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REVENUE MOBILIZATION AND ECONOMIC EXPANSION: A CROSS-COUNTRY STUDY OF SAARC ECONOMIES.

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ABSTRACT

The study examines the relationship between tax revenue and economic growth of selected SAARC countries by taking a panel data over a period of (1980 -2020) from World Bank. The study concentrated on tax revenues and its connection to GDP that defined as a measure of economic growth. The Real GDP (LNGDP), Tax revenue (LNTR), Secondary education (LNSE), Labour force (LNLF) Gross Fixed Capital Formation (LNGFCF) and Trade Openness (LNTO) were the main variable of this study. A secondary (panel) data has been taken according to variables of this study. Finding of our study shows that: The relation between the GDP and tax revenue is positive, similarly the secondary education exerts a statistically significant effect on economic growth. According to the model, the labour force has a significant impact on GDP. Gross Fixed Capital Formation has a positive effect on economic growth. The last variable, Trade Openness, has a positive relationship with the GDP of SAARC countries also. The unit root stationary analyses performed by using the ADF test to determine whether the data trend was stationary or non-stationary. For additional empirical estimations, ADF was performed. Our panel unit root test value is greater than the accepted value, which reject hypothesis. Error correction model employed in order to examine the speed of adjustment. The results of the panel cointegration analysis indicate the presence of a long-run equilibrium relationship among the variables. Finally, we applied the Johansen Panel Cointegration Test results to keep the statistically significant under 5%. Based on the evidence from three panel cointegration tests, we conclude that a long-term cointegrating relationship exists among LNGDP, LNTR, LNSE, LNLF, LNGFCF, and LNTO in the selected countries. The Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) estimators are employed in this study, as they provide asymptotically unbiased and normally distributed coefficient estimates in the presence of cointegration.

1.0. INTRODUCTION

Tax revenue constitutes a fundamental component of government finances and plays a pivotal role in promoting economic development, particularly in developing regions such as South Asia. For countries within the South Asian Association for Regional Cooperation (SAARC), where fiscal deficits, underdeveloped infrastructure, and social service gaps are persistent, effective tax collection is essential to sustain public investment and foster macroeconomic stability. Despite the strategic importance of tax revenue, many SAARC economies face challenges such as narrow tax bases, administrative inefficiencies, and high levels of tax evasion, which constrain their capacity to generate adequate domestic resources. In this context, the relationship between tax revenue and economic growth has become a subject of increasing interest among policymakers and scholars. This study undertakes an empirical investigation into how tax revenue influences economic growth across selected SAARC countries, offering comparative insights that can inform fiscal policy reforms. By exploring this nexus, the research contributes to the broader discourse on sustainable economic strategies in emerging economies.

1.2. PROBLEM STATEMENT

Previous studies have explored the relationship between human capital and economic growth across various SAARC countries. However, most of this research has predominantly focused on more advanced economies, leaving developing nations relatively underexamined (Abbas, 2001). In response to this gap, the present study adopts a novel empirical approach to investigate how tax revenue influences economic growth in selected emerging South Asian countries—specifically Pakistan, Bangladesh, Sri Lanka, and India. By concentrating on these developing economies, the research aims to provide deeper insights into the fiscal dynamics shaping economic performance in the region. The primary objective is to examine the nature and strength of the relationship between tax revenue and economic growth within the context of these selected SAARC countries.

1.3. OBJECTIVES OF THE STUDY

1. To assess the effect of tax income on SAARC countries' economic growth.
2. To investigate the impact of secondary education on the economic growth of SAARC countries.

1.4. HYPOTHESIS OF THE STUDY

$H_{0:}$ SAARC countries (Pakistan, Bangladesh, Sri Lanka, and India), tax revenues have non-significant impact on economic growth.

$H_{1:}$ SAARC countries (Pakistan, Bangladesh, Sri Lanka, and India), tax revenues have positive impact on economic growth.

1.4. SIGNIFICANCE STUDY

This study is important for understanding how tax revenue influences economic growth in selected SAARC countries. It offers useful insights for policymakers aiming to improve tax collection systems and design effective fiscal policies. By comparing multiple developing economies, the research contributes to the existing knowledge on taxation in South Asia and supports future academic studies. It also helps educational institutions and researchers better understand the economic impact of tax structure in emerging markets.

2. LITERATURE REVIEW

The SAARC region, rich in labor resources, holds great potential for economic development. Wheeler (1980) linked rapid growth in China and India to their abundant and low-cost labor. Similarly, Bowman (1980) and Khan (1988) emphasized the role of R&D, training, and human capital in boosting productivity. Dornbusch (1994) and Funke (2000) highlighted advancements in capital, labor, and technology as key growth drivers, while Romer (1990) explored the importance of learning and education.

Abbas and Nasir (2001) explored the human capital-growth relationship in Pakistan and Sri Lanka, revealing mixed short-term effects. Other studies (Babatunde, 2005; Khan, 2005) confirmed that labor, education, and capital are critical to economic expansion. Taxation also emerged as significant; Padovano and Galli (2001) and Gwartney and Lawson (2006) found that high taxes can hinder growth, while reducing top marginal rates boosts long-term GDP.

Trade liberalization has also been shown to promote growth (Panagariya, 2004; Roberto, 2009), though results **vary by** country (Kim & Lin, 2009). Research by Durkaya and Ceylan (2006) and Roshaiza (2011) examined the tax–GDP nexus, with mixed outcomes across developing countries. Ahmed and Sheikh (2011) suggested that tax reform in SAARC nations—especially increasing direct taxes—could strengthen fiscal health. These findings underscore the

complex but critical relationship between taxation, human capital, and economic growth in emerging economies.

At end we concluded that the literature highlights that both human capital and effective tax policies play a vital role in economic growth. While some studies support a strong link between tax revenue and GDP, others show mixed or country-specific results. However, limited research exists on revenue mobilization in SAARC economies, indicating a clear gap this study aims to address.

3. RESEARCH METHODOLOGY

3.1. MODEL SPECIFICATION

Background of the economic growth models shows that classical and neo classical economists determine economic growth model. They determine that growth is a function of labor.

$Q = f(L)$ …… (1)

Neo classical include capital

$Q = f(L, k)$ …… (2)

Then human capital is including in economic growth as Lucas assumed that increase in time individual spent in obtaining skills generates a permanent increase in output.

$Q = f(L, K, Ht)$ …… (3)

$Q = f(L, K, Ht, G)$…… (4)

Where G is physical capital.

In modern economic era not only labor, capital, human capital and physical capital but trade openness also plays its positive role in economic growth. Then production function written in this form

$Q = f(L, K, Ht, G, To)$ …… (5)

Where To = trade openness. After looking the impact of all those economic growth factors. The purpose of this study (the impact of total tax revenue on economic growth) is as follows.

$Growth = f(TTR)$…… (6)

Including the above function into (5) then production function written in this form

$Y = f(L, K, Ht, G, To, TTR)$ …… (7)

In this study the impact of tax revenue on economic growth of selected SAARC, countries are analyzed using the data over the period of (1980-2020). Different sources used to gather data. The study concentrated on revenue and its connection to GDP that defined as a measure of economic growth.

$GDP = \beta_0 + \beta_1 TR + \beta_2 X_i + \mu$…… (8)

Where GDP = Gross domestic product

TR = total tax revenue

X_i = set of control variables (GFCF, Ht, G, TO)

β_0 = constant

β_1, β_2 =slope of coefficients

μ = error term

3.2. SOURCE OF DATA

This study was based on the secondary data collected over time from open sources (1980-2020). Bangladesh, India, Pakistan, and Sri Lanka were among the SAARC countries from WDI.

3.3. GENERAL TOOLS & TECHNIQUES

It is essential to assess the characteristics of the data before conducting any empirical analysis. To examine the impact of tax revenue on economic growth in SAARC countries, the data was first linearized and standardized. A static estimation approach was employed, followed by the application of Panel Cointegration tests. To ensure robustness, both Fully Modified Ordinary Least Squares (FMOLS) and Dynamic Ordinary Least Squares (DOLS) techniques were used for long-run estimation.

4.0 RESULT AND DISCUSSSION

4.1 DESCRIPTIVE ANALYSIS

Table- 1: Descriptive Statistics

	LNGDP	LNTR	LNSE	LN LF	LNGFCF	LNTO
Mean	25.6615	16.1102	16.4476	16.8337	24.1931	23.3469
Median	25.3080	16.6017	16.1120	16.7700	23.8720	24.0809
Maximum	28.6339	17.7725	33.0070	20.0545	27.391	27.4592
Minimum	23.2905	-4.6973	13.6450	13.7831	21.923	20.7218
Std. Dev.	1.4020	3.4299	2.1904	1.4351	1.5075	1.5210

The table 1 above provides a descriptive measurement of model demonstrations. GDP used as a dependent variable in this study, and TR, SE, LF, LNGFCF, and TO has been used as independent variables. Despite the fact that the central estimate of GDP is (25.66), the average estimate is (25.66). (25.30). It displays the median value of the descriptive statistics. The variables with the greatest and least scope are (28.63) and (23.29), respectively. The maximum and minimum values represented by the largest and least values, respectively. The standard deviation of the data is estimated to be (1.40), indicating that the data does not spread evenly around the mean.

Similarly, the least extreme worth maximum value of independent variable TR is (-4.69), while the mean LNTR assessment is now (16.11) and the Median evaluation is currently (17.77) (16.60). TR's standard deviation is (3.42), which is lower than the mean, indicating that the data is regularly distributed.

The independent component SE has a least extreme value of (13.64) and a extreme value of (33.00). The median and mean values are (16.11) and (16.44), respectively, but the data distribution for the variable in question is (2.19), which is below average. The mean estimate for the independent variable LF is (16.83), and the figure's middle estimate is (16.77). The highest value for LF is (20.05), and the lowest value is (13.78), with a feast of data for this component of 1.43, which is less than the mean value. The typical estimate for GFCF is (24.19), but its true value is (23.87). The most and least significant GFCF estimates, respectively, are (27.39) and (21.92). The standard deviation is determined (1.50). TO, on the other hand, has a median value of (23.34) and a middling value of (23.34). (24.08). TO has a maximum and minimum value of (27.45) and a standard deviation of (20.72). (1.52).

4.2 CORRELATION ANALYSIS

Correlation analysis was used to assess the strength and direction of the relationship between two variables.

Table- 2: Correlation Matrix

	DLNGDP	DLNTR	DLNSE	DLNLF	DLNGFCF	DLNTO
DLNGDP	1					
DLNTR	0.292	1				
DLNSE	0.924	0.337	1			
DLNLF	0.608	0.358	0.797	1		
DLNGFCF	0.684	0.259	0.632	0.89	1	
DLNTO	0.791	0.253	0.627	0.501	0.792	1

The correlation analysis reveals a strong and positive association between secondary education and GDP, supported by a coefficient of 0.924. Other key variables, such as labour force participation (DLNLF), gross fixed capital formation (DLNGFCF), and trade openness (DLNTO), also show a favourable relationship with GDP, with correlation coefficients of 0.608, 0.684, and 0.791 respectively. Additionally, tax revenue (DLNTR) is positively linked to education, labor force, and trade openness, with coefficients ranging from 0.253 to 0.358. Education demonstrates a strong connection with other growth-related factors, such as labour force (0.797), capital formation (0.632), and trade openness (0.627). Likewise, labour force and capital formation share a high correlation of 0.89, while trade openness is positively associated with both, registering coefficients of 0.501 and 0.792. Overall, the results highlight meaningful and positive interrelationships among key macroeconomic indicators influencing GDP.

4.3 UNIT ROOT TEST

This section outlines the findings from the panel unit root tests. Based on the results of the Levin, Lin, and Chu (LLC) test, as well as other complementary tests, the variables LNGDP, LNTR, LNSE, LNLF, LNGFCF, and LNTO were found to be non-stationary at the 5% significance level. This implies that the statistical characteristics of these variables—such as mean and variance—are not constant over time. Panel unit root tests generally assess the null hypothesis that each time series within the panel contains a unit root. While these tests provide a collective evaluation of stationarity, the interpretation of their outcomes can be intricate, especially when considering the presence of cross-sectional dependence and structural heterogeneity among the countries included in the panel.

Table- 3: Panel Unit Root Test 1

panel unit root test yielded t P-value Levine, W-stat P-value** Im, Pesaran,**		
Level	**t P-value**	**Levine, W-stat P-value**
ΔLNGDP	**0.9745**	**1.0000**
ΔLNTR	**0.2181**	**0.7463**
ΔLNSE	**0.5510**	**0.9984**
ΔLNLF	**0.0551**	**0.2282**
ΔLNGFCF	**0.8956**	**0.9996**
ΔLNTO	**0.6283**	**0.9937**

A root test for a panel unit performed here. There is no longer a unit root problem with this data. The null hypothesis is that the panels all have the same unit root. The panels' homogeneity is one of their drawbacks. When not all of the panels are stationary, these tests have a lot of power.

Table- 4: Panel Unit Root Test 2

1st difference	t P-value** Levine, Lin, and Chu	W-stat P-value** Im, Pesaran, and Shin
ΔLNGDP	-5.2671 0.0000	-4.8285 0.0000
ΔLNTR	-4.7745 0.0000	-6.6337 0.0000
ΔLNSE	-7.6072 0.0000	-7.2159 0.0000
ΔLNLF	-4.8715 0.0000	-4.9872 0.0000
ΔLNGFCF	-5.8674 0.0376	-5.2659 0.0129
ΔLNTR	-4.8548 0.0000	-5.4724 0.0000

As a result, in the case of selected SAARC countries, we have fixed statistics and a long-term correlation between variables under consideration.

4.4. TEST OF PEDRONI PANEL COINTEGRATION

In the table presents the results of the Unit Root Dynamic Panel Tests. The findings indicate that while the Panel Augmented Dickey-Fuller (ADF) Statistic and the Group ADF Statistic do not provide evidence of cointegration, the Panel rho Statistic, Panel ADF Statistic, Group PP-Statistic, and Group ADF-Statistic do confirm its presence. These tests are designed to assess non-stationary time series processes, where variances and means change over time. In such cases, cointegration tests are appropriate for determining whether a long-run equilibrium relationship exists among variables with unit roots (Rao, 2007).

Additionally, the Kao Residual Cointegration Test results, as shown in the table, suggest statistical significance at the 5% level. This supports the presence of a long-term relationship among the variables, commonly referred to as cointegration. To maintain statistical robustness at the 5% significance level, the Johansen Panel Cointegration Test was also applied. Based on the outcomes of three separate cointegration tests, it is concluded that there is a stable long-run association among LNGDP, LNTR, LNSE, LNLF, LNGFCF, and LNTO across the countries included in this analysis.

Table- 5: Pedroni Residual Co -Integration Test

Panel Cointegration Test		
Test Name	**T- Statistic**	**Prob. percent**
(1) Pedroni Residual Cointegration Tests		
Panel rho-Statistic	**-0.664003**	**0.7467**
Panel PP-Statistic	**1.602164**	**0.0454**
Panel rho-Statistic	**0.148005**	**0.0854**
ADF-Statistics Panel	**-2.023223**	**0.0215**
ADF-Statistic Group	**2.442237**	**0.9927**
rho-Statistic rho-Statisticrho-Statistic	**-0.331191**	**0.0370**
PP-Statistics Group	**-3.451655**	**0.0003**
(2) Kao Residual Cointegration Test		
ADF-Statistic	**-3.450696**	**0.0003**
(3) Cointegration Test of the Johansen Panel		
Trace Statistic	**801.4514**	**0.0001**

Stata enables users to perform Pedroni's seven cointegration tests using panel data, based on the null hypothesis of no cointegration. These tests include panel-v, panel-rho, panel-t (non-parametric), panel-ADF (parametric t), group-rho, group-t (non-parametric), and group-ADF (parametric t). All t-statistics are normalized and asymptotically distributed as standard normal, N (0,1). Except for the panel-v statistic, all other test statistics tend toward negative infinity as the p-value approaches zero, indicating stronger evidence against the null hypothesis.

To estimate the cointegration vector, Pedroni proposes the use of Panel Dynamic Ordinary Least Squares (DOLS), which is suitable for panel time series data with medium to large cross-sections (N) and long time periods (T). The DOLS method incorporates leads and lags of the differenced regressors to correct for endogeneity and serial correlation, thereby producing more reliable estimates of the long-run relationship.

5.6. FULLY MODIFIED ORDINARY LEAST SQUARED

Phillips and Hansen developed optimal estimates of regression analysis using the fully modified least squares (FM-OLS) analysis (1990). Because cointegration tests revealed a long-run relationship, the FMOLS test now used to derive long-run coefficients in this study. At the 5% and 10% levels, we can see that the bulk of variables are significant. The analysis of FMOLS shows that LNGDP, LNTR, LNSE, LNLF, LNGFCF, and LNTO have a long-term association in Pakistan, Bangladesh, Sri Lanka, and India.

Table-6: FMOLS Estimator

FMOLS Estimator			
DLNGDP is the dependent variable			
Variables	**Coefficient**	**t-stat**	**Prob. percent**
DLNTR	0.016661	2.132726	0.0359**
DLNSE	0.780164	4.530196	0.0000**
DLNLF	0.449088	2.627543	0.0078**
DLNGFCF	0.797173	3.316052	0.0013**
DLNTO	0.405632	1.533002	0.0084**

Note: *- Panel implication at the 10% level, **- implications at the 5% level

FMOLS is the lengthy technique (Fully Modified Ordinary Least Squares). The dependent variable is DLNGDP, while the independent variables are DLNTR, DLNSE, DLNLF, LNGFCF, and DLNTO. We have six long-term coefficients in this table, and all of them positively related to economic growth (GDP). These variables have a significant and positive relationship with one another. The DLNGDP increases by 0.017 unit when the DLNTR increases by one unit. Our DLNGDP increases by 0.78 unit when DLNSE increases by one unit. The DLNSE has a considerable and beneficial impact on DLNGDP in this case. Ranis (2011) and Siddiqui and Rehman (2017) found similar results.

The labor force DLNGDP will increase by 0.45 unit if DLNLF increases by one unit. The results demonstrate that these variables related to one another in a meaningful and beneficial way. Safdar has observed similar findings (2006). The DLNGFCF and DLNGDP are significantly and positively associated. Our DLNGDP increases by (0.79) unit when the DLNGFCF increases by one unit. This finding is similar to that of (Kakar 2011, Ogujiuba & Adeniyi ,2011). These variables have a significant and positive relationship with one another. The DLNGDP increases by 0.405 unit when the DLNTO increases by one unit. The gross saving coefficient is positive, significant, and consistent with the study's conclusions (Choong *et al*., 2010; Lean and Song, 2009).

4.5. VARIANCE INFLATION FACTOR AND PANEL DYNAMIC LEAST SQUARES

Table-7: DOLS Dynamic Ordinary Least Square

Variable	Coefficient	t-Statistic	Prob.	VIF
DLNTR	0.802364	11.24981	0.0000	1.0905
DLNSE	0.129647	1.543758	0.0254	8.2615
DLNLF	0.650073	6.700932	0.0000	9.0012
DLNGFCF	0.150471	1.226280	0.0462	5.6556
DLNTO	0.841713	5.929356	0.0000	6.2394

The long-term model is Panel Dynamic Least Square (DOLS). The dependent variable is DLNGDP, whereas the independent variables are DLNTR, DLNSE, DLNLF, LNGFCF, and DLNTO. There are six long-term coefficients in this table, and all of them are positively associated to economic growth (GDP). These variables have a significant and positive relationship with one another. The DLNGDP increases by 0.802 units when the DLNTR increases by one unit. Our DLNGDP increases by 0.129 unit when DLNSE increases by one unit. In this scenario, the DLNSE has a significant and positive impact on the DLNGDP. Sharp (1998), Ranis (2011), and Siddiqui and Rehman (1998) all came to similar conclusions. If we increase the DLNLF by one unit, our DLNGDP increases by 0.65 unit. The results indicate that such variables substantively and positively related to one another. Similar finding found the study of Khalil (2010) and safdar (2006).

The DLNGFCF and DLNGDP are significantly and positively connected if our DLNGDP rises by (0.15) unit and our DLNGFCF rises by one unit. This finding is similar to that of (Kakar *et al* 2011, Ogujiuba &Adeniyi, 2014). These variables have a significant and positive relationship with one another. The DLNGDP increases by 0.841 unit when the DLNTO increases by one unit. Abu (2010), Masih, and Peters all report similar findings (2010). None of the results is greater than 10, showing that the independent variables are not multicollinear, according to the variance inflation factor (VIF) test.

5. DISCUSSIONS

This study utilized the regression and correlation analyses by taking panel data from the World Development Indicators (1980–2020) investigating the relationship between human capital, particularly education, and GDP growth in SAARC countries. Regression and correlation analyses were conducted to assess the strength and direction of this relationship. The empirical results indicated a positive and statistically significant association between human capital and economic growth, underscoring the vital role of education in fostering development. Both research hypotheses were supported, with findings suggesting that the current economic and political conditions of SAARC nations contribute to this positive association.

Our finding consistent with the theoretical frameworks proposed by Lucas (1988) and Mankiw, Romer, and Weil (1992), the study confirms that enhancements in human capital contribute to the increased productivity of other growth determinants, thereby supporting broader economic development. In the long run, secondary education showed a significant positive effect on economic growth, though its impact varied over time. High levels of educational attainment were strongly associated with increased GDP, and long-term effects were more prominent than short-term gains in both secondary and overall educational achievement.

Proponents of human capital theory argue that education enhances knowledge, skills, and worker productivity. While secondary education often continues foundational learning from primary levels, its contribution becomes more substantial due to the added years of schooling and the cumulative effect on human capital. This makes education particularly crucial for innovation and technological advancement, positioning it as a key driver of economic progress. Cross-country empirical studies have similarly found a robust relationship between education and economic development (Barro, 1991; Krueger & Lindahl, 2001).

However, the economic benefits of education typically emerge over time, as the influence of a more educated workforce on productivity is not immediate. Individuals with higher levels of education tend to exhibit greater productivity with earnings. In addition to human capital development, economic growth can also be driven by capital accumulation and financial sector advancement. Specifically, enhancing the efficiency of financial intermediaries—such as banks—plays a critical role in resource allocation, risk diversification, and the mobilization of savings, all of which contribute to sustained economic development.

According to this study, 1% increase in financial development contributes to a 34% rise in GDP, aligning with findings from Levine & King (1993), Levine (1994), Ghaly et al. (1997), Khan et al. (1999), and Devarajan et al. (1996). Similarly, a 1% improvement in labor quality (education) is estimated to raise GDP by 65%, underscoring the significance of educational investment. Furthermore, trade openness was found to have a substantial impact: a 1% increase in trade liberalization policies is associated with a 72% boost in economic growth. These findings are consistent with those of Barro (1998) and Mankiw (1992), reinforcing the critical roles of human capital, financial development, and trade in fostering long-term economic progress.

6. CONCLUSION

The study's main goal was to find out the impact of tax revenue on economic growth of selected SAARK countries. Tax Revenue, Secondary Education, Labour Forces, Gross Fixed Capital Formation, Gross Domestic Product, Trade Openness, were main variables of the study. This study utilizes the descriptive statistics, correlation analysis, the unit root tests, cointegration panel cointegration test. The correlation model indicates the all the variables are significantly and positive associated with each other. The panel unit root test presented first differences of the data and describe the data is stationary. Panel rho statistic do not have cointegration, whereas panel rho statistic, Panel ADF- statistic, do. Cointegration tests used to analyze non-stationary time series processes with varying variances and means over time. To get the best estimates for cointegrating regressions, the fully modified least squares (FM-OLS) regression performed. Because cointegration tests revealed a long-run link, the FMOLS test used to derive long-run coefficients. The panel-cointegrated result revealed that long run relationship exists among the variables. The results of our study showed that there is positive relationship existed between the GDP and tax revenue, similarly the secondary education has positive and significant effect on economic growth. According to the model, the labour force has a significant impact on GDP. Gross Fixed Capital Formation has a significant impact on economic growth. Moreover, Trade openness exhibits a positive relationship with the GDP of SAARC countries, indicating that greater integration with global markets contributes to economic growth in the region. The study concluded that Human capital, education, and other variables included in this study were a favorable and significant impact on GDP growth. The current economic circumstances of SAARC countries similar association between human capital and GDP development.

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