growth. Due to innovation and creativity, entrepreneur earns higher profit in the economy. The process of innovation is fulfilled with the help of efficient financial market (Hafer, 2013). Barro and Sala-i-Martin (2004) introduced a new idea to determine the economic growth and they say that, if there is improvement in human capital, it results in higher economic growth. If there exist free mobility of capital, foreign investment, technology and variety of institution, it will lead to economic growth in the economy. In the light of above mentioned views presented by different economists, one can realize the importance of economic growth. There exists influence of factors like human capital, natural resources, technical progress, financial institutions, public expenditure, monetary and fiscal strategy on economic growth (Bencivenga & Smith, 1991; Boyd & Smith, 1992; Jovanovic & Greenwood, 1990). The study of association among stock market, economic growth and public spending reached its climax during last decades. Both public spending and stock market are considered important in the economy (Arshad, Syed, & Shabbir, 2017; Badri & Sheshgelani, 2016; Hansen & King, 1996; Mhadhbi, 2014; Sghaier & Abida, 2013).

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Stock exchange is a market place where listed organizations gather to trade their stock and securities. In other words, stock markets are where government and industry can raise long-term capital and investors can purchase and sell securities. It has been observed that the rapid growth depends on the development of the financial market and the countries with developed stock markets enjoy robust economic growth (Beck & Levine, 2004). Stock exchange/market functions are likelisting of companies according to rules and regulations, monitoring of listed companies (As per Listing Regulations), control and surveillance of trading activities, publications and reviews on monthly basis etc.

Stock market also provides or increases the amount of financial resource available, as the stock market offers many opportunities for both creditors and civilians via the provision of multiple investment channels. Similarly, it provide financial information and projects relating to various financial assets available in the stock market, regarding information of the financial situation of companies, thus reducing the cost of access to such information in terms of effort, time and risk. Another responsibility of stock market is to provide liquidity for owners of various financial assets and to assist in the development of diverse methods of financing (short, medium and long term) for the projects.

The effectiveness of fiscal policy for achieving macroeconomic goals is major concern of the countries. Government expenditure is one of the prime tools of fiscal policy which shows important role in achieving the goals of growth and stability in the economy in many developing countries. Government expenditures and economic growth got popularity in late 1980's. They are still under discussion amongst the economist and researchers. The amount of money used by government to provide different facilities like, health, education, water and sanitation, law and order and energy to the people in the country is called government expenditures or public spending (Gumus & Mammadov, 2019; Mehmood, Raza, & Mureed, 2014; Muktdair-Al-Mukit, 2012). There is a controversy about the impact of increased public expenditures on economic growth. Keynesians are of the view that government expenditure plays an important role in output of the economy. The fiscal multiplier theory suggests that increase in government expenditure increases output of the economy. So, there exists optimistic impact of public expenditure on economic growth (Abdullah et al, 2009; Adu et al,2014; Cooray, 2009; Olurankinse & Alimi, 2014).

On the other side, some studies showed negative effects of public outlay on economic growth. There are three main reasons behind negative effect of government expenditure on output in the economy i.e. taxation, borrowing and unnecessary political interference. The burden of taxes on individuals and firms, existence of non-productive public expenditure due to political interference and reduction in credit facility for private sector due to government borrowing, lead to negative impact on output (Barro, 1991; Iheanacho, 2016; Majeed et al,2019).

The rest of this paper is structured as follows: Section 2 overview of selected SAARC countries. Section 3 surveys the empirical literature. Section 4 discusses the methodology used. Section 5 reports and illuminates the empiricalresults. Last section concludes the whole paper.

2. Historical Overview of SAARC Economies

South-Asian Association for Regional Cooperation (SAARC) was established among the seven nations i.e. Bangladesh, Pakistan, Maldives, India, Bhutan, Nepal and Sri Lanka in December 1985. Its object is to facilitate one another and to promote positive relations among the SAARC member countries (Jun, 2015). According to its charter, the main objectives of the association are;

i) To increase the speed of economic growth, enhance the cultural and social maturity and provide equal opportunities to all individuals in the countries.

ii) To promote group effort and reciprocal support in the social, economic, cultural, scientific and technical fields among the SAARC member nations.

Evidence from the history shows that most of the members of SAARC countries were allied under the British rule. India, Pakistan, Sri Lanka and Maldives got freedom from British Empire in late 40's.

It was analyzed that electoral/democratic and legal system exist in the SAARC countries. It was also observed that all the countries except Nepal, directly or indirectly, were ruled by the British Empire and most of the SAARC countries adopted the English common law (Ahmed, 2018; Amundsen, 2016; Chakrabarty, 2008; Clémentin-Ojha, 2014; Golder, 2005; Mushtaq, 2009; Rahman, 2007; Tahir, 2005).

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Comparative Analysis of Stock Market in SAARC Countries

In Pakistan stock market, there were three stock exchanges i-e. Islamabad, Karachi and Lahore. These stock exchanges have been merged into the one stock exchange and it is called Pakistan Stock Exchange (PSX).Stock market of India is the oldest stock market in the Asia. In 18th century East India Company started business of stock and securities in Bombay. Bombay stock exchange (BSE) was established in 1875. After the freedom from British rule Bombay stock exchange (BSE) was recognized by the Government of India under security contracts regulation ACT in 1956 (Jayasree, 2014). National stock exchange (NSE) is the second largest stock exchange of India which was established in 1992. NSE is a modern stock exchange of the world. In Bangladesh stock market, there are two stock exchanges i.e. Dhaka Stock Exchange (DSE) which started its operation in 1964 and Chittagong Stock Exchange (CSE) which started its operation in1995 (Chowdhury, 2002). Under Sri Lankan stock market, Colombo Stock Exchange (CE) is the one of the modern stock exchanges in South Asia region. It started its operation in 1990 (Jahfer & Inoue, 2014). In Nepal stock market, Stock exchange of Nepal (NEPSE) was established in 1993 and it performed its trading in January, 1994.

3. Literature Review

The existing literature reveals that a large number of studies has investigated the nexus between stock market and economic growth. However, empirical studies on the effect of stock market and public spending on economic growth are limited. Undeniably, the role of public expenditure and importance of stock market has received immense attention from researchers, policymakers, and institutions. Jun (2012) conducted the visible study on the correlation between stock exchange and output (growth) in 27 countries of Asia from 1960-2009. GDP was proxy for growth and M2/GDP, M3/GDP, market capitalization and domestic credit were decision variablesin the study. The study used panel data and advanced techniques like panel unit root test, panel co-integration test, FMOLS and DOLS. The study used Breitung test, IPS test and LLC test unit root and found first difference stationarity. To check existence of long-run relations among the variable, the study used Pedroni cointegration test and Kao cointegration test and both tests confirms long run relations among the variables. Long run estimates were taken using Canonical Co-integrating regression, DOLS and FMOLS. Market capitalization, M2/GDP and domestic credit shows positive impact on economic growth.The study originates the 2-way causality market capitalization and real GDP growth. Further, Khadraoui and Smida (2012) found the role stock market capitalization, trade openness, and liquid liabilities on economic growth in 70 countries of the world. The data was taken from 1970 to 2009. By taking average of 5 years, the data was divided into 8 periods. The study used fixed effect OLS; which is called static approach, GMM difference and GMM system; which is called dynamic approach for estimation. Market capitalization, trade openness, and liquid liabilities show positive impact on growth using fixed effect, GMM difference and GMM system methods. It was found that results impact of market capitalization was higher as compared to liquid liabilities using fixed effect and GMM system approach. Market capitalization showed constructive impact on growth using all three estimation methods. The study further confirmed the existence of political stability-led growth hypothesis through empirical results.Ishtiaq et al. (2016) inspected the role of democracy and supply of money, polity, investment and market capitalization in 114 countries of the world. The study used panel data technique for estimation and GMM approach was applied for results estimates. The data were taken from period 1974 to 2013. Political regime was into three categories i.e. democracy, dictatorship and combine. The range of political regime showed -10 to +10 values. Negative ten value showed extreme dictatorship and whereas +10 showed maximum democracy in the countries. The impact of market capitalization and money supply was positive in all regimes whereas in democracy regime the results were insignificant. Moreover, Abdullah et al. (2009) found the affiliation between economic growth and fiscal policy in 13 Asian countries from period 1985 to 2001. Panel OLS and GMM techniques were applied for estimates. Growth (GDP per capita), overall government expenditure, balance budget, tax to GDP and saving were variables of the study. Using both GMM and OLS techniques, the results of tax to GDP, balance budget and population were negative whereas government expense and saving results were positive in the model. In another study, Adu et al. (2014) found government

expenditure and growth relations from the period 1970 to 2010 in Ghana. Log real GDP (growth proxy), government total expenditure, inflation, openness and political system were variables of the study. For unit root, ADF-test was applied and it was found I(0) and I(1) integration order. ARDL method was selected for long and short run estimates. It was found that outcome of government outlay was positive, whereas effect of inflation and openness were negative in Ghana. Similarly, Olurankinse and Alimi (2014) found public spending and national income nexus among 3 African nations. The study also used time series approach for country wise analysis from period 1970 to 2012. For analysis of unit root, ADF-test and PP-test were applied and found I(1) integration order. Different approaches were used for time series and panel co-integration. Simple OLS technique was applied for estimates and found positive government expenditure effect on national income under both panel and time series. The results of causality were different in panel and country wise estimates.

Iheanacho (2016) found the contribution of public expenses in Nigeria for the period of 1986-2014. GDP per capita, public expenses and investment (capital formation) were the variables of the study. Unit root results were taken from ADF test and Phillips-Perron test and study found I(1) stationarity level. For co-integration, Johansen approach was applied which confirms long-run relations. Result of public expenditure was negative in long run but was positive in short run. The impact of investment (capital formation) was positive in both short and long run.

Hussain et al. (2017) found the impact of public expenditure on economic growth in Pakistan from period 1973 to 2014. Study utilized GDP per capita, government current expenditure, government development expenditure, tax to GDP and fixed capital formation variables. ADF-test and PP- test were applied which showed I(0) and I(1) integration order. The study used ARDL methods for estimates. The study found positive impact of capital formation, tax to GDP and development expenditure whereas negative effect of current expenditure by government on growth in Pakistan.

4. Methodology

Empirical Model

On the basis of conventional growth literature, the study specifies a growthequation presented by Solow (1956, 1957) and augmented by Barro et al. (1995), and Barro (2001, 2013), in which three inputs, namely physical capital, human capital, and a non-reproducible factor, that is, raw labor, jointly produce and aggregate output. The mathematical form of aggregate production function can be written as follows:

$$Q = F(K, L; t) \text{----------} (1)$$

Where Q represents the aggregate output, K and L represent capital and labor inputs (in 'physical' units), respectively, and the t variable for time. Fappears to allow technicalchange. Basically, the term 'technical change' is used to representany kind of variation in the production function.

The Solow model highlights four variables, namely, output (Q), capital(K), labor (L), and 'knowledge 'which is also called 'effectiveness of labor' (A), and t denotestime. The economy produces output with a combination of certain amounts of labor, capital, and knowledge. Thus, the production function takes the form as follows:

$$Q = A(t)F(K, L) \text{----------} (2)$$

The existing literature shows that researchers use stock market capitalization and public spending as inputs in the production function. For example, Abdullah et al. (2009), Jun (2012), Iheanacho (2016), Ishtiaq et al (2016) and Hussain et al. (2017). Thus, the following multivariate regression model is given which based on Equation (2), where output is expressed as a function of stock market capitalization to GDP, Government Expenditures and population growth rate.

$$LNGDPPC_{it} = \alpha_0 + \beta_1 LNSMC_{it} + \beta_2 LNGE_{it} + \beta_3 LNPOP_{it} + \varepsilon_{it} \quad (3)$$

In Equation (3), all the variables in the model are in log form. So, the term $\alpha_0$refers to the intercept, whereas, $\beta_i's$ (i=1, …3) representthe coefficients to be estimated, and t denotes the time period t=1,2,…,T (T=25yearsin this case). LNGDPPCis GDP per capita, LNSMC is stock market capitalization, LNGE is government expenditures LNPOP is population rate and ε_{it} is white noise disturbance term.

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Econometric Strategy

Panel Unit Root Tests

Distinguished applied researchers like Choi (2001); Hadri (2000); Harris and Tzavalis (1999); Im, Pesaran, and Shin (2003); Levin, Lin, and Chu (2002); Maddala and Wu (1999) are much worried about non-stationarity and spurious regressions in macro panels with large number of entities. They considered unit root tests imperative in panel studies to address spurious regressions. Varieties of tests are in hand to check stationarity in panel datasets.

There are two types of panel unit root tests i.e common unit root process and individual unit root process across cross sections. Levin, Lin, and Chu (2002), Hadri (2000) and Harris and Tzavalis (1999)all assume common unit root process across cross sections whereas Im, Pesaran, and Shin (2003), ADF-Fisher tests and PP-Fisher tests assume individual unit root process.

These tests depend on autoregressive process which consider an AR (1) process that may be written as follows for panel data:

$$y_{it} = \alpha_i + y_{i,t-1} + \varepsilon_{it} \quad (4)$$

Where i = 1, 2, 3, 4----------N, t = 1, 2, 3, 4--------T_i , α_i are autoregressive coefficients. $\varepsilon_{it}$is error term. If $|\alpha_i|= 1$ then y_i is not stationary or it has a unit root. While if $|\alpha_i| < 1$ then y_i is said a stationary series.

A non-stationary series is also termed as a series having unit root. When a series is non-stationary and its first difference is taken, it becomes stationary and that is called stationary at first difference i.e. I(1).

In the above AR (1) process, one can include exogenous variable (X_{it}) and individual fixed effect (constant term) or individual constants and trends. This study used two unit root tests namely Levin et al. (2002) and Im et al. (IPS; 2003) that assume common and individual unit root process respectively. Both panel unit tests are based on the null of a unit root opposite to the stationarity alternative of the series.

Panel Cointegration Tests

To test whether the variables are co-integrated, this study implements three widely used panel cointegration tests, namely Pedroni cointegration tests, Maddala and Wu (1999) cointegration test and Kao (1999) cointegration test. Pedroni introduced a cointegration test for panel data which was based on Eangle and Granger (1987) two step procedures. Pedroni performs seven tests; four tests are panel based which are called within-dimension and three tests are grouped based which are called between-dimension.

Maddala and Wu (1999) developed a cointegration test for panel data based on the Fisher approach, where cointegration is tested individually for each time series and p-values of test statistic are combined. That's why; this test is also known as Johansen combined test for panel cointegration. Maddala and Wu (1999) proposed two tests namely trace and maximum eigen value test, these tests also confirm cointegrating vectors.

Kao (1999) proposed 5 tests statistics to test for null hypothesis of no panel cointegration. Four of them based on following Dickey Fuller sepecification, while remaining one test statistics is based on Augmented Dickey Fuller (ADF) specification.

Panel FMOLS, DOLS and ARDL Estimators

FMOLS technique, developed by Pedroni (1999) is applied for long run estimates. The FMOLS is considered one of the advanced methods for long run results in the panel data analysis. FMOLS estimators provide consistent estimates of parameters, if sample is relatively small. Moreover, they also control endogeneity and serial correlation.

Panel DOLS approach developed by Saikkonen (1992) andStock and Watson (1993) to estimate the long-run linkage, assuming that the variablesare cointegrated. It is an asymptotically decisive method that removes feedbackin the co-integrating system by expanding the co-integrating regression with regressor lags and leads.

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The PMG estimator proposed by Pesaran and Shin (1999) and Pesaran et al. (1999,2001) is used to check the robustness of the estimates. The ARDL model (PMG estimator), provides reliable coefficients despite the potential presence of endogeneity,because it contains response lags and explanatory variables (Pesaran et al. 1999). ARDL approach is applicable irrespective of whether the regressors are purely I (0),purely I (1) or mutually cointegrated.

Due to data availability, the study selects 5 countries of SAARC i.e. Sri Lanka, Pakistan, Nepal, India and Bangladesh for research from period 1994 to 2018. A panel data approach (balanced) is used in analysis. The data is taken from World development indicators (WDI), Economy watch, Economic Surveys of concerned countries, International financial statistics (IFS) and Statistical bulletins of SAARC countries.

5. Empirical Results

This study employs the LLC and IPS panel unit root tests for the selected variables at level and first difference, and the results are presented in Table 1. Table 1 shows that all the variables of the study are nonstationary at level and stationary at first difference, with constant and constant and trend. However, all the series are integrated at first difference I(1) for the purpose of further empirical investigation.

Table 1:Panel Unit Root Tests

		Level		1st difference	
Tests	Variables	Constant	Constant+Trend	Constant	Constant+Trend
Levine Lin & Chu (LLC)	LNGDPPC	1.85	0.12	-3.52	-4.70
		(0.968)	(0.539)	(0.000)	(0.000)
	LNSMC	-1.02	-0.08	-7.17	-6.03
		(0.153)	(0.531)	(0.000)	(0.000)
	LNGE	2.77	0.63	-6.99	-6.53
		(0.997)	(0.735)	(0.000)	(0.000)
	LNPOP	-0.64	0.28	-4.89	-6.44
		(0.272)	(0.612)	(0.000)	(0.000)
Im, Pesaran and Shin (IPS)	LNGDPPC	4.36	0.69	-2.82	-2.68
		(1.000)	(0.758)	(0.000)	(0.000)
	LNSMC	-0.08	-1.08	-6.04	-4.48
		(0.466)	(0.154)	(0.000)	(0.000)
	LNGE	4.97	1.88	-6.27	-5.42
		(1.000)	(0.970)	(0.000)	(0.000)
	LNPOP	2.30	-1.35	-3.48	-7.16
		(0.986)	(0.096)	(0.000)	(0.000)

Note: values in parenthesis are P-values: small P-values ($p<0.05$) indicate stationarity.

The Pedroni, Maddala and Wu(Johansen Fisher panel cointegration) and Kao cointegration tests are performed to check the existence of cointegration between the variables. Cointegration analyses are done for the constant and constant and trend models. A summary of the results of the Pedroni cointegration test analyses is given in Table 2. The results given in Table 2 are within and between the dimensions of panel cointegration test statistics for each panel data set. Four out of seven panel cointegration tests reject the null hypothesis of no cointegration at the 1%, 5% 10 % significance levels for the panel, thereby suggesting that a long-run equilibrium link exists between the variables. Likewise, Maddala and Wu (Johansen Fisher approach) and Kao cointegration tests are given in Table 3. Table 3 shows three cointegrated equations, thereby vindicating the existence of a long-run cointegration link between the set of variables in the model. Similarly, Kao-test rejects the premise of no cointegration and its statistical value (-2.81) indicates the existence of long run relations.

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Table 2. Pedroni Cointegration Test

	Panel statistic (Within-Dimension)		Group statistic
Tests	Statistic (prob)	Weighted statistic (prob)	(between-dimension)
v-Statistic	0.384 (0.3510)	1.011 (0.156)	----------
rho-Statistic	0.694 (0.7561)	0.168 (0.566)	0.941 (0.8266)
PP-Statistic	-0.314 (0.3762)	-1.548***(0.061)	-2.712* (0.0033)
ADF-Statistic	-0.269 (0.3941)	-2.306**(0.011)	-3.582*(0.0002)

Note: All statistics are from Pedroni's procedure (1999) which is the adjusted values can be compared to the N(0,1) distribution. Asterisks a, and b shows rejection of the null hypothesis of no-cointegration at 1%, and 10% level of significance respectively. Automatic lag length selection based on SIC with a max lag of 4, Newey-West fixed bandwidth and Bartlett kernel. Trend assumption: Deterministic intercept and trend (Constant and Trend).

Table 3.Maddala and Wu and Kao Cointegration Tests

Maddala and Wu co-integration test		
Hypothesis	Fisher Trace Statistics	Fisher Max Eigen Value Statistics
None	121.8* (0.0000)	86.94*(0.0000)
At most 1	52.76*(0.0000)	38.43*(0.0000)
At most 2	23.58*(0.0000)	14.96(0.1336)
At most 3	17.23***(0.0694)	17.23***(0.0694)
Kao Co-Integration Test		
Kao test	t-stat (prob)	
	-2.8093* (0.0025)	

, **, * indicate that the null hypothesis is rejected at 1, 5 and 10 percent respectively. Notes: probabilities are computed using the asymptotic Chi-square distribution (Maddala and Wu) and t-Statistic (Kao test); p-values are shown immediately to the right of the relevant test statistic.*

On the basis of the nature of the data and the results of the unit root tests in Table 1, this study implements the PMG (Panel ARDL), FMOLS and DOLS methods for long run estimates. The empirical result of the long run estimators Table 4 reveals that all the tested regressors have significant impacts onthe economic growth of the 5 selected SAARC countries. Moreover, nearly all theexplanatory variables are individually statistically significant, thereby verifying andindicating that the estimated models are technically and statistically desirable. All theexplanatory variables carry the expected coefficient signs.

Table 4. FMOLS, DOLS and Panel ARDL Estimates

	FMOLS		DOLS		ARDL	
Variables	Coefficient	p-values	Coefficient	p-values	Coefficient	p-values
LNSMC	0.0971*	0.0000	0.6640*	0.0021	0.4133*	0.0000
	(0.0139)		(0.2073)		(0.0711)	
LNGE	0.4409*	0.0000	0.2650*	0.0000	0.2718*	0.0000
	(0.0332)		(0.0328)		(0.0158)	
LNPOP	-0.0549*	0.0079	-0.4096**	0.0209	-0.2431*	0.0114
	(0.0202)		(0.1728)		(0.0191)	
	R^2=0.98		R^2=0.90			

Note. Model selection method is Akaike info criterion (AIC) and selected model is ARDL (1, 1, 1, 1) withmaximum dependent lags 4 (Automatic selection). For FMOLS and DOLS, "*" indicates estimated coefficients are significant at 1% level, respectively. Standard errors are in parenthesis (). Dependent variable is LNGDPPC. Long-run covariance estimates (Bartlett kernel, Newey-West fixed bandwidth).

Under ARDL approach, the result shows that an increase in stock market capitalization by 1% point stimulate GDP per capita by the 0.41 percent. An explanation for this is that market capitalization to GDP ratio shows worth of stock traded in the economy relative to size of total economy; a higher value

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indicates higher size of capital market meaning higher ability to mobilize capital and diversification of risk which leads to output/economic growth. Similarly, one percent increase in government expenditures lead to 0.27 percent enhancement in GDP per capita. The effectiveness of fiscal policy for achieving macroeconomic goals is major concern of the countries. Government expenditure is one of the prime tools of fiscal policy which shows important role in achieving the goals of growth and stability in the economy in many developing countries. When there is rise in government expenses, it results in creation of jobs, provision of better infrastructure and improvement in services by government in the economy. Purchasing power of people is increased which leads to increase in aggregate demand and ultimate expansion in output in the economy. So, there exists optimistic impact of public expenditure on economic growth (Abdullah et al. 2009; Adu et al. 2014; Cooray, 2009; Olurankinse & Alimi, 2014). Population role is negative and it shows that one percent positive change in population results in almost -0.24 percent reduction in GDP per capita during the study periods in SAARC countries.

The empirical results of both estimators (FMOLS and DOLS) are reported in Table 4, which shows thatthe panel FMOLS and DOLS estimation has significant explanatory power based on R^2 values, which are 0.98 (FMOLS) and 0.90 (DOLS). This finding means that the R^2 explains approximately 98% of the variation of the included explanatory variables,namely stock market capitalization, public expenditures and population rate in the response variable (economic growth measured byGDP per capita). All the explanatory variables carry the expected coefficient signs.The empirical results in Tables 4 likewise reveal that all the tested regressors have significantimpacts on economic growth. Moreover, all the regressors are statistically significantindividually, thereby indicating that the estimated models are technically andstatistically acceptable. The empirical results of the FMOLS and DOLS indicate thatstock market capitalization has a positive impact on economic growth and statistically significantat 1% level of significance. The results of the relationship between public expensesand economic growth are significantly positive at the 1% level of significance, while population rate has a negative relationship with economic growthand statistically significant at the 5% level of significance. Overall, the positive and statisticallysignificant results of the impact of stock market capitalization and public expenses on economic growth agree withtheoretical expectations and strongly support the empirical results of prior studies.The results are in sequence with Ishtiaq et al. (2016), Jun (2012), Khadraoui and Smida (2012), Kimaro et al. (2017), Barguellil et al. (2013) and Gumus and Mammadov (2019).

6. Concluding Remarks

The central aim of this empirical study is to explore the role that stock market and public spending on the economic growth of 5 selected SAARC countries between 1994 and 2018. The stock market capitalization, public spending and population rate are used within the productionframework to achieve the objective of the study. Following standard and appropriate methods for empirical investigation purposes, the panelARDL/PMG and panelFMOLS and DOLS estimators are employed for the panel group (5countries) afterchecking the data for stationarity prospects by using relevant and widely used LLC and IPS to understand the impact of regressors on economic growth.

The panel Pedroni,Maddala and Wu (Johnson Fisher approach) and Kao cointegration tests support long-term cointegrationbetween the variables. Empirical results of the panel ARDL/PMG estimatesreveal that stock market capitalization and public spending has a significantly positive influence on economicgrowth through GDP per capita. The results also suggest that population rate has negative significant impacts on economic growth. Moreover, the panel FMOLS andDOLS estimators confirm the significantly positive impact of stock market capitalization and public spending oneconomic growth. Thus, it is concluded that efficiency of stock market and role of public expenses is also one of theindispensable determinants of economic growth. Furthermore, the empirical findings of the study have several policy implications. Stock market is a major player in the economy. All the selected 5-SAARC countries should have up to the mark and updated stock exchanges in the countries. Stock market information should be shared on daily basis in the country. Special training sessions should be arranged regarding stock market trading etc. Number of listed companies should be increased that may participate in the stock market. Simple procedure of buying and selling of shares should be introduced in the stock market for the layman. Profits

of companies and share holders should be announced on electronic and print media on regular basis. The combined efforts of the governments of the selected 5-SAARC countries are recommended for valuable use of public spending in their countries. Government expenditure should be used for productive projects rather than non productive projects. Governments of the concerned SAARC countries should adopt strategies that may lead to corruption free projects. Government should increase infrastructure development expenditure that have dual effect i.e. it may provide facilities like road, electricity etc to the public and on the other side it may provide employment opportunities to the public.

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