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THE IMPACT OF GOVERNMENT EXPENDITURE ON ECONOMIC GROWTH IN SOUTH ASIAN COUNTRIES

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ABSTRACT: Government spending on economic growth is a crucial metric for assessing sustainable economic development. We examined government spending for the period 2000–2021 in the south Asian countries, taking into account both the significance of a country's economic development and the impact of government expenditure on economic development. (Nepal, India, Bangladesh, Pakistan, Bhutan, Srilanka, and Maldives) The research finds that government spending and economic growth are cointegrated using panel cointegration and panel causality, showing the existence of a long run equilibrium link between them. With the exception of Pakistan, Bhutan, and the Maldives, it also supports the existence of a causal relationship between government spending and economic growth on a short- and long-term basis. This paper indicates that higher government spending is both a cause and an effect of higher economic growth.

Introduction

The current state of the economy is a topic of significant interest and the center of attention for global policy-making. Economic development is defined as the policies and strategies a nation uses to accomplish development as well as the development mindset it has attained. A long-term process of increasing national income is known as economic development.

The increase of the national product and per capita income, which are external economic factors that relate to numbers and data in order to define microeconomic and macroeconomic policies bringing about economic development, are currently used to quantify economic growth, despite the fact that economic growth is more often associated with the quantitative aspect or the formation of a production or service sector. The most significant economic measure of national accounts, or how well a nation's economy performed over a specific time period, is GDP. The value of all finished goods and services generated in an economy is also measured as a whole by the GDP. Therefore, it is crucial to estimate GDP in order to assess the state and dynamics of an economy.

The relevance of government involvement in stabilizing and regulating aggregates of the general economy has been brought to the attention of a significant number of countries following the aftermath of the Great Economic Depression of the 1930s, which eventually resulted in the birth of the Keynesian Economics School of thought. That development primarily refers to the dominant classical theory about how demand and supply interact to provide the appropriate adjustments in regard to output determination and employment (Johnson LE, 2001)

For the broad goal of economic stabilization and for the accomplishment of several crucial macroeconomic goals and objectives in particular, there are two main kinds of economic policies that have been widely applied over a long period of time. Both monetary and fiscal policies are involved. Although the two strategies have different structures and approaches to using their primary tools, they both generally aim to achieve the same outcomes by maintaining economic stability in most countries (Beetsma and Jensen 2005; Claeys 2006).

Fiscal policies are measures taken by the government with the intention of stabilizing or regulating the economy through various taxes and spending programs. They are economic policies that incorporate government tactics for raising money, primarily through taxation, and its subsequent strategies for deciding how the related funds raised will be distributed for achieving specific economic objectives. Fiscal policy, according to Jhingan (1997), aims to ensure long-term economic stability by adjusting for short-run economic fluctuations in a way that a government uses its spending and revenue programs to produce desirable effects while avoiding those that are undesirable on a nation's income production and employment levels.

According to empirical evidence, a variety of variables may be contributing to increased public spending in several countries. Growing government revenue sources were noted by Hong and Nadler (2016) as a significant element that might influence increased public spending. Remmer (2004), Ouattara (2006), Asongu and Jellal (2016), and some other research have also demonstrated that factors like access to foreign aid and grants can also promote incremental public expenditure, which is frequently seen in the majority of low-income nations.

2. Hypothesis and Existing Litreture

Wagner's "law," which essentially asserts that the role of the public sector will increase as per capita income rises, is the relationship he posited between the government and national revenue in the late 19th century (Bird, 1971). Wagner offered three explanations for why the GDP portion of government spending would become more significant as an economy expanded. First, as industrialization advances, public sector activity will gradually replace private sector activity as the state's administrative and protective tasks become more and more crucial. Due to the complexity of economic life and urbanization, which occur during industrialization, the state's involvement in upholding law and order as well as its position in activities connected to economic regulation is likely to grow increasingly prominent. Wagner's theory implicitly assumes that due to the high income elasticity of demand for these services, state spending on social and cultural services (such as education and income redistribution) will rise as a nation industrializes. This means that as per capita income rises, so does the demand for the aforementioned government-provided services, driving up the public sector's proportion of GDP spending at a rapid rate.

Public choice models, like the one Meltzer and Richard examined, provide another justification for the law (1981). In their hypothetical scenario, government spending is carried out in order to satisfy the median voter, which would result in a correlation between economic growth and government expenditure if the position of the decisive median voter in the income distribution were to shift towards the lower end. For instance, as the economy expands, skilled workers' earnings may rise significantly more than those of unskilled people, increasing inequality. According to the Meltzer-Richard model, this would mean more votes in favor of redistribution and subsequently more money spent by the government (Oxley, 1994,).

Next, we review a few relevant research. Islam (2001) used the Johansen-Juselius cointegration approach to reexamine Wagner's theory for the USA and discovered that the real Gross National Product per capita and the relative quantity of government expenditure are cointegrated. Wagner's theory is further strongly supported by the Engle-Granger (1987) error correction approach. The study used annual data from 1929 to 1996. Ansari et al. (1997) use the Holmes-Hutton (1990) causality test, a modified version of the Granger test, and standard Granger testing procedures to try to evaluate the direction of causality between government spending and national income for three African nations: Ghana, Kenya, and South Africa. The research determined that there is no long-run equilibrium relationship between government expenditure and national income in Ghana, Kenya, and South Africa during the study's sample period. Except for Ghana, where Wagner's law is supported, none of these nations' short-term data supports Wagner's hypothesis or the converse. Wagner's law is tested using South Korean data by Abizadeh and Yousefi (1998). They perform Granger-type causality tests first, and then, using annual data for the years 1961–1992, they construct a growth equation and a government expenditure growth equation. They derive the private sector GDP by subtracting government spending from the GDP and utilize this for their testing. Authors get the conclusion that government expenditure in Korea did not help to economic growth after comparing the results of their estimations. The Granger causality test is used by Singh and Sahni (1984) to establish the causal relationship between India's national income and public spending. For the years 1950–1981, both total (aggregate) and disaggregate expenditure statistics were used. The study's data were yearly and implicitly deflated using the national income deflator. The research does not support either the Wagnerian or the opposing perspective with a causal mechanism.

For the seven SAARC nations of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, the article aims to explore a number of opposing hypotheses on Granger causality between government expenditure and economic growth. The competing hypotheses contend that there is a one-way causal relationship between government spending and economic growth, a two-way relationship between these variables, or that there is no Granger causality in either direction. Government spending may increase as a result of economic growth because there may be a demand for more government expenditure if government income rises. These hypotheses have important political implications. It can be assumed that government spending policies (fiscal policy) have little or no negative impact on economic growth if there is unidirectional Granger causality linking economic growth to government expenditure or if there is no Granger causality in either direction. On the other hand, if there is unidirectional causality connecting government expenditure to economic growth, then follows that decreasing government spending might cause a decline in economic growth while increasing government spending could help the SAARC countries experience higher economic growth. It is so clear that the investigation makes a significant individual and collective contribution to policymakers in the respective countries.

Several studies have tested for Granger causality between government spending and economic growth use for a range of countries using myriad methodologies. There is three generation of studies: traditional regression approach (Iyare and Lorde, 2004; Wahab, 2004; Kolluri et al., 2000; Thornton, 1999; Ansari et al., 1997; Afxentiou and Serletis, 1996; Ram, 1986), unit root and cointegration for a single countries (see Akitoby et al., 2006; Halicioglu, 2003; Chang, 2002; Courakis et al., 1993; Ahsan et al., 1996; Biswal et al., 1999; Islam, 2001; Chlestsos and Kollias, 1997; Abizadeh and Yousefi, 1998; Sun, 1997) and a panel-based approach (Tobin, 2005; Narayan et al., 2008) (for more details, see Table 1). However, when it comes to whether government spending is a result of, or a prerequisite for, economic growth, there are no clear trends in the literature. Depending on the methodology used and the country and time period studied, the direction of causality between government spending and economic growth has remained empirically elusive and controversial. One way to resolve this controversy is to look at the issue empirically

3. Methodology and Data Descriptions

The test for the nexus between the relative size of the government (or government spending) and economic growth will be performed in three steps: first, panel unit root test; second, panel co-integration test and third, panel causality test. The detail descriptions of these three tests are presented below.

3.1. Panel unit root test

The unit root test is meant to know the stationarity of the time series variables. Traditionally, we use Augmented Dickey Fuller (ADF) unit root test to know the stationarity of the time series. But the technique has a problem of low power in rejecting the null hypothesis of stationarity, particularly for small samples. On the contrary, panel unit root test has a higher power to reject the null hypothesis of stationarity. The Levin-Lin-Chu (LLC) and Im-Pesaran-Shin (IPS) panel unit root tests are used in this study to investigate the stationarity of the time series. They are very popular and are based on the lines of ADF principle. The LLC (Levin et al., 2002) assumes homogeneity in the dynamics of the autoregressive coefficients for all panel numbers, while IPS (Im et al., 2003) assumes heterogeneity in these dynamics and hence called as “heterogeneous panel unit root tests”. The LLC proposes a panel-based ADF test with a panel setting and restricts γ to keep it identical across cross-sectional regions. The test imposes homogeneity on the autoregressive coefficient that indicates the presence or absence of a unit root, whereas the intercept and trend can vary across individual series. The model only allows for heterogeneity in the intercept and is given by

$$\Delta \boldsymbol{Y}_{i,t} = \boldsymbol{\alpha}_i + \boldsymbol{\gamma} \boldsymbol{Y}_{i,t-i} + \sum_{j=1}^{Pi} \boldsymbol{\beta j}\, \Delta \boldsymbol{Y}_{i,t-j} + \boldsymbol{\varepsilon}_{i,t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\mathbf{1}$$

Where $Y_{i,t}$ is a series for panel member (country) i (i = 1, 2,….. , N) over period t (t = 1, 2, …, T), pi is the number of lags in the ADF regression and the error terms e_i, t are assumed to be independently and Identically Distributed (IID) at (0, σ2) and to be independent across the units of the sample. The model allows for fixed effects, unit-specific time trends and common time effects. The coefficient of the lagged dependent variable is restricted to be homogenous across all units of the panel. Hence, the null hypothesis of non-stationary is as follows:

H_0: γ_i= 0, is tested against the alternative,

H_A: $\gamma_i = \gamma < 0$ for all I ………………………………………………….. 2

Where the fixed effect model in equation (1) is based on the usual t-statistics and γ is restricted by being kept identical across regions under both the null and alternative hypotheses.

$$\boldsymbol{t_\gamma = \frac{\hat{y}}{s.e(\widehat{\gamma})}} \text{ ……………………………… } \mathbf{3}$$

The IPS (2003) begins by specifying a separate ADF regression for each cross section (country):

$$\boldsymbol{\Delta Y_{i,t} = \alpha_i + \gamma_i Y_{i,t-i} + \sum_{j=1}^{pi} Bi,j + \Delta Y_{i,t-j} + \varepsilon_{i,t}} \text{ …………………… } \mathbf{4}$$

Where series $y_{i,t}$(i = 1, 2… N; t = 1, 2, …, T) is the series for panel member (country) i over period, pi is the number of lags in the ADF regression and the error terms $e_{i,t}$ are assumed to be IID (0,σ_2^i) for all i and t. Both y_i and the lag order β in equation (4) are allowed to vary across sections (countries). The IPS (2003) relaxes the assumption of homogeneity of the coefficient of the lagged dependent variable. It tests the null hypothesis that each series in the panel has a unit root for all cross-section units against the alternative that at least one of the series is stationary.

H_0 : y_i= 0 for all i is tested against the alternative,

H_A: $y_i = \gamma_i < 0$ for i = 1, 2… N1, y_i= 0,

i = N_1 + 1, N_1 + 2… N …………….. 5

The alternative hypothesis simply implies that some or all of the individual series are stationary. The IPS (2003) developed two test statistics and called them the LM-bar and the t-bar tests. The IPS t-bar statistics is calculated using the average of the individual Dickey-Fuller τ statistics.

$$\bar{t} = \frac{1}{N}\sum_{i=1}^{N} \tau i \text{ ………………………………………6}$$

$$\tau_i = \frac{\widehat{yi}}{s.e.(\widehat{yi})} \text{ ……………………………7}$$

Assuming that the cross sections are independent, IPS proposes the use of the standardised t-bar statistics as shown below.

$$\overline{Z} = \frac{\sqrt{N(\overline{t - E(\bar{t})})}}{Var(\bar{t})} \qquad 8$$

The terms E ($\bar{t}$) and Var ($\bar{t}$) t are the mean and variance of τ statistic. They are generated by simulations and are tabulated in IPS (Im et al., 2003).

Overall, the above tests are designed under the assumption that the individual time series in the panel is cross-sectional independently distributed. This assumption is absolutely required in order to satisfy the Lindberg-Levy central limit theorem and to obtain asymptotically normal distributed test statistics. The study also uses the second-generation unit root tests in order to relax the cross-sectional independent assumption. There are number of tests readily available in the econometric literature for the analysis of cross-sectional dependent data (see Moon and Perron, 2004; Bai and Ng, 2004; Pesaran, 2003; Maddala and Wu, 1999; O'Connel, 1998). The present study, however, used Pesaran's CIPS test to examine the same. The test is basically an extension to IPS test of Im et al. (2003), where t-ratios are pooled across the individuals. It is just advancement on the cross-sectional extensions of the ADF test (CADF). The CIPS test statistic is the mean of the CADF statistics for the individuals. The CADF statistic is simply the t-ratio for b_i in the below model.

$$\Delta Y_{i,t} = \alpha_i + \rho_i Y_{i,t-1} + \gamma_i \bar{y}_{t-1} + \delta_i \Delta \bar{y}_t + \varepsilon_{i,t} \quad 9$$

Where, $\bar{y}_t = N^{-1} \sum_{i=1}^{N} y_{i,t}$ and $\Delta \bar{y}_t = N^{-1} \sum_{i=1}^{N} y_{i,t}$.

Let ti (N, T) be the t-statistic of the OLS estimate of ρi. The Pesaran test is based on these individual cross-sectionally augmented ADF statistics, represented by CADF. A truncated version, denoted as CADF*, is also considered to avoid undue influence of extreme outcomes that could arise for small T samples. In both the cases, the idea is to build a modified version of IPS t-bar test based on the average of individual CADF or CADF* statistics (i.e., denoted by CIPS and CIPS*, respectively for cross-sectionally augmented IPS).

$$\text{CIPS} = N^{-1} \sum_{i=1}^{N} ti(\text{N,T}) \ \text{CIPS*} = N^{-1} \sum_{i=1}^{N} ti*(\text{N,T}) \quad 10$$

Where, the truncated CADF statistic is defined as

$$t_i*(\text{N,T}) = \begin{matrix} K_1 & t_i(N,T) < K_1 \\ t_i(N,T) & K_1 < t_i(N,T) < K_2 \\ K_2 & t_i(N,T) > K_2 \end{matrix} \quad 11$$

Where the constants K_1 and K_2 are fixed such that the probability that t_i(N, T) belongs to [K_1,K_2] is near to one. All the individual CADF (or CADF*) statistics have similar asymptotic null distributions, which do not depend on the factor loadings. They are, however, correlated due to the dependence on the common factor. Hence, it is possible to build an average of individual CADF statistics, but standard central limit theorems do not apply to these CIPS or CIPS* statistics. Pesaran shows that, even if it is not normal, the null asymptotic distribution of the truncated version of the CIPS statistic exists and is free from nuisance parameter. The simulated critical values of CIPS and CIPS* for various samples sizes are given in Pesaran (2003).

Following Maddala and Wu (1999) and Choi (2001), Pesaran also proposes Fisher-type tests based on the significant levels of individual CADF statistics. In this case, the statistics do not have standard distributions. This approach readily extends to serially correlated residuals. For an AR

(p) error specification, the relevant individual CADF statistics are computed from a pth order cross-section/time series augmented regression. This is as follows:

$$\Delta Y_{i,t}= \alpha_i+ \rho_i Y_{i,t-i} + c_i \bar{y}_{t-1} + \sum_{j=0}^{p} di,j\Delta\bar{y}_{t-j} + \sum_{j=0}^{p} \beta i,j\, \Delta y_{i,t-j} + \varepsilon_{i,t} \qquad 12$$

It is to be noted that the CADF and CIPS tests are developed for testing the unit roots when the cross-sectional dependence is due to a single common factor, but the CIPS test has better power properties than the individual CADF tests and should therefore be preferred.

3.2 Panel co-integration test

Granger (1981) showed that when the series becomes stationary only after being differenced once, they might have linear combinations that are stationary without differencing. In the literature, such series are called cointegrated. If integration of order one is implied, the next step is to use cointegartion analysis in order to establish whether there exists a long-run relationship among the set of integrated variables in question. Earlier tests of cointegration include simple two-step test by Engle and Granger (1987). However, the Engle and Granger method has a number of problems. Alternatively, the Engle and Yoo (1987) three-step procedure has been widely recognised as dealing with most of these problems. The methods, however, could not detect more than one cointegrating relationship. Johansen's vector auto regression test of integration (Johansen, 1988) is very useful in the above problem. It is a systemic approach to cointegration that allows determination of up to r linearly independent cointegrating vectors (r <= g – 1, where g is the number of variables tested for cointegration). The estimated cointegration equation is of the following form:

$$Y_{i,t} = \beta_{i0} + \beta_{i1}X_{i1t} + \beta_{i2}X_{i2t} + \ldots.. + \beta_{ik}X_{ikt} + \varepsilon_{it} \qquad 13$$

The equation can be re-written as:

$$\varepsilon_{it}= Y_{it} – (\beta_{i0} + \beta_{i1}X_{i1t} + \beta_{i2}X_{i2t} + \ldots\ldots.. \beta_{ik}X_{ikt}). \qquad 14$$

And the cointegration vector is:

$$[1- \beta_{i0} - \beta_{i1} - \beta_{i2} \ldots -\beta_{ik}]. \qquad 15$$

Johansen's method is helpful for doing cointegration tests on an individual basis, however it is not applicable for panel cointegration tests. As an alternative, Pedroni (2004)'s recently created panel cointegration tests offer a method that allows for the use of panel data, so resolving the issue of small samples, as well as allowing for heterogeneity in the intercepts and slopes of the cointegrating equation. The following time series panel regression serves as the test's starting point.

$$Y_{i,t}= \alpha_i + \sum_{j=1}^{p_i} \beta_{ji}\, X_{jit} +\varepsilon_{it} \qquad 16$$

$$\varepsilon_{it=} \rho_i \varepsilon_{i(t-1)} + w_{it} \qquad 17$$

Where Y_{it} and X_{jit} are the observable variables with dimension (N * T) × 1 and (N * T) × m, respectively;ε_{it} is the disturbance term from the panel regression; αi allows for the possibility of country-specific fixed effects and the coefficients of β_{ji} allows for the variation across individual countries.

The null hypothesis of no cointegration of pooled (within-dimension) estimation is

H_0: ρ_i = 1 for all i againstH_0: ρ_i = ρ < 1. 18

Here, under alternative hypothesis, the within-dimensional estimation assumes a common value for ρ_i= ρ. This means that it does not allow an additional source of possible heterogeneity across individual country members of the panel. The null hypothesis of no cointegration of the pooled (between-dimension) estimation is

H_0: ρ_i = 1 for all i against H0: ρ_i < 1. 19

Here, under alternative hypothesis, the between-dimensional estimation does not assume a common value for ρ_i = ρ. This means that it allows an additional source of possible heterogeneity across individual country members of the panel. Pedroni (1999) suggested two types of test to know the existence of heterogeneity of cointegration vector. First test is the test based on within-dimension approach (i.e., panel test). It includes four statistics: panel v-statistic, panel ρ-statistic, panel PP-statistic and panel ADF-statistic. These statistics pool the autoregressive coefficients across different members for the unit root tests on the estimated residuals. Second test is the test based on between-dimensional approaches (group test). It includes three statistics: group ρ-statistic, group PP-statistic and group ADF-statistic. These statistics are based on estimators that simply average the individually estimated coefficients for each member. The details of heterogeneous panel and heterogeneous group mean panel cointegration statistics are calculated as follows:

Panel v-statistic

Z_v= $[\ \sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{\varepsilon}_{it-1}^{2}]^{-1}$ 20

Panel ρ-statistic

Z_ρ= $[\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{\varepsilon}_{it-1}^{2}]^{-1}\sum_{i=1}^{N}\sum_{t=1}^{T}L_{11i}^{-2}(\hat{\varepsilon}_{it-1}\Delta\hat{\varepsilon}_{it-1}\hat{\lambda}_i)$ 21

Panel PP-statistic

Z_t= $[\hat{\sigma}^2\sum_{i=1}^{N}\sum_{t=1}^{T}L_{11i}^{-2}(\hat{\varepsilon}_{it-1}\Delta\hat{\varepsilon}_{it}$- $\hat{\lambda}_i)$ 22

Panel ADF-statistic

Z_t^*= $[\hat{s}^{*^2}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{\varepsilon}_{it-1}^{*2}]^{-0.5}\sum_{i=1}^{N}\sum_{t=1}^{T}\hat{L}_{11i}^{-2}\,\hat{\varepsilon}_{it-1}\Delta\hat{\varepsilon}_{it}$ 23

Group ρ-statistic

$\tilde{Z}_\rho$= $\sum_{i=1}^{N}(\sum_{t=1}^{T}\hat{\varepsilon}_{it-1}^{2})^{-1}\sum_{t=1}^{T}(\ \hat{\varepsilon}_{it-1}\Delta\hat{\varepsilon}_{it}$ - $\hat{\lambda}_i)$ 24

Group PP-statistic

$\tilde{Z}_t$ = $\sum_{i=1}^{N}(\ \hat{\sigma}^2\sum_{t=1}^{T}\hat{\varepsilon}_{it-1}^{2})^{-0.5}\sum_{t=1}^{T}(\ \hat{\varepsilon}_{it-1}\Delta\hat{\varepsilon}_{it}$ - $\hat{\lambda}_i)$ 25

Group ADF-statistic

$$\tilde{Z}_t^* = \sum_{i=1}^{N}(\sum_{t=1}^{T}\hat{s}_i^2\,\hat{\varepsilon}_{it-1}^{*2})^{-0.5}\sum_{t=1}^{T}(\hat{\varepsilon}_{it-1}^{*}\,\Delta\hat{\varepsilon}_{it}^{*} \quad 26$$

Where $\hat{\varepsilon}_{it}$ is the estimated residual from equation (12) and $\hat{L}_{11i}^{-2}$is the estimated long-run covariance matrix for$\Delta\hat{\varepsilon}_{it}$. Similarly, $\hat{\sigma}_i^2$and $\hat{S}_i^2(\hat{S}_i^{*^2})$ are the long-run and contemporaneous variances for individual i. All seven tests are asymptotically standard normal distribution given by the respective panel/group cointegration statistic. The panel v is a one-sided test where large positive values reject the null hypothesis of no cointegration. The other remaining statistics diverge to negative infinite, which means that large negative values reject the null hypothesis. Each of these tests is able to accommodate individual specific short-run dynamics, individual specific fixed effects and deterministic trends and individual specific slope coefficients.

3.3 Panel Granger Causality Test

Pedroni's (1999) heterogeneous panel cointegration test will only confirm the existence of the long-run equilibrium relationship between government spending and economic growth. However, it does not detect the direction of causality. Traditionally, we use the standard Engle-Granger two-step procedures to do the same. The present study uses panel causality test, proposed by Holtz-Eakin et al. (1988). Two different models can be used to investigate the relationship.

Model 1: If the time series variables are 1 (1) and not cointegrated, we can use the following causality model:

$$\Delta GDP_{it} = \eta_j + \sum_{k=1}^{p}\alpha_{ik}\,\Delta GDP_{it-k} + \sum_{k=1}^{q}\beta_{ik}\,\Delta GCE_{it-k} + \Delta\varepsilon_{itt} \quad 27$$

Where GDP is economic growth and GCE is government spending. The hypothesis is tested asH_0: β_{ik} = 0 (for all i and k) againstH_A: $\beta_{ik} \neq 0$ for at least one j.

$$\Delta GCE_{it} = \mu_j + \sum_{k=1}^{r}\gamma_{ik}\,\Delta GCE_{it-k} + \sum_{k=1}^{s}\lambda_{ik}\,\Delta GDP_{it-k} + \Delta\eta_{it} \quad 28$$

WhereH_0: λ_{ik} = 0 (for all i and k) is tested againstH_A: $\lambda_{ik} \neq 0$.

Model 2: If GDP and GCE are I(1) and cointegrtaed, then the causality is tested by using Error Correction Model (ECM). This is represented as follows:

$$\Delta \mathrm{GDP}_{it} = \eta_j + \sum_{k=1}^{p}\alpha_{ik}\,\Delta GDP_{it-k} + \sum_{k=1}^{q}\beta_{ik}\,\Delta GCE_{it-k} + \delta_i EC_{it-k} + \Delta\varepsilon_{it} \quad 29$$

Where EC is error correction term, which is obtained from the cointegrating equation. The null hypothesis is tested forH_0: β_{ik} = 0 (for all i and k) againstH_A: $\beta_{ik} \neq 0$.

$$\Delta GCE_{it} = \mu_j + \sum_{k=1}^{r}\gamma_{ik}\,\Delta GCE_{it-k} + \sum_{k=1}^{s}\lambda_{ik}\,\Delta GDP_{it-k} + \delta_i EC_{it-k} + \Delta\eta_{it} \quad 30$$

Where null hypothesis is tested forH_0: λ_{ik} = 0 (for all i and k) againstH_A: $\lambda_{ik} \neq 0$.

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The empirical analysis is based on a panel of SAARC countries (Bangladesh, Bhutan, India, Nepal, Pakistan Sri Lanka and Maldives) over the period 2000 – 2020. The sample is restricted to those countries for which data on government spending and per capita GDP (as a proxy to economic growth) are available over this period. The data are used in natural logarithms prior to conducting the analysis.

4 Empirical Results and its Discussion

Country Name	GCE				GDP			
	LD		FD		LD		FD	
	C	C+T	C	C+T	C	C+T	C	C+T
Nepal	**0.53384**	**-2.9114**	**-5.5264**	**-5.7059**	**1.2936**	**-1.8549**	**-4.1814**	**-4.1635**
India	**1.2869**	**-2.2623**	**-3.9374**	**-4.2379**	**0.6708**	**-2.3813**	**-4.4721**	**-4.4801**
Bangladesh	**2.7263**	**-0.6573**	**-2.8422**	**-4.1475**	**3.6991**	**2.4169**	**0.6650∗**	**-5.7279**
Pakistan	**-0.0428**	**-2.9634**	**-3.0953**	**-4.1413**	**1.0472**	**-1.5693**	**-3.6162**	**-2.9907∗**
Bhutan	**0.71756**	**-1.7658**	**-3.4683**	**-3.4889**	**-0.8313**	**-1.7039**	**-4.7222**	**-4.7536**
Srilanka	**-0.6394**	**-0.4387**	**0.9531∗**	**0.9371∗**	**-0.1673**	**-2.0969**	**-2.9364**	**-2.8829**
Maldivs	**-0.3724**	**-1.9456**	**-2.872**	**- 1247.8**	**-0.0280**	**-4.4896**	**-6.2919**	**-6.0253**
Panel Unit Root Test								
LLC	**3.55057**	**0.6800**	**-5.3245**	**-6.2903**	**4.0196**	**2.9125**	**-3.7724**	**-6.8276**
IPS	**5.5057**	**0.9118**	**-4.1965**	**-2.2798**	**7.5369**	**2.1798**	**-4.1813**	**-7.67179**

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ADF	**0.9287**	**10.8224**	**50.5240**	**43.121**	**0.7722**	**13.6464**	**58.728**	**72.560**
PP	**0.6561**	**10.3956**	**63.091**	**54.869**	**0.9035**	**24.756**	**168.19**	**116.153**

C: Constant

CT: Constant with trend

LD: Level data

FD: First difference

LLC: LLC statistics

IPS: IPS statistics

CIPS: Pesaran's Second generation unit root test

GCE: Government spending

GDP: Economic growth.

***Indicates the probability of significance at 1% level.**

Having established the fact that economic growth and government spending series are integrated of order one, tests for the long-run relationship between both variables is conducted. We test the long-run relationship both by the univariate and panel analyses. Johansen's maximum likelihood test has been applied for each country in the panel, and Pedroni's (1999) panel cointegration test has been applied to the panel of seven SAARC countries. The estimated results of Johansen's test for individual countries and Pedroni's test for group of seven countries are reported in Tables 2 and 3 respectively.

The results suggest a rejection of null hypothesis of no cointegration at 5% significance level for the seven SAARC countries. The results of the panel cointegration tests, from the seven statistics, also rejected the null hypothesis of no cointegration at 5% significance level. This suggests that economic growth and government spending are cointegrated. This means that government spending and economic growth, in the SAARC countries, share a long-run cointegrating relationship. But the nature of this relationship must be investigated by testing the direction of causality between economic growth and government spending.

Table 2 Results of Johansen's cointegration test

Countries	**Null Hypothesis**	**Trace Statistics**	**MEV Statistics**
Nepal	Non At most 1	**5.7498 (0.7249)** **0.3332 (0.5638)**	**5.4166 (0.6886)** **0.3332 (0.5638)**
India	**Non** **At most 1**	**6.7606 (0.6056)** **0.356032 (0.5507)**	**6.40459 (0.5619)** **0.356032 (0.5507)**
Bangladesh	**Non**	**8.5043 (0.4132)**	**8.3129 (0.3478)**

	At most 1	**0.191423 (0.6617)**	**0.1914 (0.6617)**
Pakistan	**Non**	**5.5931 (0.7430)**	**5.34097 (0.6983)**
	At most 1	**0.25216 (0.6156)**	**0.252163 (0.6156)**
Bhutan	**Non**	**13.8031 (0.0885)***	**8.80275 (0.3029)**
	At most 1	**5.0004 (0.0253)***	**5.000384 (0.0253)***
Srilanka	**Non**	**16.4808 (0.0354)***	**16.1447 (0.0249)***
	At most 1	**0.33611 (0.5621)**	**0.33611 (0.5621)**
Maldivs	**Non**	**46.0568 (0.048)***	**32.4713(0.043)***
	At most 1	**14.2809 (0.0281)***	**14.2809 (0.0281)***

Table 3 Results of Pedroni's panel cointegration test

Test Statistics	**Calculated Value**
Panel v-statistic	***2.38 (0.00)***
Panel ρ-statistic	***-1.87 (0.04)***
Panel PP-statistic	***-1.76(0.04)***
Panel ADF-statistic	***-2.86 (0.02)***
Group ρ-statistic	***-1.482 (0.20)***
Group PP-statistic	***-1.15 (0.05)***
Group ADF–statistic	***-1.12(0.04)***

The parentheses indicate the probability of significance; Estimation follows no deterministic trend.

Having found that there is a long-run equilibrium relationship between government spending and economic growth, it gives an indication that there can be Granger causality in at least one direction. The results show bidirectional causality between government spending and economic growth, both at the individual and panel levels, except for Pakistan Bhutan and Maldives. Consequently, increased government spending is both a cause and a consequence of increased economic growth. The findings suggest that, for Pakistan, Bhutan and Maldives, there is unidirectional causality between government spending and economic growth when government spending is taken as an independent variable.

Table 4 Granger Panel Casualty Test

Independent Variable			
		GCE	**GDP**
Country Name	**DV**	***F Statistic***	***F Statistic***
Nepal	ΔGDP	5.3497*	-
	ΔGCE	-	0.5248*
India	ΔGDP	2.5567*	-
	ΔGCE	-	0.3294*
Bangladesh	ΔGDP	5.3779*	-
	ΔGCE	-	0.5205*
Pakistan	ΔGDP	*1.2219**	-
	ΔGCE	-	*1.9087*
Bhutan	ΔGDP	*0.04161*	-
	ΔGCE	-	*0.1239**

Srilanka	ΔGDP ΔGCE	*0.1577** -	- *4.459**
Maldivs	ΔGDP ΔGCE	*3.3939*	- *0.6204**
Panel Granger Test	ΔGDP ΔGCE	*5.47286** -	- *14.77**

*Indicates significant at 5%.

DV= Dependent Variable

5 Conclusion

The present work extended the literature on growth-government spending nexus in the seven SAARC countries over the period 2000-2001. Using univariate and panel cointegration, it suggests the following conclusions.

• Economic growth, measured by GDP, and government spending are integrated of order one for the seven SAARC countries at the individual and group levels except for the srilanka of government spending.

- Economic growth and government spending are cointegrated, indicating the presence of long-run equilibrium relationship between them.
- The causality test concludes that government spending Granger cause economic growth and vice versa indicating the feedback between these two variables, both in the short run and long run. This is, however, true for all the countries at the individual level, except Pakistan, Bhutan and Maldives and the group level
- To conclude, increased government spending is both a cause and a consequence of increased economic growth in seven SAARC countries. The lack of government spending may constrain the economic growth in these countries. The results from this study support the view that government spending is a critical factor to economic growth. Hence, the policy to increase government spending is likely to stimulate economic growth in the SAARC countries. The study is, however, not free from limitations. It is mostly bounded by two variables: economic growth, measured by GDP, and government spending, measured by government final consumption expenditure only. In reality, both can be measured in other forms too, which are not incorporated in this study. The study can be again criticised on the grounds of exclusion of other relevant variables such as exports, imports, money supply and tax. The addition of these variables may change the current research findings and policy implications as well. So this could be the future research directions in the relation between government spending and economic growth.

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References

Abizadeh, Sohrab and Yousefi, Mahmood (1998) An Empirical Analysis of South Korea's Economic Development and Public Expenditures Growth, *Journal of Socio-Economics* 27, 687-700.

Afxentiou, P.C. and Serletis, A. (1996) 'Government expenditures in the European Union: do they converge or follow Wagner's Law', *International Economic Journal*, 10, 33–47.

Ahsan, S.M., Kwan, A.C. and Sahni, B.S. (1996) '*Cointegration and Wagner's hypothesis: time series evidence for Canada'*, Applied Economics, 28, 1055–1058.

Akitoby, B., Clements, B., Gupta, S. and Inchauste, G. (2006) 'Public spending, voracity, and Wagner's law in developing countries', *European Journal of Political Economy*, 22, 908–924.

Ansari, Mohammed I., Gordon, D. V. and Akuamoah, C. (1997) Keynes versus Wagner: Public Expenditure and National Income for Three African Countries, Applied Economics 29, 543-550.

Asongu, S., & Jellal, M. (2016). Foreign aid fiscal policy: theory and evidence. *Comparative Economic Studies*, *58*(2), 279-314.

Bai, J. and Ng, S. (2004) 'A panic attack on unit roots and cointegration', Econometrica, 70, 191–221.

Beetsma, R. M., & Jensen, H. (2005). Monetary and fiscal policy interactions in a micro-founded model of a monetary union. *Journal of international Economics, 67*(2), 320-352.

Bird, R.M. (1971) Wagner's Law of Expanding State Activity, Public Finance 26, 1-26.

Biswal, B., Dhawan, U. and Lee, H.Y. (1999) 'Testing Wagner versus Keynes using disaggregated public expenditure data for Canada', Applied Economics, 31, 1283–1291.

Chang, T. (2002) 'An econometric test of Wagner's law for six countries based on cointegration and error correction modelling techniques', Applied Economics, 34,1157–1169.

Chlestos, M. and Kollias, C. (1997) 'Testing Wagner's Law using disaggregated public expenditure data in the case of Greece – 1953–1993', Applied Economics, 29, 371–377.

Choi, I. (2001) 'Unit root tests for panel data', *Journal of International Money and Finance*, 20, 249–272.

Courakis, A.S., Moura-Roque, F. and Tridimas, G. (1993) 'Public expenditure growth in Greece and Portugal: Wagner's law and beyond', Applied Economics, 25,125–134.

Engel, R.F. and Granger, C.W.J. (1987) 'Cointegration and error correction: representation, estimation and testing', Econometrica, 55,251–276.

Engle, R.F. and Yoo, B.S. (1987) 'Forecasting and testing in cointegrated systems', *Journal of Econometrics*, 35, 143–159.

Engle, Robert F., and Granger, C.W.J. (1987) Cointegration and Error Correction: Representation, Estimation and Testing Econometrica 55, 251-276.

Granger, C.W.J. (1981) 'Some properties of time series data and their use in econometric model specification', *Journal of Econometrics*, 16,121–130.

Halicioglu, F. (2003) 'Testing Wagner's Law for Turkey, 1960–2000', Review of Middle East Economics and Finance, 1,129–140.

Hong, S., & Nadler, D. (2016). The impact of political institutions on US state bond yields during crises: evidence from the 2008 credit market seizure. *Journal of Economic Policy Reform*, *19*(1), 77-89.

Im, K.S., Pesaran, M.H. and Shin, Y. (2003) 'Testing for unit roots in heterogeneous panels', Journal of Econometrics, 115, 53–74.

Islam, Anisul, M. (2001) Wagner's law revisited: cointegration and exogeneity tests for the USA, Applied Economics Letters, 8, 509-515.

Iyare, S.O. and Lorde, T. (2004) 'Cointegration, causality and Wagner's law: tests for selected Caribbean countries', Applied Economics Letters, 11, 815–825.

Jhingan, M. L. "Macroeconomic Theory, © ML Jhingan." (2003): 773-787.

Johnson, L. E., Ley, R., & Cate, T. (2001). Keynes' theory of money and his attack on the classical model. *International Advances in Economic Research*, *7*(4), 409-418.

Kolluri, B.R., Panik, M.J. and Wahab, M.S. (2000) 'Government expenditure and economic growth: evidence from G7 countries', Applied Economics, 32, 1059–1068.

Levin, A., Lin, C.F. and Chu, C.S. (2002) 'Unit root tests in panel data: asymptotic and finite sample properties', *Journal of Econometrics*, 108, 1–24.

Maddala, G. and Wu, S. (1999) 'A comparative study of unit root in panel with dynamic factors', Oxford Bulletin of Economics and Statistics, 61,631–652.

Meltzer, A. and Richard, S. (1981) A Rational Theory of the Size of Government, *Journal of Political Economy* 89, 914-927.

Nagarajan, P. and Spears, A. (1990) 'An econometric test of Wagner's law for Mexico: a re-examination', Public Finance/ Finances Publiques, 45, 165–168.

O'Connell, P.G.J. (1998) 'The overvaluation of purchasing power parity', *Journal of International Economics,* 44.1–19.

Ouattara, B. (2006). Foreign aid and government fiscal behaviour in developing countries: Panel data evidence. *Economic Modelling*, *23*(3), 506-514.

Pedroni, P. (2004) ‘Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis: new results’, Econometric Theory, 20, 597–627.

Pesaran, M.H. (2003) A Simple Panel Unit Root Test in the Presence of Cross Section Dependence, Cambridge University, Mimeo.

Remmer, K. L. (2004). Does foreign aid promote the expansion of government? *American Journal of Political Science*, *48*(1), 77-92.

Shkodra, J., Krasniqi, A., & Ahmeti, N. (2022). The impact of government expenditure on economic growth in Southeast European countries. *Journal of Management Information and Decision Sciences,* 25(S1), 1-7.

Singh, B. and Sahni, B. S. (1984) Causality between Public Expenditure and National Income, the Review of Economics and Statistics 66, 630-644.

Thornton, J. (1999) ‘Cointegration, causality and Wagner’s law in nineteenth century Europe’, Applied Economics Letters, 6, 413–416.

Tobin, D. (2005) ‘Economic liberalization, the changing role of the state and Wagner’s law: China’s development experience since 1978’, World Development, 33, 729–743.

Wahab, M. (2004) ‘Economic growth and government expenditure: evidence from a new test specification’, Applied Economics, 36, 2125–2135.