

THE IMPACT OF SELECTED COMPONENTS OF PUBLIC EXPENDITURE AND ECONOMIC GROWTH IN SRI LANKA DURING 1990-2022: AN ECONOMETRIC ANALYSIS

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Abstract

Purpose: Public expenditure is one of the most important instrument of fiscal policy. It is most affect the economic growth. So, this study examined the impact of selected components of public expenditure and economic growth in Sri Lanka during the period of 1990-2022 and find out the long run and short run relationship between selected components of public expenditure and economic growth in Sri Lanka. Selected components of public expenditure are such as defence, health, transport and communication and interest payments.

Methodology: This study is entirely quantitative analysis which is based on secondary time series data. Data for the study have obtained from the annual reports of central Bank of Sri Lanka (CBSL) Department Of census and statistics website and world development indicators website. Economic growth is used as a dependent variable and defence, health, transport and communication and interest payments have been used as independent variables. Dependent and independent variables are used as a percentage of GDP. The independent variables have been converted into Logarithms to avoid the heteroscedasticity problem among the variables. Many econometric tools such as ADF unit root test, Diagnostic test, ARDL model, ARDL Bound test and Error correction model test have been employed to analyse the data.

Findings: This study found that defence and interest payments have a negative impact on economic growth. And health, transport and communication have a positive impact on economic growth. More funds are allocated to defence and interest payments, those are negative impact on economic growth. It is greater than Health and transport and communication expenditure.

Implications: Therefore, the government should allocate the required more funds to the components of public expenditure which induce the economic development.

Theoretical Contribution: Assessing the effectiveness of various types of public expenditure in promoting economic growth contributes to understanding the efficacy of fiscal policy tools and their impact on overall economic performance.

Originality: Employing novel data analysis, techniques or econometric models to study the relationship between public expenditure components and economic growth can offer fresh insights.

Keywords: Public expenditure, Economic Growth, Econometric Analysis, ARDL model.

1. Introduction

The components of GDP are essential for economic growth and development of a country. Public Expenditure is the most important component of GDP. Economic growth means an increase in the value of national output and national expenditure. It's basically measures the total volume of goods and services produced in an economy. An increase in the capacity of an economy to produce goods and services compared from one period of time to another. Economic growth is a key indicator of the success of a country's development. With high economic growth can overcome some macro-economic problems such as unemployment, poverty and income inequality (Nursini.2017). Economic growth is usually associated with technological advancements, Human capital/productivity of labours and physical capital accumulation. Factors that determine economic growth can be classified into two categories as economic factors and non-economic factors.

Among the economic factors public expenditure is the determining factor of economic growth. Public expenditure is spending made by the government of a country on collective or individual needs and wants of public goods and services such as pension, health care security, education subsidies, emergency services, infrastructure and etc. Government expenditure enables government to achieve two goals: one is produce and purchase goods and services and second one is redistribute income (Tharshan and et.al.2019).

Public expenditure can be divided into two categories namely functional classification of expenditure and Economic classification of public expenditure. Functional classification include recurrent expenditure and Capital expenditure and Lending. Recurrent expenditure include General public services, Social services, Economic services, and other expenditure and Capital expenditure and Lending in General public services, Social services, Economic services and other expenditure. Economic classification of expenditure include recurrent expenditure and Capital expenditure and Lending. Recurrent expenditure include Expenditure on good and services, Interest payments and Current transfers and Subsidies and Capital expenditure and Lending include Acquisition of real assets capital transfers, Other expenditure and Net lending.

So, this study examined to know the impact of selected components of public expenditure and Economic Growth based on the functional classification. And this analysis is focused from 1990 to 2022 time series data. Economic growth was used as dependent variable and Defence, Health, Transport and Communication and Interest Payments were used as independent variables for this study.

Objective of Study

This study mainly focus on the impact of selected components of public expenditure and Economic growth in Sri Lanka. And to find out the Long run and Short run Relationship between Public expenditure and economic growth in Sri Lanka.

2. Literature Review

Theoretical Study

Keynesian model was developed by the 'John Maynard Keynes'. He was well known as father of modern economics. The book 'General theory of employment was written by Keynes. It was published in the year 1936 right after the great depression. This book challenges some of the general principles of economics. His idea was that an economy can be stabilized through government intervention. He said 'the expansion of government expenditure will accelerate economic growth. This means that fiscal policy is very important for the economic development of a country.

Wagner Law was developed by 'Adolph Wagner (1835-1917) was a German economist and politician. Wagner's law explained that public expenditure increases as national income rises. Who first observed the effect in this own

country and then for other countries. The principle is closely tied to industrialization. It predicts that the development of an industrial economy will be accompanied by an increased share of public expenditure in gross national product. As progressive nations industrialize, the share of the public sector in the national economy grows continually. The increase in state expenditure is needed because of three main reasons. Those are social activities of the state, administrative and protective action and welfare functions.

Harrod-Domer model was developed independently by Roy F Harrod in 1939 and Evsey Domer in 1946. It is an exogenous model. It is also known as the Keynesian model of economic growth. This model is used in economic growth to explain the rate of economic growth based on the savings and capital. This model divides economic growth as potential growth, actual growth and natural growth. It instructs that, there are no natural causes for the economy to have consistent growth.

Empirical Literature Review

Devarajan (1996), was focused on the link between the level of public expenditure and growth. Analysed data from 43 developing countries. And from 1970 through 1990 over 20 years. They applied the pooled data, regression analysis, fixed-effects model, non-linear specification and other variables. This study concluded that an increase in the share of current expenditure had positive and statistically significant growth effects. And the relationship between the capital components of public expenditure and per capita growth was negative. These results imply that developing countries' government had been misallocated public expenditures in favour of capital expenditures at the expense of current expenditures.

Kesavarajah (2019), suggested reforming public expenditure in favour of human capital development was paramount to stimulate long run growth in Sri Lanka. And used time series annual data for the period from 1977 to 2016. Data collected from the central bank of Sri Lanka, World development indicators, and department of census and statistics of Sri Lanka. And this study applied regression model, unit root ARDL model, Augmented Dickey Fuller (ADF), Phillips Perron and Kwiatkowski Phillips-Schmidt-Shin tests. Found of this study the growth effect of public expenditure varies at disaggregated levels and a major finding showed that public expenditure in education, agriculture, transport and communication sectors was positively and significantly associated with economic growth.

Fransis and Amirthalingam (2019) were intended to investigate the causal relationship between public expenditure and economic growth and evaluated short run and long run effects of public expenditure on economic growth in Sri Lanka. This study analysed from 1980 to 2017. It was the time series analysed. They used econometric tools such as ADF unit root test, Johansen co-integration test, Vector error correction model and Granger Causality test. They found of this study exhibited that effects of fiscal policy on economic growth were complex and varied. And fiscal expenditure had different degrees of impact on economic growth. Implied the existence of a significant potential to improve growth generating efficiency of fiscal spending by reallocated expenditures among sectors.

Asomani and et.al (2019), this study focused on a further disaggregated level of public expenditure and relationship with economic growth Ghana. This analysed from 1980 to 2017, and they used ARDL model, Stock-Watson Dynamic OLS model, Granger causality test. Based on the results of this study, capital expenditure propels economic growth in the country. And interest payment recurrent expenditure negative relationship with the growth of the economy.

Linus and et.al (2023), were focused the short and long run impact of public expenditure on economic development in Nigeria. And specifically, it focused to determine the nature and direction of causality between government spending and economic development. This study analysed from 1980 to 2020. And employed the pairwise Granger causality technique and Autoregressive distributed Lag model (ARDL). Major findings were

public expenditure on health was seen to inversely affect poverty hence promoted economic development was statistically significant, public expenditure on education also had a negative effect on poverty, expenditure on agriculture promoted economic development and government expenditure on administration otherwise regarded as the cost of governance, did not promote economic development as it increased the level of poverty in Nigeria.

3. Data and Methodology

This study examine the impact of selected components of Public expenditure and Economic growth. And Short run and Long run Relationship between Selected components of Public expenditure and economic growth in Sri Lanka. This study based on the time series analysis and using the quantitative analysis method and econometrics analysis from 1990 to 2022. Data for the study obtained from the Annual reports of central bank of Sri Lanka (CBSL), Department of census and statistics website (DCS) and World development indicators website.

The Models were used in the time series data with the help of various tools such as Unit root test (ADF test), Diagnostic test (Breusch –Pagan- Godfrey: Heteroscedasticity test, Breusch-Godfrey Serial Correlation LM test, Normality of error term test, Ramsey RESET test: Omitted Variable and Cusum test: Stability), ARDL model, ARDL Bound test, Error Correction Model test (ECM). Eview 10 software and Ms Excel used to test these econometric analysis. Health and Transport and communication expenditures include recurrent expenditure and capital expenditure. and Defence and Interest Payments include recurrent expenditure. Economic growth used as a percentage variable (dependent) and Defence, Health, Transport and communication and Interest payments used as a Million rupees variables (Independent variables).

Dependent variable was used percentage variable and Independent variables were used Million rupees. That's mean, this analysis used different measurements. Therefore, this study converted the independent variables into Logarithms to avoid the Heteroscedasticity problem among the variables. Eview 10 software and Ms Excel have been used to test these econometric analysis.

$$EG_t = \beta_0 + \beta_1 LDEF_t + \beta_2 LHEL_t + \beta_3 LTRAC_t + \beta_4 LINTP_t + \mu_t$$

Economic growth (EG) is a dependent variable, L means that Log of variable, $\beta_1, \beta_2, \beta_3, \beta_4$ are Regression Coefficient. β_0 is constant variable. And Defence (DEF), Health (HEL), Transport and communication (TRAC) and Interest Payments (INTP) are used as a independent variables and μ_t is the White noise error term.

4. Results and Discussion

Test for the Stationary (ADF unit root test)

Table 1: ADF Unit Root Test

Variables	Level (intercept)			1 st Different (intercept)		
	ADF Statistics	Critical t statistics 5%	Probability Value	ADF Statistics	Critical t statistics 5%	Probability Value
EG	-0.817142	-2.960411	0.8002	-9.011118	-2.960411	0.0000***
LDEF	-3.252896	-2.957110	0.0259**	-4.775586	-2.960411	0.0006***
LHEL	-0.925049	-2.957110	0.7670	-5.655614	-2.960411	0.0001***
LTRAC	-1.239966	-2.957110	0.6446	-4.255100	-2.963972	0.0023**
LINTP	-0.333977	-2.960411	0.9085	-7.602934	-2.960411	0.0000***

Source: Author's calculation using E-views 10 software

Note: Significant levels at 1%-***, 5%- **, 10%-* respectively.

In accordance with the 1st Different, as absolute value of ADF Statistic for all variables are greater than t critical value (t cv) at 0.05 significance level. Variables are Stationary in which P value also confirm that variables in use in this analysis are Stationary after first different in order one Because, Probability values are less than 0.05 significance level. It is the fact that residuals do not have Unit root Problem in this analysis.

Autoregressive distributed lag model

Table 2: Autoregressive distributed lag model

Variables	Coefficients	Standard Error	t Statistic	Probability
EG(-1)	-0.329706	0.255458	-1.290643	0.2329
EG(-2)	0.094317	0.191853	0.491611	0.6362
EG(-3)	-0.345725	0.208999	-1.654190	0.1367
LDEF	-21.93271	5.854882	-3.746055	0.0057
LDEF(-1)	-9.160602	5.374641	-1.704412	0.1267
LDEF(-2)	9.536688	4.435107	2.150273	0.0637
LDEF(-3)	11.39649	5.822654	1.957268	0.0860
LDEF(-4)	-4.239167	3.578653	-1.184570	0.2702
LHEL	14.78696	4.140603	3.571210	0.007
LHEL(-1)	13.01733	5.856097	2.222867	0.0569
LTRAC	6.318584	3.243302	1.948195	0.0872
LTRAC(-1)	2.587686	3.301019	0.783905	0.4557
LTRAC(-2)	11.48214	3.794596	3.025919	0.0164
LTRAC(-3)	-1.170260	1.830937	-0.639159	0.5406
LTRAC(-4)	-4.443973	1.541177	-2.883496	0.0204
LINTP	-16.79735	2.161253	-7.772043	0.0001
LINTP(-1)	-7.348106	4.823851	-1.523286	0.1662
LINTP(-2)	-7.273523	3.821746	-1.903194	0.0935
LINTP(-3)	4.225668	4.974971	0.849385	0.4204
LINTP(-4)	-9.232687	4.039066	-2.285847	0.0516
C	147.4700	31.07584	4.745486	0.0015
R ²	0.969434	Mean dependent variable		4.307786
Adjusted R ²	0.893019	S.D. Dependent variable		3.716475
S.E. of regression	1.215582	Akaike info criterion		3.388745
Sum squared resid	11.82112	Schwarz criterion		4.378856
Log likelihood	-28.13680	Prob. (F-Statistic)		0.000500
F-Statistic	12.68645	Durbin- Watson stat		1.910355
Jarque- Bere-P	0.816160	Breusch – Godfrey (Chi-Square-P)		0.7856

Source: Author's calculation using E-views 10 software

Note: Significant levels at 1%-***, 5%- **, 10%-* respectively.

According to the model R^2 is 0.969 (96.9%) meaning that virtually 96.9% of variation in Economic growth incidence is explained jointly by independence variables and the value of Adjusted R^2 is 0.893019. the test of 3.1 % variation in economic growth incidence can be explain by residual or other variables. there are positive impact between Health, Transport and communication and Economic growth. And there are negative impact between Defence, interest payment and Economic Growth in Sri Lanka. So, Selected Public expenditure (Defence, Health, Transport and communication, interest payment) have a significantly impact on economic growth in Sri Lanka.

ARDL Bound test and results

$$EG_t = \alpha_0 + \alpha_1 LEG_{t-1} + \alpha_2 LDEF_{t-1} + \alpha_3 LHEL_{t-1} + \alpha_4 LINP_{t-1} + \alpha_5 LTRAC_{t-1} + \gamma_t$$

Table 3: ARDL Bound test and results

Test Statistic	Value	K
F- Statistic	6.734524	4

Source: Author's calculation using E-views 10 software

Critical Value Bounds Significance	Lower Bounds [I(0)]	Upper Bounds [I(1)]
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

According to the response, the statistic at 5% confidence level is 6.734524 and the upper limit value is 3.49 [I(1)]. So, here the F statistic is found to be greater than the upper bound value. Therefore, the null hypothesis is rejected. So, there is no co-integration relationship between the variables is rejected. Therefore, it has been confirmed through this test that there is a co-integration relationship between the variables used in this study.

Long run Relationship between variables

Table 4 shows that results of long run correlation between variable obtained based on ARDL (3, 4, 1, 4, 4) as co-integration relationship between variables is confirmed here.

Table 4: Long run Relationship between variables results

Independent variables	Coefficient	probability
LDEF	-9.107064	0.0215**
LHEL	17.58527	0.0026**
LTRAC	9.344162	0.0005***
LINP	-23.03820	0.0009***
C	93.26973	0.0019

Source: Author's calculation using E-views 10 software

Note: Significant levels at 1%-***, 5%- **, 10%-* respectively.

According to the ARDL Bounds test and Long run results, there is a co-integration relationship between the variables used in this study. There are long run relationship between Defence, Health, Transport and communication, interest payment and Economic growth. As well as, Health and Transport and communication are Positive impact on economic growth. And Defence and Interest payments are negative impact on economic growth in Sri Lanka.

5 Error correction model

$$\Delta EG_t = \delta_0 + \sum_{i=1}^p \delta_{1i} \Delta EG_{t-i} + \sum_{i=0}^{q1} \delta_{2i} \Delta LDEF_{t-i} + \sum_{i=0}^{q2} \delta_{3i} \Delta LHEL_{t-i} + \sum_{i=0}^{q3} \delta_{4i} \Delta LINTP_{t-i} + \sum_{i=0}^{q4} \delta_{5i} \Delta LTRAC_{t-i} + \lambda ECT_{t-1} + \varepsilon_t$$

Table 5: Error correction model Results

Dependent variable D(Economic Growth)				
Variable	Lag Order			
	0	1	2	3
D(EG)		0.251407 (0.1047)	0.345725 (0.0146)**	
D(LDEF)	-21.9327 (0.0001)***	-16.69402 (0.0002)***	-7.157327 (0.0288)**	4.239167 (0.0678)*
D(LHEL)	14.78696 (0.0005)***			
D(LTRAC)	6.318584 (0.0034)**	-5.867904 (0.0122)**	5.614239 (0.0006)***	4.443979 (0.00047)***
D(LINTP)	-16.79765 (0.0000)***	12.28054 (0.0021)**	5.007019 (0.0986)*	9.232687 (0.0068)**
ECT	-1.58113 (0.0001)***			

Source: Author's calculation using E-views 10 software

Note: Significant levels at 1%-***, 5%- **, 10%-* respectively.

According to the Error correction Model results, there are short run relationship between Defence, Health, Transport and communication, interest payment and Economic growth. Therefore, this analysis shows that there are Short run and Long run relationship between selected public expenditure and Economic growth in Sri Lanka.

5. Conclusion and Recommendations

There are many factors that influence the economic growth of a country. Public expenditure is seen as the most important factor among it. Economic growth is important condition for achieving development. Public expenditure is one of the most important instrument of fiscal policy. So, if improve the public expenditure and it is propels the economic growth. This study examined the selected components of public expenditure have a significantly impact on economic growth in Sri Lanka during 1990-2022. This study mainly focused on selected components of public expenditure have a significantly impact on economic growth and investigated the long run and short run relationship between selected components of public expenditure and economic growth in Sri Lanka.

The present study found that, the selected components of public expenditure have a significantly mixed impact on economic growth. Mean that, Health Expenditure is significantly positive impact on economic growth. Which

is consistent with the finding of (Francis and Amirthalingam, 2019). Transport and communication are significantly positive impact on economic growth in Sri Lanka. Which is consistent with the finding of (Kesavaraja, 2017). And Defence is significantly negative impact on economic growth in Sri Lanka. Which is consistent with the finding of (Francis and Amirthalingam, 2019). Interest payments are significantly negative impact on economic growth. Which is consistent with the finding of (Asomani and et.al, 2019).

Interest Payments and Defence expenditure have a significantly negative impact on economic growth. But most of the total government expenditure were allocated to the interest payment and defence expenditure.

This study reveals how to allocate the expenditure to propel the economic growth. Generally, when the government increases public expenditure to promote economic growth in a country. So, public expenditure should be continuously increased and carried forward. Recurrent expenditure has been increasing every year compared to capital expenditure in Sri Lanka. That's means, the capital expenditure has comparatively very low. It is clearly shows the misallocation of public expenditure.

This study found Health and Transport and communication expenditure have a positive impact on economic growth, so, the government should prioritize more on this expenditure. So, when the transport and communication expenditure was increased the country's infrastructure will be developed and trade will be facilitated and market access will be easier. The Transport network should be accelerated across the country including railways. Most people are engaged in agriculture activities in Sri Lanka. So, a better transport network is essential for farmers to transport their produce in short time and get profit from it. Similarly, people can get more benefits if communication facilities will be increased. Now a days, online services are as a platform where more people transfer goods and services. And so many scams and untrusted are in internet services. So, the government should allow only legitimate Internet service companies to operate. People can easily engage in business activities in a reliable manner in Sri Lanka.

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