Remittances Review
April 2024,
Volume: 9, No: 2, pp.1782-1794
ISSN: 2059-6588(Print) | ISSN 2059-6596(Online)

Received : 10 Januanry 2024, Accepted: 15 April 2024
DOI: https://doi.org/10.33282/rr.vx9i2.95

Investigating the Impact of Education Expenditure and Health Expenditure on Economic Growth: Selected SAARC Countries Analysis

Falak Sher[1], ImadUd Din[2], Talah Numan Khan[3], RehmatUllah Awan[4*]

Abstract

This study investigates the impact of education expenditure and health expenditure over economic growth in selected SAARC countries by using panel data for time span of 1990 to 2021. Pedroni and Kao co-integration tests and Autoregressive Distributed Lag (ARDL) model are applied. The findings show that, in selected SAARC countries, there is a long-term correlation between education expenditure, health expenditure and economic growth. The ARDL method's findings indicate that expenditures on health and education as well as investment have a positive and significant impact on economic growth, whereas government has a negative and significant impact on the long-term economic growth of selected SAARC countries. According to this study, improving human capital through increased investment in health and education is crucial for economic growth, and policymakers in selected SAARC nations should place the highest priority on increasing investment in these two human capital pillars.

JEL Classification: I10, I20, O4

Keywords: Education Expenditure, Health Expenditure, Economic Growth, ARDL, SAARC Countries

1. Introduction

The money that the government uses to acquire and deliver services, including as defense, law and order, social security, healthcare, and education, is known as government expenditures. The current resurgence of interest in growth theory has prompted researchers to increase their efforts in verifying and understanding the links between fiscal policies and growth. For the last 15 years, a substantial amount of empirical research has been carried out with the aim of identifying the public spending components (both at the aggregate and dis-aggregate levels) that have a strong correlation with economic growth. The empirical literature uses a variety of data sets and econometric techniques, and its findings are usually unclear. The conflicting explanations that have been offered can be divided into two

[1]Falak Sher, Lecturer, University of Sargodha, Pakistan, falak.sher@uos.edu.pk

[2]ImadUd Din, Mphil Economics, University of Sargodha, Pakistan, imadk6439@gmail.com

[3]TalahNuman Khan, Assistant Professor, Forman Christian College Lahore, Pakistan, talahkhan@fccollege.edu.pk

[4]RehmatUllah Awan, Professor, University of Sargodha, Pakistan, rehmatullah.awan@uos.edu.pk (corresponding Author)

separate groups. The first claims that differences in the set of conditioning factors utilized by various researches are the cause of the discrepancy in the results. In contrast, a small number of studies in the second group argue that the variation in the results is most likely due to the common tendency of researchers to ignore the impact of government funding limitations on their regressions.

The later viewpoint, in particular, highlights the necessity of simultaneously taking into account the sources and uses of money in order to meaningfully asses how taxes and spending affect economic growth. The existing literature presents a worrying trend in addition to generating divergent points of view. Most of the inferences made about the outcomes of public spending over growth are either premised on experiences of a group of developed nations or on extensive samples made up of both developed as well as developing nations. As a result, little is still known about how public spending decisions affect developing nations' prospects for economic growth. This tendency has persisted in spite of long-held belief among development professionals that there is significant distinction among developed and developing countries in how public spending has impacts on findings in these two groups of nations. The proportion of public expenditures between these two groups of nations also differs significantly (Bose et al. 2007).

Additionally, the entire amount of a nation's federal budget set aside for a variety of educational initiatives is known as education expenditure (Kweka& Morrissey, 2000). In human capital theories,education is an important component of economic progress. Spending money on education as well as health improves worker quality, which raises labor productivity and promotes new trades along with economic growth. (Chani et al. 2021). Also government spending on education has indirect benefits in the economy, such as improved educational attainment and achievement among children, lower child mortality, better individual health, and a reduced birth rate, all of which contribute to increased overall earnings (Sihaloho, 2021). The general public benefits greatly from education investments on a macro and micro level, and education have a significant direct and indirect influence over economic growth (Mercan&Sezer 2014 as cited in Sihaloho, 2021).

However, all expenses related to nutrition, family planning, and medical emergency support fall under the area of health expenditures (World Health Organization [WHO], 1999). Health expenditures have a vital role in fostering an innovative and healthy economy. In terms of socioeconomic development, health is among the most crucial facet of human capital. Better health increases human capital levels and increases labor productivity, which in turn leads to faster economic growth. Increased health-care spending boosts economic development and improves lifestyle quality. Sickness is common among young workers, disrupting efficiency and domestic saving rates (Ainsworth & Over, 1994). A productive asset and a growth driver for the economy is health. (Barrow, 1996). Good health leads to increased growth, whereas poor health leads to poverty (WHO, 1999). Potential suppliers of health sector interventions are expected to positively impact economic growth (Khan et al. 2016; Donou-Adonsou et al. 2021).

For the case of low-income nations, adult survival rates have a favourable influence over economic growth. (Bhargava et al. 2001). Excellent health has a favourable, large, as well as significant influence on overall productivity (Bloom et al. 2004). Health has a positive influence over growth, but only when combined with education (Cooray, 2013). According to WHO, health of a country's population influences its growth rate (Faruk et al. 2022). According to statistics, there are significant differences in health care expenditure (HCE) throughout time and between different South Asian countries and regions. For instance, in the SAARC region, yearly per capita health spending in 2011 was 3.7%. (WHO 2014).

Human capital development is dependent on health and education. They are basic needs and are desirable for their own sake. They are also among the most basic economic development objectives. Human welfare is linked with good health, and education is necessary for a happy life. Education and health are also intrinsically linked. A successful education requires good health which in turn requires education and literacy. The international community has recognized the critical relevance of health and education, and has made improving health and education a policy priority in the battle against poverty. Many governments around the world have attempted to revive their economies by raising government spending, while others have harshly condemned them, most notably some European Union members. Economic growth and development are significantly influenced by education as well as health, which has been widely studied and accepted. Health and education are important to the idea of enhancing individual potentials, is the essential component of what economic progress entails (Riasat et al. 2011; Ali &Saif, 2017; Dudzeviciute et al. 2017; Donou-Adonsou et al. 2021).

Several studies have examined the connection between government spending and economic growth as well as the association between spending on healthcare and education and economic growth in different nations. Nonetheless, it seems that little research has been done on the connection between economic growth and spending on healthcare and education, particularly in SAARC countries. This study looks at these linkages in an attempt to fill gap in literature.

The study is organized into several sections: The second part offers an extensive overview of existing literature, encompassing both theoretical frameworks and empirical background to situate the current study. Section three elaborates on the data collection and methodology utilized. The fourth section presents the results and corresponding discussions. Finally, in section five, we draw conclusions from our research and discuss its policy implications.

2. Literature Review

An overview of the empirical relationships between health and education spending and economic growth is provided in this section. Kesavarajab (2021) revealed influence of public spending on economic growth in Sri Lanka using data from 1977-2016. Findings of ADF, PP and KPSS revealed that some variables were found stationary on level but other was become stationary on 1st difference and hence the study utilized ARDL technique for estimation. Study findings showed existence of long term connection among variables. According to the study, the disaggregated level of the growth effects of public expenditures varies. The overall spending on

education, transportation, and communication was shown to have positive and statistically significant growth effects, whereas total spending on health, agriculture, and defense was found to have statistically insignificant growth effects.

Sihaloho (2021) explored that whether government spending over health, defense, and education improves welfare by using data from twenty Asian Developing nations of 2013 to 2017. The findings of Fixed Effect Generalized Least Square (FEGLS) technique demonstrated that government expenditure over education, health, and defense has positive and significant influence over welfare in these twenty Asian nations. In comparison to government spending over education and the military, the study demonstrated that government spending over health has the greatest influence on welfare.

Shehzad and Munir (2021) discovered the relationship between government spending and economic growth in Pakistan through data spanning from 1980 to 2015. Their findings, using the ARDL approach, showed a positive and significant correlation between government spending on defense and economic growth, both in the short and long term. Additionally, their results indicated a positive and significant link between government expenditure on infrastructure, healthcare, and education, and economic expansion in Pakistan.

Dilawar et al. (2020) explored the effect of fiscal policy on Pakistan's economic growth using data from 1981 to 2016 sourced from the World Development Indicator (WDI). Their analysis, employing ADF test, demonstrated that except for the gross domestic product (GDP) growth rate, which remained stationary at its level, all other variables were stationary at first difference. Study's findings indicated both long-term and short-term relationships among variables. Results from ARDL technique revealed a positive and significant association between gross national expenditures, industry value added, and gross saving with economic growth. However, the association of labor participation rate with economic growth was positive yet insignificant. The outcome of ARDL technique revealed negative and also significant connection of gross capital formation with economic growth. The study recommended that long-term productive measures, as dams, will aid the country's economic growth.

Appiah (2017) explored the influence of expansion in education spending over GDPPC using Generalized Method of Movement(GMM) estimator by utilizing panel data from 139 different developing nations using the period of 1975 to 2015 and also determined whether the influence differs from that of Sub Saharan African (SSA) nations or not. According to the estimates, raising education spending in developing nations has positive influence over GDPPC, and the influence is similar to that of SSA nations.

Khan et al. (2016) utilized panel data from 1995 to 2012 in order to reveal the relationship among health care expenditures and economic growth in SAARC nations. Findings of Im, Pessaran and Shin (IPS) unit root test revealed that at 1st difference, all variables were become stationary. The outcome of Dynamic Ordinary Least Square (DLOS) explored positive and significant relationship among health care spending, labour force and economic growth. DLOS as well revealed positive but insignificant association among literacy rate and economic growth in the long run in SAARC countries. Results revealed that in short run health care expenditure

positively and significantly affected economic growth in SAARC countries. Findings of panel causality test explored the unidirectional causality of growth towards health care spending. The study proposed that any shock will have an adverse effect on the HCE if it negatively affects the per capita GDP. Increase in wealth and human capital levels are necessary to attain a high level of HCE and ensure that people in these countries have free access towards health-related services such as housing amenities, a healthy food, and education.

Korkmaz (2015) revealed the influence of military spending over economic growth as well as unemployment in 10 Mediterranean nations using panel data for the period 2005-2012. Unit root test indicated that variables were found stationary at level. Findings of Fixed Effect Model (FEM) show that unemployment, along with GDP, is statistically significant for the 10 Mediterranean countries. According to the outcome of this study, military spending has an adverse influence on GDP and has a positive influence over unemployment.

Muhammad et al. (2015) explored the influence of government spending over economic growth in Pakistan using data from 1972 to 2013. The ADF test results showed that variables were stationary at 1st difference. According to results of the Johnson co-integration along with granger causality tests, there was no long-run connection among growth rate and expenditure in Pakistan over that time period.

Olabisi et al. (2012) revealed the association of government expenditures with growth in Nigeria by utilizing data from 1983 to 2012 which was extracted from Central bank of Nigeria. The outcome of ADF test demonstrated that every variable was stationary over 1st difference. Findings of study revealed positive and significant connection of government consumption expenditures with economic growth but square of government consumption spending negatively related with economic growth in Nigeria.

Rehman (2011) analyzed casual connection between education expenditure, health expenditure and gross domestic product using data of Bangladesh from 1990-2009. Findings of research using the error correction model(ECM) method demonstrated that the importance of coefficient of both human as well as physical capital during growth model for Bangladesh was enhanced. Second, using the VAR Granger Causality test, this study determined causative link between these variables. According to the empirical analysis, there is bidirectional causal connection among education spending and GDP as well as among education spending and health spending, however there is only a one-way association between health spending and GDP.

Bose et al. (2007) used data from 1970 to 1990 from the World Bank and International Monetary Fund (IMF) to investigate the effect of public spending, specifically disaggregated government spending, on economic growth across thirty developing nations. The study found a strong and positive correlation between economic growth and government capital spending. It did discover, however, that current government spending was positively but not significantly correlated with economic development in any of these thirty countries. When analyzed separately, total investment in education as well as total spending on education indicated strong positive correlations with these countries' economic growth. According to the study's

findings, a 1% increase in overall spending on education may contribute 1.5% to economic growth.

The empirical studies discussed earlier highlight a consistent pattern across different countries, indicating a positive association between government expenditure and economic growth. This positive correlation is particularly notable in sectors like healthcare and education, emphasizing their significant contributions to overall economic growth.

3. Data and Methodology

3.1 Model Specification

To examine influence of education expenditure, health expenditure, and economic growth, this study adopted same model as utilized by Donou-Adonsou et al. (2021).

$$\text{GDP Per Capita} = f(\text{EDUE, HEE, GOVE, INV}) \quad (1)$$

Converting the function mentioned above into an equation:

$$LnGDPPC_{it} = \beta_0 + \beta_1 lnEDUE_{it} + \beta_2 lnHEE_{it} + \beta_3 lnGOVE_{it} + \beta_4 lnINV_{it} + \mu_{it} \quad (2)$$

Where GDPPC = Gross Domestic Product Per Capita, EDUE = Education Expenditure, HEE = Health Expenditure, GOVE = Government, INV = Investment, μ = Error term, the subscript (i = 1……..n) indicates the country while the subscript (t = 1…….t) shows the time period.

Equation 2 captures effect of education expenditure (EE), health expenditure (HE) and gross domestic product per capita. Dependent variable is GDPPC while all the right side variables in equation 2 explanatory variables.

3.2 Data

Panel data on six SAARC countries (Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka) from the period spanning 1990 to 2021 have been employed. Data for all variables were sourced from WDI and UNESCO. There is no analysis for Afghanistan and the Maldives due to data.

The data for this study were sourced from WDI and UNESCO. WDI provided data on variables such as GDPPC (constant 2015 US$), HE per capita (constant 2015 US$), GOVE final consumption expenditure per capita (constant 2015 US$), and Gross capital formation (GCF) per capita (constant 2015 US$). UNESCO provided data on EE per capita (constant 2015 US$).

3.3 Estimation Technique

Many earlier studies encounter a fundamental issue by neglecting to account for cross-sectional dependence. Cross-sectional dependency arises from the presence of unobserved factors that affect all cross-sectional units, potentially introducing common disturbances. It is plausible that unobservable factors, such as cultural or technological spillovers, may exert a similar influence on developing nations. There is a wide belief on cross-sectional independence, which forms the basis of much panel data research, does not hold. Overlooking such dependencies, which could be caused by unaccounted random effects possibly linked to regressors, can result in biased and

erroneous estimates. Hence determination of presence of cross-sectional dependency in the data is important in order to employ estimation methods that yield robust results (Shastri et al., 2017). The LM test, originally proposed by Breusch and Pagan in 1980, serves as a tool for assessing cross-sectional independence.

Before assessing the long-term relationships among variables, stationarity of each variable needs to be checked. This step is crucial as if there is an issue at this stage, projected outcomes may be inaccurate and misleading for policymaking purposes (Khan et al., 2016). Due to certain issues with traditional "first-generation" panel unit root tests, it is advisable to use second-generation tests that are more suitable in such cases.

In this study, Cross-sectional Im, Pesarran and Shin (IPS) test was employed. This test relies on an Augmented Dickey-Fuller (ADF) regression that is augmented cross-sectionally, incorporating the lagged cross-sectional mean and the lagged first differences of the cross-sectional mean to address and eliminate cross-sectional dependence effectively (Khan et al., 2016).

The next phase includes estimating long run coefficients when the long run association has been confirmed.Panel ARDL Model, the new standard for establishing long-term relationships in panel analysis, provides a number of advantages over DOLS, FMOLS and Generalized Method of Moment (GMM). This method simultaneously estimates long-term and short-term estimations. By include lagged terms for dependent and independent variables, it also addresses the issue of endogeneity. It applies to variables that have been integrated in either at level, I(1), and may be mixed order. For the analysis of panel data, the ARDL Model is based on three different estimators. These estimators are estimated using the maximum likelihood method. To acquire long run parameters for each cross section, the mean grouped calculates separate regression. To get the total coefficient of the panel, it calculates the mean of the estimated long term coefficients from ARDL model for each individual country. These estimates will produce consistent and efficient results for long run parameters (Pesaran, Shin & Smith, 1999). The dynamic fixed effect (DFE) estimator and pooled mean group(PMG) are somewhat similar. It imposes restrictions on long run parameters and error variance, requiring that short run slopes and ECM coefficients be the same for all countries.

Under ARDL framework, (Pesaran et al. 1999) created PMG to reveal short term and also long-term connections among series. Following are the fundamental requirements for a consistent and efficient PMG estimator: In order to prevent serial correlation among the error terms, the lag of output variable (p) and the lag of the explanatory variables (q) are introduced in the error correction representation. It is assumed that every explanatory factor is actually exogenous. Explanatory variables and dependent variables have a long-term relationship. It is assumed that all countries' long-term parameters would remain constant. The key characteristic of the PMG estimator is that it considers short term coefficients, ECM coefficient, intercepts, and error variance to be unique to each nation while assuming that long run parameters are the same for all countries.

4. Results and Discussions

Results of link among EE, HE and EG in sample nations given in lines below.

Table 1.Breusch-Pagan LM Test Results

Statistics	d.f	p-value
69.1	15	0.0000

Source: Author's calculation

LM test results are depicted in Figure 1. Alternative hypothesis of cross-sectional dependency is accepted. Consequently, we employ second-generation unit root tests.

Table 2. Result of Homogeneity Test

T-statistic	P value
9.4	0.0000
10.4	0.0000

Source: Author's calculation

Table 2 presents results of homogeneity test. Null hypothesis regarding heterogeneous constant terms and slope coefficients is accepted. Therefore, we proceed with the model that incorporates unobserved effects.

Table 3. Unit Root Test Findings

Series	Cross Sectional Im, Pesaran and Shin Test		Results
	Level	1st Difference	
LnGDPPC	-01.0	-04.2***[5]	I(1)
LnEDUE	-03.2***	-05.1***	I(0)
LnHEE	-02.5	-05.6***	I(1)
LnGOVE	-02.2	-04.0***	I(1)
LnINV	-02.4	-03.6***	I(1)

Source: Author's calculation

Note: ***, **, *, shows the 1%, 5% and 10% level of significance.

Table 3 reveal that EE exhibits stationarity at the level, whereas GDPPC, HE, GOVE, and INV are stationary at the first difference.

Table 4. Descriptive Statistics

Variables	Observation	Mean	Std.Dev	Minimum	Maximum
lnGDPPC	192	07.1	0.6	06.1	08.4
lnEDUE	192	03.6	0.7	02.0	05.4
lnHEE	192	02.5	1.0	0.9	05.5

lnGOVE	192	04.7	0.8	03.2	06.4
lnINV	192	05.8	0.8	04.3	07.4

Source: Author's calculation

Descriptive statistics of all series are presented in table 4. Notably, on average SAARC nation tend to spend more on education compared to health over the study period.

Table 5. Correlation Matrix

Series	**lnGDPPC**	**lnEDUE**	**lnHEE**	**lnGOVE**	**lnINV**
lnGDPPC	1	0.82	0.88	0.86	0.80
lnEDUE	0.82	1	0.90	0.94	0.89
lnHEE	0.88	0.90	1	0.92	0.87
lnGOVE	0.86	0.94	0.92	1	0.86
lnINV	0.80	0.89	0.87	0.86	1

Source: Author's calculation

Table 5 displays correlation results. Both key variables, EE and HE, exhibit positive correlations with GDPPC. The correlation between GDPPC and HE is notably high at 0.88, while the correlation between GDPPC and EE is 0.82. Furthermore, the correlation between HE and EE also substantial at 0.90.

In this study, we employ panel co-integration tests developed by Pedroni (1999, 2004) and Kao (1999) to assess co-integration relationships among the variables.

Table 6.Pedroni Residual Co-Integration Test

Model		
Test Statistics	**t-statistic**	**p-value**
v-statistic	-01.2	0.886
rho-statistic	-01.9	0.026
PP-statistic	-06.6	0.000
ADF-statistic	-05.7	0.000
Group rho-statistic	-00.5	0.299
Group PP-statistic	-08.4	0.000
Group ADF-statistic	-05.6	0.000

Source: Author's calculation

The panel co-integration test results are presented in table 6. Among the seven tests conducted, five yielded p-values below 0.05, indicating existence of long-term link among EE, HE and EG.

Table 7. Kao Residual Co-integration Test

Test	**t-statistic**	**p-value**
ADF	-3.482	0.0002

Source: Author's calculation

Results of Kao residual co-integration test, as depicted in table 7, indicate a highly significant p-value, rejecting the null hypothesis, hence it is concluded that there is co-integration among the series.

Long Run Results

Table 8. Results of Auto Regressive Distributive Lag Model

Variable	Coefficient	Std.Error	t-statistics	p-value
LnEDUE	0.01	0.0001	104.2	0.0000
LnHEE	0.06	0.010	5.5	0.0000
LnINV	0.60	0.007	21.9	0.0000
LnGOVE	-0.04	0.007	-5.3	0.0000

Source: Author's calculation

Figure 8 shows ARDL model findings of relationship among the series sampled nations. The outcome shows positive and significant impact of education expenditure, health expenditure and investment over economic growth. The outcome indicates negative and significant influence of government over economic growth.

Short term results are given in table 8 and it is apparent that expenses on education and health sectors have positive and statistically significant impact on economic growth. Investment expenditures do also have beneficial effect on growth of sampled countries (SAARC). Conversely, the study reveals a negative but statistically insignificant relationship between GOVE and EG in these countries.

Table 9. Short Run Results: Dependent Variable is ΔLnGDPPC

Variable	Coefficient
ΔlnEDUE	0.03** (0.01)
ΔlnHEE	0.04*** (0.01)
ΔlnGOVE	-0.01 (0.02)
ΔlnINV	0.01 (0.03)
ECT	-0.71*** (0.13)

Source: Author's calculation

Note: ***, **, *, shows the 1%, 5% and 10% level of significance respectively.

5. Conclusions and Policy Implications

The primary objective of this study was to investigate the relationship between education expenditure, health expenditure, and economic in SAARC countries. Study finds positive and significant impact of EE, HE, and INV on economic growth. In contrast, the results indicate a negative and significant influence of GOVE on economic growth in these countries and these findings are consistent with; (Anwar &Munir 2013, Ahmed & Bashir 2016). In developing countries, the prevalence of

rent-seeking, corruption, or poor institutional quality, results in more unproductive spending or inefficient government activities. These factors can lead to unproductive spending and inefficient government activities, funded by high taxes or aid, ultimately restraining overall economic growth (Anwar &Munir, 2013).

The study suggests that an increase in investment will boost and promote growth in SAARC region. Furthermore, the findings underscore the importance of advancing human capital by allocating more resources to health and education. Policy makers in these selected SAARC countries should prioritize and enhance investment in these aspects of human capital to facilitate economic growth.

References

Ali, Afshan, and SabeenSaif. 2017. "Determinants of economic growth in Pakistan: a time series analysis." *European Online Journal of Natural and Social Sciences* 6, no. 4. pp-686.

Anwar, Saba, and KashifMunir. 2013. *Size of the Government, Quality of Institutions and Growth in SAARC Countries*. University Library of Munich, Germany.

Appiah, Elizabeth N. 2017. "The effect of education expenditure on per capita GDP in developing countries." *International Journal of Economics and Finance* 9, no. 10. 136-144.

Bloom, David E., David Canning, and JaypeeSevilla. "2004. The effect of health on economic growth: a production function approach." *World development* 32, no. 1. 1-13.

Bose, Niloy, M. EmranulHaque, and Denise R. Osborn. "2007. Public expenditure and economic growth: A disaggregated analysis for developing countries." *The Manchester School* 75, no. 5. 533-556.

Chani, Muhammad Irfan, Muhammad Ramzan Sheikh, Muhammad Mansha, Asad Abbas, and Javed Iqbal. 2021."Impact of human capital investment on economic growth in muslim and non-muslimasian countries." *PalArch's Journal of Archaeology of Egypt/Egyptology* 18, no. 4. 5227-5247.

Dilawar, Sabira, AfifaSadarUd Din, AimanJavaid, Sadam Hussain, and Ayesha Ambreen. 2020. "Impact of Fiscal Policy on GDP Growth Rate: a Case of

Pakistan." *International Journal of Management, Accounting & Economics* 7, no. 4.

Donou-Adonsou, Ficawoyi, Gyan Pradhan, and Hem C. Basnet. 2021."Human capital expenditure and income in developing countries." *The Journal of Developing Areas* 55, no. 3. 113-128.

Dudzevičiūtė, Gitana, AgnėŠimelytė, and AušraLiučvaitienė. 2018."Government expenditure and economic growth in the European Union countries." *International Journal of Social Economics* 45, no. 2. 372-386.

Faruk, Bashir Umar, Mohammad ImdadulHaque, Mohammad RumziTausif, and MdRiyazuddin Khan. 2022."The association between health expenditure, institutions, and economic growth in MENA countries." *Health Promotion Perspectives* 12, no. 1. 92.

Hassan, Gazi M., and Arusha Cooray. 2013. *Effects of Male and Female Education on Economic Growth: Some Evidence from Asia Using the Extreme Bounds Analysis*. Department of Economics, University of Waikato.

Kao, Chihwa. 1999. "Spurious regression and residual-based tests for cointegration in panel data." *Journal of econometrics* 90, no. 1. 1-44.

Khan, Habib Nawaz, Muhammad Arshad Khan, Radzuan B. Razli, Afz'A. BintiSahfie, GulapShehzada, Katrina Lane Krebs, and NasrinSarvghad. 2016. "Health care expenditure and economic growth in SAARC countries (1995–2012): a panel causality analysis." *Applied Research in Quality of Life* 11. 639-661.

Korkmaz, Suna. 2015."The effect of military spending on economic growth and unemployment in Mediterranean countries." *International Journal of Economics and Financial Issues* 5, no. 1. 273-280.

Kweka, Josaphat P., and Oliver Morrissey. 2000. *Government spending and economic growth in Tanzania, 1965-1996*. No. 00/6. Credit Research Paper.

Olabisi, Adewara Sunday, and Elizabeth FunlayoOloni. 2012."Composition of public expenditure and economic growth in Nigeria." *Journal of Emerging Trends in Economics and Management Sciences* 3, no. 4. 403-407.

Pedroni, Peter. 1999."Critical values for cointegration tests in heterogeneous panels with multiple regressors." *Oxford Bulletin of Economics and statistics* 61, no. S1. 653-670.

Pedroni, Peter. 2004. "Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis." *Econometric theory* 20, no. 3. 597-625.

Pesaran, M. Hashem, Yongcheol Shin, and Ron P. Smith. 1999."Pooled mean group estimation of dynamic heterogeneous panels." *Journal of the American statistical Association* 94, no. 446. 621-634.

Rahman, MdMostafizur. 2011."Causal relationship among education expenditure, health expenditure and GDP: A case study for Bangladesh." *International Journal of Economics and Finance* 3, no. 3. 149-159.

Rathnasiri, R. A. 2020."Impact of public education expenditure on economic growth in Sri Lanka: Evidence from econometrics analysis."

Riasat, Saima, Rao Muhammad Atif, and Khalid Zaman. 2011."Measuring the impact of educational expenditures on economic growth: evidence from Pakistan." *Educational Research* 2, no. 13. 1839-1846.

Shastri, Shruti, A. K. Giri, and GeetilaxmiMohapatra. 2017."An empirical investigation of the twin deficit hypothesis: Panel evidence from selected Asian economies." *Journal of Economic Research* 22. 1-22.

Shehzad, Khurram, and Hafiz Adnan Munir. "Long-and short-run relationship between government spending and economic growth of Pakistan."

Wiksadana, Wiksadana, and EstroDariatnoSihaloho. 2021. "Does Government Spending in Health, Education, and Military Improve Welfare in Asian Developing Countries?." *JurnalEkonomi&Studi Pembangunan* 22, no. 1 59-74.