

The Strength of Government Education Expenditure: Does it Fuel Sri Lanka's Economic Growth?

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Abstract: The relationship between public expenditure on education and economic growth in Sri Lanka is a multifaceted and crucial element in shaping the country's development policies. Economic growth is widely recognized as a key driver in improving the living standards of a nation, providing better employment opportunities, and enhancing overall well-being. On the other hand, educational investment plays a crucial role by equipping the workforce with the necessary skills and knowledge to enhance productivity and foster innovation. While these concepts are theoretically linked, there is a noticeable gap in empirical literature specifically focusing on Sri Lanka, indicating the need for further in-depth analysis in this context.

This research investigates the relationship between public expenditure on education and real GDP growth in Sri Lanka from 1989 to 2023. The primary objective was to assess whether public spending on education has a significant impact on the country's economic growth. To explore both the long-run and short-run dynamics, the study employed cointegration analysis, the Vector Autoregression (VAR) model, and the Granger Causality test. The cointegration analysis revealed no long-run cointegration between education expenditure and GDP growth, suggesting that public expenditure on education may not have a sustained impact on economic growth in the long term. In the short run, the Vector Autoregression model showed a positive but statistically insignificant relationship between education expenditure and GDP growth, further corroborated by the Granger Causality test, which indicated no significant predictive power of education expenditure on economic growth. Based on these results, the study concludes that there is no significant relationship between public expenditure on education and economic growth in Sri Lanka during the studied period.

Keywords: Education, Economic Growth, Public Expenditure, Real GDP, Sri Lanka.

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I. INTRODUCTION

Economic growth refers to the increase in the overall size of a country's economy over a specific period of time. The size of an economy is most commonly measured by its total output of goods and services, a metric known as Gross Domestic Product (GDP). GDP provides a holistic view of economic activity by aggregating the value of all goods and services produced within a country's borders. Economic growth can be assessed in two primary ways: nominal and real. Nominal economic growth measures the increase in the monetary value of production over time, considering both the changes in the quantity of goods and services produced and fluctuations in their prices. This means that nominal growth can be influenced by inflation or deflation, as it reflects both production volumes and price levels where as real economic growth is concerned solely with changes in the volume of production, adjusting for price changes over

time. This adjustment makes real growth a more accurate reflection of the actual increase in the economy's output, as it eliminates the distorting effects of price changes [1]. Economists typically focus on real economic growth to evaluate the true expansion of an economy's capacity. In Sri Lanka, the most recent positive real GDP growth was recorded in 2021 at a rate of 4.2%. However, the country has faced negative growth rates in subsequent years. As shown in Fig. 1, In 2022, Sri Lanka's economy contracted by 7.3%, but by 2023, there was an improvement, with the GDP growth rate reaching -2.3% [2]. Despite still being negative, this represented a significant recovery from the previous year's performance. A rise in real GDP is typically seen as a signal of positive economic performance, indicating that a country's economy is expanding and generating more goods and services. Sustained real GDP growth is usually linked to higher levels of employment, as businesses ramp up production and hire additional workers to meet increasing

demand. This, in turn, leads to an increase in disposable income for individuals, contributing to improved living standards. Conversely, when GDP contracts, as was observed in many countries during the recent global economic downturn, it often signals a weakening economy. A decline in GDP is commonly associated with reduced business activity and layoffs, resulting in higher unemployment. However, it is important to note that even in periods of economic growth, the GDP growth rate may not always be sufficient to create enough jobs to meet the demands of the labor force, potentially leading to stagnant or rising unemployment despite an expanding economy [3].

In 2023, government spending on education in Sri Lanka was 1.83% of GDP, according to data from the World Bank's collection of development indicators, sourced from officially recognized channels. As depicted in Figure 2, public expenditure on education accounted for 8.68% of total government expenditure in 2023, reflecting an upward trend.

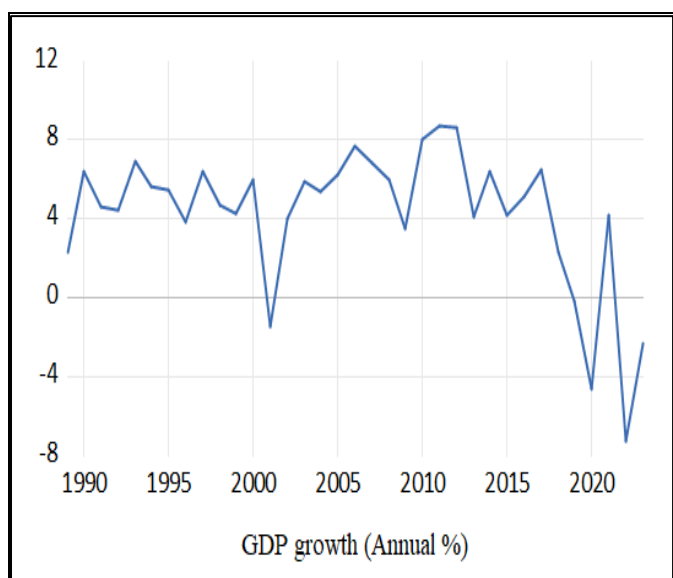


Fig 1: GDP Growth in Sri Lanka from 1989 to 2023

In 2022, Sri Lanka allocated only 1.5% of its GDP to education, including primary, secondary, and tertiary levels, which is among the lowest in South Asia. In contrast, nations such as India, the Maldives, and Afghanistan invest more than 4% of their GDP in public education. Leading the region, Bhutan dedicates an impressive 8% of its GDP to the education sector, highlighting its strong commitment to education. Over the past 15 years, Sri Lanka's educational expenditure has remained largely stagnant, fluctuating between 1.5% and 2% of its GDP. While other countries have progressively increased their investments in the education sector to improve access, quality, and infrastructure, Sri Lanka's education spending has remained relatively unchanged [5].

The relationship between public expenditure on education and economic growth has been widely explored by scholars at the international level, with varying and often contradictory findings regarding the impact of increased education spending on economic growth. In the Sri Lankan

context, a limited number of studies have examined this relationship, again yielding mixed results. The lack of literature in this area, coupled with the differing viewpoints presented by various scholars, underscores the need for a more comprehensive and rigorous analysis to explore the association between education expenditure and economic growth, specifically in terms of real GDP. Understanding this relationship is critical, as it can provide valuable insights for policymakers in making informed decisions that foster economic development. Thus, the primary objective of this study is to examine the relationship between government expenditure on education and economic growth in Sri Lanka using dataset covering the period 1989-2023. Through this analysis, the researcher aims to provide updated data and insights that will assist policymakers in formulating evidence-based strategies to enhance economic growth in the country.

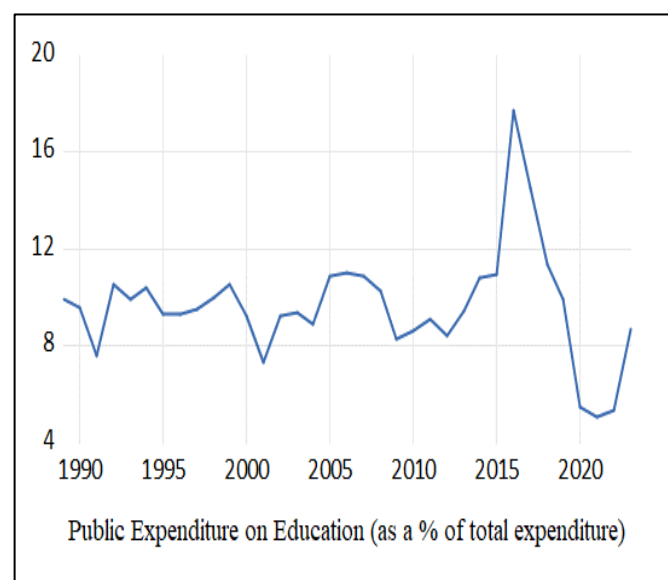


Fig 2: Public Expenditure on Education in Sri Lanka from 1989 to 2023

II. LITREATURE REVIEW

A. Theortical Framework

In the 1930s, British economist John Maynard Keynes developed Keynesian economic theory as a response to the Great Depression. Keynes argued that increasing government spending and reducing taxes could stimulate demand, thereby helping to revive the global economy. While Keynesian economics focused on the broader impact of government expenditure on economic recovery, it did not specifically address the role of education spending [6]. Later, Wagner's Law emerged, which stated that government services such as those in the judicial system, education, healthcare, and infrastructure are key contributors to economic growth [7]. In 1957, the Solow Growth Model was established, providing a foundational framework for understanding economic growth. However, the model largely ignored the role of human capital in driving growth, a gap that was subsequently addressed by the Endogenous Growth Theory, introduced by economists Romer and Lucas. This theory emphasized that knowledge and human

capital are critical factors in fostering long-term growth. In 1991, Barro's New Growth Theory further reinforced the importance of human capital by explaining the long-term benefits of investing in education and skill development. This perspective indirectly highlights the significance of education expenditure in promoting sustained economic growth [8].

B. Empirical Evidence from a Global Perspective on the Relationship between Education Expenditure and Economic Growth.

Scholars have offered various perspectives on the relationship between education expenditure and economic growth. Mercan and Sezer [9] investigated the relationship between education expenditure and economic growth in Turkey over the period from 1970 to 2012. Their analysis revealed a positive correlation, suggesting that increased spending on education contributed to the country's economic growth during this time. Dewan [10] conducted a study in Bangladesh to explore the long-term relationship between public education spending and economic growth, using time series data from 1995 to 2009. The findings indicated that public investment in education had a substantial and positive impact on economic growth. Specifically, the study revealed that 1% increase in education expenditure led to a 0.34% increase in GDP per capita over the long run. Jung and Thorbecke [11] examined the connection between education expenditure and economic growth in two African countries, Tanzania and Zambia. Their research concluded that increasing public spending on education not only supports economic growth but also plays a role in alleviating poverty. Similarly, Musila and Belassi [12] analyzed the relationship between education expenditure and economic growth in Uganda from 1965 to 1999 and found that higher education spending had a positive and significant impact on economic growth. Zouheyr et al. [13] focused on Saudi Arabia from 1990 to 2017, revealing that education expenses positively influenced economic growth. Rambeli et al. [14] explored the relationship in Malaysia, particularly during the post-crisis recovery period. Their findings highlighted that a long-run equilibrium exists between government spending on education and economic growth, suggesting that consistent investment in education contributes to economic recovery and stability. Owusu-Nantwi [15] analyzed the impact of education expenditure on economic growth in Ghana from 1970 to 2012. The study found a strong and positive long-term relationship between education spending and real GDP, suggesting that increasing education expenditures significantly contributes to the sustained economic growth of Ghana.

In contrast, several studies have offered different viewpoints regarding the impact of education expenditure on economic growth. Kauton [16] conducted an analysis of the link between education spending and economic growth in Côte d'Ivoire from 1970 to 2015. His findings indicated that government investment in education did not lead to any notable improvements in the country's economic growth during the period studied. Similarly, Kocevskaja [17] examined the influence of public education spending on GDP per capita in North Macedonia over the period from

1991 to 2020 and concluded that the government's expenditure on education had no significant effect on the country's economic growth. Additionally, Villela and Paredes [18] explored the relationship between public education spending, human capital, and economic growth in Honduras between 1990 and 2020. Their research found no significant correlation between public expenditure on education and the country's economic growth. This suggests that, despite investments in education.

Moreover, some scholars have presented varying perspectives on the short-term and long-term relationships between education expenditure and economic growth, leading to mixed results. Tabar et al. [19], analyzing annual data from Iran's economy between 1981 and 2012, found a positive relationship between government educational expenditure and real GDP in the short run, but a negative relationship in the long run. Similarly, Coman et al. [20] studied the impact of public spending on education in former communist Eastern European countries, which are now EU members, and observed mixed results for both the short and long term. Ayeni and Omobude [21] investigated the education expenditure-economic growth link in Nigeria using secondary and time series data from 1987 to 2016 and discovered that recurrent educational expenditure had a positive and significant long-term impact on economic growth, while capital expenditure on education showed no significant effect.

C. Empirical Evidence from the Sri Lankan Context on the Relationship between Education Expenditure and Economic Growth.

There are limited studies focused on the impact of education expenditure on economic growth in Sri Lanka. Rathanasiri [8] analyzed the effect of public expenditure on education in Sri Lanka from 1974 to 2018 and found a positive and significant relationship between public expenditure on higher education and economic growth. However, the study revealed that public spending on general education had a negative impact on economic growth in the country. In a similar vein, Vijesandiran et al. [22] investigated the long-term effects of public spending on education and economic growth in Sri Lanka, using data from 1960 to 2011. Their findings indicated that both capital and recurrent public expenditure on education positively influenced economic growth in Sri Lanka. Ganegodage and Rambaldi [23] assessed the role of education investment in Sri Lanka's economic growth from 1959 to 2008 and found a positive, though less significant, relationship between education expenditure and economic growth. In contrast, Vithursa [24] examined the impact of government expenditure on economic growth in Sri Lanka, using annual data from 1977 to 2020, and concluded that education expenditure has a negative long-term relationship with economic growth in the country.

The different perspectives and mixed findings presented by scholars emphasize the necessity for further research in this field. Thus, the objective of this study is to examine the effect of education expenditure on economic growth in Sri Lanka. The findings will contribute to filling the existing

literature gap by incorporating more recent data and offer valuable insights to policymakers in the country for making informed decisions on matters related to both educational expenditure and economic growth. Thus, to achieve this based on the theoretical framework and previous research, the study will test the following hypotheses.

- H_0 : There is no significant relationship between public expenditure on education and economic growth in Sri Lanka.
- H_1 : There is a significant relationship between public expenditure on education and economic growth in Sri Lanka.

III. MATERIALS AND METHODS

A. Data Collection and Data Analysis

To explore the relationship between public expenditure on education and economic growth, secondary data were collected from reliable sources such as the Central Bank of Sri Lanka and World Bank publications, covering the period from 1989 to 2023. The Augmented Dickey-Fuller (ADF) test was applied to check for unit roots in the time series data, which is essential for assessing the stationarity of the variables. Cointegration analysis was used to evaluate the long-term relationship between public expenditure on education and economic growth in Sri Lanka, while the Vector Autoregression (VAR) model and Granger causality test were employed to examine their short-term dynamics. In this study, public expenditure on education was considered the independent variable, with the real GDP growth rate as the dependent variable. The analyses and results were generated using EViews 12 statistical software.

IV. RESULTS AND DISCUSSION

Table 1: Descriptive Statistics

	Public Expenditure on Education	GDP Growth
Mean	9.630571	4.245714
Median	9.500000	5.100000
Maximum	17.70000	8.700000
Minimum	5.040000	-7.300000
Std.Dev.	2.274885	3.562579
Skewness	0.971374	-1.605745
Kurtosis	6.738188	5.368677
Jarque- Bera	25.88297	23.22293
Probability	0.000002	0.000009
Sum	337.0700	148.6000
Sum Sq. Dev	175.9534	431.5269
Observations	35	35

Table 2: of Augmented Dickey-Fuller Test Results

Variable		Level				First Difference			
		Intercept		Intercept and Trend		Intercept		Intercept and Trend	
		t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
Public expenditure on Education	ADF test statistics	-5.042348	0.0003	-5.363907	0.0007	-4.461149	0.0017	-4.473957	0.008
	1%	-3.661661		-4.284580		-3.711457		-4.374307	
	5%	-2.960411		-3.562882		-2.981038		-3.603202	
	10%	-2.619160		-3.215267		-2.629906		-3.238054	
GDP growth	ADF test statistics	-0.750906	0.8197	-1.269326	0.8781	-11.17428	0.0000	-10.99502	0.0000
	1%	-3.646342		-4.262735		-4.262735		-3.646342	
	5%	-2.954021		-3.552973		-3.552973		-2.954021	
	10%	-2.615817		-3.209642		-3.209642		-2.615817	

A. Descriptive Statistics

Table 1 presents the descriptive statistics for the variables selected in the model. As shown, Sri Lanka has achieved an average real GDP growth rate of 4.2% over the period from 1989 to 2023. Additionally, the average annual

expenditure on education as a percentage of total expenditure stood at 9.63%. Both variables show significant deviations from normality, with the Jarque-Bera test showing low p-values, which suggest the distributions are not normal. Furthermore, The GDP growth data has a wider range of

variability, reflected in its higher standard deviation compared to public expenditure on education.

B. Unit Root Test

The Augmented Dickey-Fuller (ADF) test is a statistical test used to determine if a time series is stationary or has a unit root (non-stationary). A stationary series has constant statistical properties over time, while a non-stationary series has properties that change over time. Table 2 presents the ADF test results at different levels (intercept and intercept with trend) for two variables. Public Expenditure on Education is stationary at the level (both with and without a trend), and also stationary at the first difference. GDP Growth is non-stationary at the level, but stationary at the first difference (both with and without a trend).

C. Cointegration Analysis

Based on the results of the unit root test, the researcher conducted a cointegration analysis to examine the long-term relationship between the independent and dependent

variables. As shown in Table 3, the assumption of 2 lags and a maximum lag length of 1 were selected using the lag length criteria based on the Akaike Information Criterion (AIC) in the rank model. Cointegration analysis was then performed according to the lag length criteria, and the results are summarized in Table 4. Table 4 shows that the trace statistics are below the critical value and the associated probabilities are greater than 0.05, which confirms that there is no long-term cointegration between the variables. Additionally, the maximum eigenvalue statistics are also below the critical value, with probabilities greater than 0.05, further supporting the conclusion that no cointegration exists between the variables. Therefore, both the Trace Test and the Maximum Eigenvalue Test, as presented in Table 4, suggest that there is no long-run cointegration between Education Expenditure and GDP Growth at the 5% significance level. This indicates that the two variables do not move together over time, meaning changes in education expenditure may not have a long-term impact on GDP growth. As a result, the null hypothesis will be accepted.

Table 3: Lag Order Selection Criteria

Data Trend:	None	None	Linear	Linear	Quadratic
Rank or No. of CEs	No Intercept No Trend	Intercept No Trend	Intercept No Trend	Intercept Trend	Intercept Trend
Log Likelihood by Rank (rows) and Model (columns)					
0	-150.0402	-150.0402	-149.7326	-149.7326	-148.8092
1	-148.2610	-144.0286	-143.7337	-143.5663	-142.6746
2	-147.6458	-143.0991	-143.0991	-141.3451	-141.3451
Akaike Information Criteria by Rank (rows) and Model (columns)					
0	9.335771	9.335771	9.438340	9.438340	9.503588
1	9.470364	9.274462*	9.317195	9.367656	9.374216
2	9.675506	9.521159	9.521159	9.536068	9.536068
Schwarz Criteria by Rank (rows) and Model (columns)					
0	9.517166*	9.517166*	9.710432	9.710432	9.866377
1	9.833153	9.682600	9.770682	9.866492	9.918400
2	10.21969	10.15604	10.15604	10.26165	10.26165

D. Vector Autoregression (VAR) Model Analysis

Since no long-term relationship exists between public expenditure on education and economic growth, the researcher applied a Vector Autoregression (VAR) model to examine the short-term dynamics between these variables, using the first differences of both series. Table 5 clearly shows that the lagged coefficient for education expenditure is 0.441174, with a corresponding t-statistic of 1.57423. This indicates that public expenditure on education has a positive effect on GDP growth; however, the effect is statistically

insignificant because the t-statistic is below the critical threshold of 2, suggesting that the impact is weak. Additionally, Table 5 highlights that the VAR model accounts for 40.4% of the variance in GDP growth and 8.3% of the variance in education expenditure. This implies that while the model explains a substantial portion of the variation in economic growth in the short run, it explains only a small fraction of the variation in education expenditure.

Table 4: Cointegration Results

Series: EDUCATION_EXPENDITURE GDP_GROWTH				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.305345	13.88219	20.26184	0.2976
At most 1	0.054775	1.858972	9.164546	0.8056
Trace test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.305345	12.02322	15.89210	0.1846
At most 1	0.054775	1.858972	9.164546	0.8056
Max-eigenvalue test indicates no cointegration at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Table 5: Vector Auto Regression (VAR) Model results

	D(GDP_GR...	D(EDUCATION_EXPENDI...
D(GDP_GROWTH(-1))	-0.659785 (0.14705) [-4.48693]	-0.161795 (0.09914) [-1.63197]
D(EDUCATION_EXPE...	0.441174 (0.28025) [1.57423]	0.034197 (0.18895) [0.18099]
C	-0.394745 (0.52704) [-0.74899]	-0.070231 (0.35534) [-0.19765]
R-squared	0.404080	0.083130
Adj. R-squared	0.364352	0.022005
Sum sq. resids	272.5238	123.8809
S.E. equation	3.013988	2.032083
F-statistic	10.17118	1.360000
Log likelihood	-81.66007	-68.65139
Akaike AIC	5.130914	4.342508
Schwarz SC	5.266960	4.478554
Mean dependent	-0.263636	-0.027879
S.D. dependent	3.780362	2.054817
Determinant resid covariance (dof adj.)		36.21850
Determinant resid covariance		29.93264
Log likelihood		-149.7326
Akaike information criterion		9.438340
Schwarz criterion		9.710432
Number of coefficients		6

E. Granger Causality test

To check the short run relationship between the public expenditure on education and economic growth researcher also performed granger causality test and the results are summarized in table 6. As per Table 6, Null hypothesis 1, P value 0.2359 is greater than 0.05 thus education expenditure does not significantly predict GDP growth.as per this model null hypothesis will not be rejected. On the other hand, for the null hypothesis 2, p-value is 0.0704 which is slightly above 0.05, meaning the result is borderline insignificant thus there is weak evidence that GDP growth may Granger

cause education expenditure, but it is not statistically significant at the 5% level. Thus, since both relationships are statistically insignificant, there is no clear causal link between the two variables in the short run.

Based on the results from Cointegration, Vector Autoregression (VAR) Model and Granger Causality test, the data does not provide enough evidence to reject the null hypothesis. Therefore, in light of these statistical findings, the null hypothesis of the study will be accepted.

Table 6: Granger Causality Test Results

Pairwise Granger Causality Tests Date: 02/11/25 Time: 10:05 Sample: 1989 2023 Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
EDUCATION_EXPENDITURE does not Granger Cause GDP_GROWTH	33	1.52138	0.2359
GDP_GROWTH does not Granger Cause EDUCATION_EXPENDITURE		2.92157	0.0704

V. CONCLUSION

This research provides a comprehensive analysis of the relationship between public expenditure on education and real GDP growth in Sri Lanka from 1989 to 2023. The primary objective was to investigate the impact of public expenditure on education on GDP growth in the country.

To achieve this, the researcher examined the relationship between public expenditure on education and economic growth both in the long run and the short run. For the long-term analysis, cointegration analysis was employed, and the results indicated that there is no long-run cointegration between education expenditure and GDP growth. This finding suggests that public expenditure on education may not have a significant long-term impact on GDP growth. For the short-term relationship, the researcher applied the Vector Autoregression (VAR) model and the Granger Causality test separately. The VAR model revealed that while public expenditure on education has a positive effect on GDP growth, the effect is statistically insignificant. Similarly, the Granger Causality test also showed that public expenditure on education does not significantly predict economic growth in Sri Lanka during the period from 1989 to 2023.

Based on these findings, the study accepts the null hypothesis and concludes that there is no significant long run and short run relationship between public expenditure on education and economic growth in Sri Lanka over the period under study.

IMPLICATIONS FOR FUTURE RESEARCH

The findings of this research open several avenues for future investigations. First, while this study found no significant relationship between public expenditure on

education and economic growth in Sri Lanka, future research could explore the impact of other variables, such as the quality of education, human capital development, and technological advancements, which may have a more direct effect on economic growth. Additionally, examining sectoral or regional differences in educational investment within Sri Lanka could provide a deeper understanding of how education expenditure impacts specific areas of the economy. Furthermore, a comparative analysis using panel data across multiple countries with similar economic conditions could help contextualize Sri Lanka's situation and reveal whether these findings are unique or part of a broader global trend. Future studies could also investigate the possibility of nonlinear relationships between education expenditure and economic growth, as the effect may not be uniform across different levels of spending. Lastly, more detailed studies on the causal mechanisms through which education expenditure influences economic growth such as through productivity improvements, labor market dynamics, or innovation could shed light on the underlying processes and offer clearer policy recommendations.

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