Public Expenditure and its impact on Economic Growth: A case of Pakistan

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Abstract

The public expenditures are very important and basic necessities of every country. It plays crucial and dynamic role in each economy and government has responsibility to provide them. This study examined public expenditures impact on economic growth by using time series data from1982-2017 in case of Pakistan. The variables are growth rate as GDP, development expenditure, defense expenditures, health expenditures and education expenditures. The ordinary least square (OLS) test and CUSUM, CUSUM Square tests are applied to check relationship between public expenditures and economic growth. This study concludes with mix results, which indicates that there is a significant positive relationship between development and health expenditures on economic growth. Furthermore, defense and education expenditures have negative relationship on economic growth. Moreover, it is recommended that public expenditures should be used in appropriate way; if it is not used in accurate place it would not be favourable for Pakistan economy.

Keywords: public expenditures, economic growth, ordinary least square, Pakistan
JEL Codes: H50, H60, O50

1. Introduction

The public finance is deliberated actual of public policies targeted to improving economic growth. However, relatively these policies are accomplished over public expenses and returns. Therefore, knowledge related to trend, landscape and grade of the sound effects of variations in public spending on economic growth has energetic significance such as, capital goods, consumption goods and personnel expenditures include in public expenditures (Valentino Piana 2001). Theoretically, there are two opposite views of Keynesian and Wagner's about association among economic growth and domestic revenue. Through law of Wagner's (1890) by increasing

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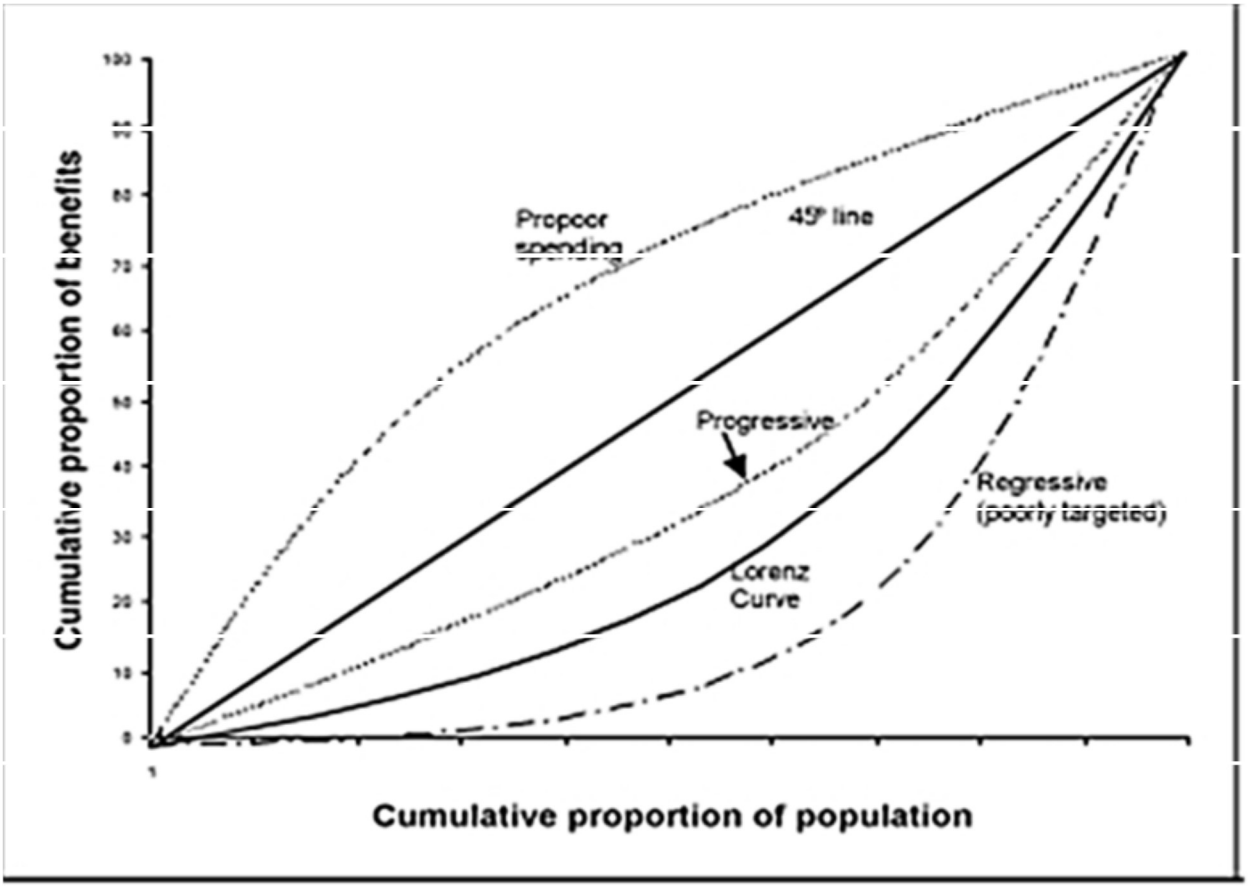
real per capita income public expenditures also increase. Causation must run from domestic revenue to public expenditures and by increasing economic growth public spending also increased. Though according to Keynesian economic growth is due to public expenditures and it is an independent variable. Moreover, Keynes thoughts for improving economic growth (both short and long run) public expenditures must be increased. According to Keynesian views causality must run from government expenditures to national income. (Muhammad *et al* 2015).

However, economic inequalities act as an authoritative role in manipulating of goods and services that are sponsored by municipal segment either that inequality is actual or perceived. The public expenses on foreign aid, research and development, roads, defense, police and fire services, have gains for all residents Shabbir and Rehman (2015). Furthermore, these expenses do not openly impress the welfare of household apart from those directly involved in these activities (Schwabish et al 2004). This analysis contains 51 developing countries by faculty at International Monetary funds (IMF) establishes reliable association all-around the countries, approving "a long-term relationship between government spending and output consistent with Wagner's law" (David Hall 2010). The public expenditures are basic aspect in economic growth and enlargement. These are vital for funding structure, comprising road and rail network, energy, and water facilities. It supplies schooling and health facilities vital for current marketplaces more proficiently and effectively rather than the flea market might offer. In OECD countries expenditure is great intensities of 40% of GDP and growing in emerging countries (David Hall 2010).

However, progressivity and regressively of public spending can be interpreted through comparing the benefit concentration curve with 45 degree sloping as well as the ordinary curve based on income and consumption. If the concentration curve is above the standard curve for income and consumption but under the 45-degree line then remunerations from public spending can be progressive. The concertation curve that fulfils this condition can be concave or convex. But remunerations from public spending can be regressive when benefits are not distributed equally than income and consumption (Chakraborty et al 2013).

Figure 1: Progressivity or Regressively of a Public Spending:



Total public expenditures in 1980s were 122153.9 million rupees according to handbook of statistics of Pakistan economy. In 1990s total expenditures were 426506.5 million rupees. Both figures of millions rupees show a significant increase in overall amount in one decade. In 2000s this amount increased rapidly and reaches to 1174192.4 million rupees. In this era government enhanced public expenditures and give subsidies to people as well. These significant increases in public expenditures indicate a favorable ground for economic growth in Pakistan. The private consumption expenditures are 79.20% of GDP and public consumption expenditures are 11.84% of GDP. In outgoing fiscal year total consumption expenditures were 91.04% as compared to 91.46% of last fiscal year. In 2013-14 total expenditures were Rs.3, 446.2 billion but in July-March 2014-15 it was 3731.6 billion, hence it increased with 8.3% growth rate on annual basis Shabbir (2016). This study tends to investigate the impact of public expenditures on economic growth. It shows at which level public expenditures are significant or which variable is positively

affect or negatively effect on economic growth. However, defense, development, health and education are independent variables and GDP is used as per alternative of economic growth.

The analysis of this study is a new contribution in existing literature of public expenses and economic growth through inspecting the effect of public outlays on economic growth, using such variables as development, defense, education and health expenditures as an explanatory variables and GDP as a dependent variable. Some of previous studies used education and health expenditures in their studies but only these two variables can't properly explain relationship of public expenditures and economic growth. So this study enhances two more variables such as development and education to check this relationship more accurately and effectively in the context of Pakistan. Finally, this study fills the gap of existing studies with adding new more variables and latest data set.

2. Literature Review

Desmond *et al* ., (2012) examined the effect of public expenditure on economic growth for period 1970-2009, where they took variables as, GDP, government capital and recurrent expenditures on economic services, social and community services and transfers. They were also using OLS method for data analysis. However, investment and regular expenses on economic services had adverse effects and investment expenditure has transferred the progressive impact on economic growth. Al-Shatti (2014) examined the impact of public expenditure on economic growth in Jordan during 1993-2013 by taking capital spending on education, expenditures on health, spending on economic affairs and also spend on housing and community utilities using OLS, augmented dickey fuller (ADF) tests. The present investment expenses on education have negative effect, while expenses on economic concerns and health has positive effect.

Yilgör *et al.,* (2012) examined the relationship between public expenditure and economic growth for period 1980-2010 by using ADF, Philips Perron (PP) and Granger Causality tests on current expenditures, transfers expenditure and investment expenditures. Their study revealed the results that uni-causality was found from current, transfers and total expenditures to economic growth. In order to ensure growth in Turkey's economy, controlled increases should be realized in forms of public expenditure. Patricia and Izuchukwu (2013) in Nigeria find out the effect of public expenditures on education from 1977-2012 and GDP using VECM and ADL methods. The result

showed education expenditure having positive impact on growth rate. Whereas, government should reduce recurrent expenditure and enhance capital expenditure but also increase expenditure on education as it influence growth rate positively.

Egbetunde and Fasanya (2013) examined public expenditure impact in Nigeria during 1970-2010 on total expenditure, capital expenditure and recurrent expenditure using ARDL approach. The result showed that total public spending impact on growth is negative and recurrent expenditures having positive impact. Oyinlola and Akinnibosun (2013) examined the relationship between public expenditure and economic growth in Nigeria during 1970-2009 on recurrent expenditures, capital expenditures, administrative expenses, community and social services and transfers using ADF and Phillips Perron (PP) tests. The long run elasticity result showed that there is negative impact of recurrent expenditures, administrative expenses and transfers expenditures and positive impact of capital expenditures as well as social and community services.

Alexiou (2009) provided evidence on economic growth and government spending in South Eastern Europe. The variables consist on capital formation, development assistance, private investment, and trade openness and population growth using pooled cross-section/time-series data of 113 countries. The results indicate that there is a significant and positive effect on economic growth by development assistance, government spending on education, trade openness and private investment. And statistically significance shows in population growth. Bose *et al* (2003) found out the growth effects of government expenditure for a panel of thirty developing countries over the decades of the 1970s and 1980s on current and capital expenditures. Initially, the government capital expenditures are positive and considerably associated with economic growth but current expenditures are insignificant. Furthermore, overall expenditures and investment are solitary expense should be considerably related on growth at sector level when variables are taken into consideration that are omitted variables and budget constraint.

Asghar *et al.,* (2011) examined the relationship between public spending in community sector and GDP during 1974-2008 in Pakistan, where they took variables as income per capita, education, health, law and order expenditures, subsidies and economic and community services by using ADF, PP, KPSS, Ng-Perron tests, VECM and Johansen co-integration tests. The outcomes of the study revealed the progressive correlation of social investment expenditures and

community services with GDP. However, expenses on law and order and subsidies showed negative relationship with economic growth.

Rauf *et al.,* (2012) examined the Wagner's law causality among community spending and domestic earnings and applicability during 1979-2009 data. Whereas, ADF, PP, ARDL approach, Todo-Yamamoto approaches have been used. The research concluded no existence of long run correlation among community spending and domestic earnings collectively. Moreover, causation outcomes declared no causal relationship from community spending to domestic earnings and domestic earnings to community spending. Muhammad *et al* (2015) inspected influence of expenses on GDP consuming annually statistics from 1972-2013 in Pakistan. ADF method was used to check stationarity of the data. To inspect the association between given variables (expenditures and economic growth) Johansen co-integration and Granger causality tests were applied. In Pakistan observed research didn't care Keynesian and Wagner theory for observed period and there were no long run relationship between expenditures and economic growth.

Gisore *et al.,* (2014) examined the government expenditure contributes to economic growth in East Africa from 1980 to 2010 by applying Levin-Lin-Chu (LLC) and unit root tests. However, this implied the Hausman (1978) test to reinforce the application of the balanced panel fixed effects model in this analysis. The findings showed that expenditures on health and defense to be positive and statistically significant effect on growth. In contrast, education and agriculture expenditure were insignificant. Aladejare (2013) examined the relationship and dynamic interactions between government capital and recurrent expenditures and economic growth in Nigeria over period 1961-2010 using VECM, Granger causality tests, ADF and PP tests. The government capital spending is more significant than government recurrent expenditure. Moreover, government recurrent expenditure indicates negative effect on growth in the economy while capital spending has positive effect.

According to previous studies on economy growth would be increased by increasing public expenditures and human capital is a best measure to determine public expenditures and economic growth relationship. However, increasing spending on economic growth obviously increased and this can be acquired by doing more spending on it and became useful in production of goods and services. While many researchers used only education as a public expenditure to measure

relationship between economic growth and public expenditures and this indicator has many doubts and education expenditures can't give short run return, so only education is not best measure to check relationship between economic growth and public expenditures as a whole. This study used education, health; defense and development expenditures to measure this relationship and these variables are more convenient and can give accurate results in the context of Pakistan economy.

3. Methodology

This study examines the impact of public expenditures on economic growth in Pakistan. However, time series data is used from 1982 to 2017 and collected from handbook of statistics of Pakistan for the variables of development, defense and health expenditures. Moreover, rest of data on education expenditures and GDP is taken from World Bank Indicator (WDI). There is one dependent variable that is GDP used in the model. The GDP is used as a percentage of GDP and as a proxy of economic growth. Many previous studies have been used GDP as proxy of economic growth in their studies. There are four independent variables used in the study. The variables are defense expenditures (DEF), development expenditures (DEV), education expenditures (EDU) and health expenditures (HEA). The education is measured as a percentage of GDP. Many studies have been used education and health variables but we didn't find any study used defense, development, education and health expenditures collectively. This study addresses following hypothesis

H_o = there is no relationship between public expenditures and economic growth

H_1 = there is a relationship between public expenditures and economic growth

The model of the study is given as below.

$$InGDP = \beta_o + \beta_1 In(DEF) + \beta_2 In(DEV) + \beta_3 In(HEA) + \beta_4 In(EDU) + \mu_o$$

Where:

GDP: gross domestic product

DEF: defense expenditures

DEV: development expenditures

HEA: health expenditures

EDU: education expenditures

4. Results and Discussions

The econometric techniques are used to check relationship between public expenditures and economic growth. Moreover, statistical analysis is used to test the hypothesis as well. The details steps for analysis are these:

Unit Root test

- ADF test

Ordinary Least Square test (OLS)

Stability tests

- CUSUM test
- CUSUM Square test

4.1 Unit Root Test

In order to find out the association of dependent and independent variables, first unit root test is applied to check the stationary of variables. For unit root test ADF test is most commonly used. The outcomes indicate that all variables are not stationary at level, so we take log of all variables and after taking log all variables become stationary at level I (0). Furthermore, simple OLS technique is applicable on this study.

Table 1: Unit Root Test

Variables	***C***	***C&T***
GDP	-3.173 (0.032)	-3.592 (0.048)
DEF	-3.241 (0.027)	-2.634 (0.269)
DEV	-4.431 (0.0015)	-5.177 (0.001)
HEAL	-5.604 (0.0001)	-5.724 (0.0003)
EDU	-6.009 (0.0000)	-5.950 (0.0002)

4.2 Ordinary Least Square test (OLS)

Variables	*Coefficient*	*Std. Error*	*T-Statistics*	*Probability*
C	4.813	1.457	3.303	0.003
LEDU	-0.406	0.328	-1.238	0.227
LDEV	0.351	0.176	1.998	0.057
LDEF	-0.542	0.184	-2.952	0.007
LHAEL	0.394	0.191	2.065	0.049
R squared	0.431	F-statistic	4.632	
Adjusted R-squared	0.312	Prob (F-statistic)	0.013	

The OLS regression results indicate that development shows significant positive impact on GDP growth rate. It means that on average other things remain constant 1% rise in development will cause to 0.35% increase in GDP. Due to increase in development the infrastructure etc; of the economy can positively affect the GDP of the economy. Moreover, health expenditures show significant positive impact on GDP growth rate. It means on average other things remain constant 1% rise in health causes to 0.39% rise in GDP. It will better affect the health of people, which cause enhanced the growth rate and increase in GDP or growth rate. The healthy people can contribute in best way to increase economic growth. While, rest of both variables indicates such as defense and education expenditures insignificant negative results. Moreover education expenditures give return in long run. The R square shows goodness or fitness of the model and 43% independent variables explained by the dependent variable. Finally, F-statistic is significant at 5% level as p-value is less than 0.10.

4.3 CUSUM Test

The Pesaran and Shin (1999) estimated the constant of error correction model, which must also be obviously examined. In graphs image of the Cumulative Sum (CUSUM) and the Cumulative

Sum of Square (CUSUMSQ) of the recursive residual are also documented. The cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) designs, which is presented in figure 1 from a recursive estimation of the model also show constancy in the coefficients over the trial era.

Figure 2: CUSUM

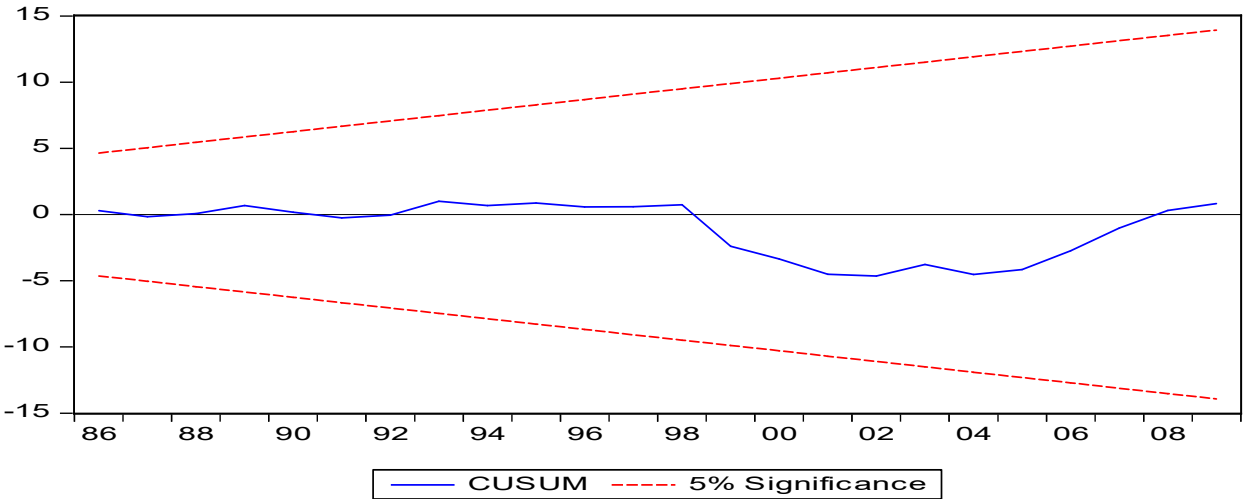
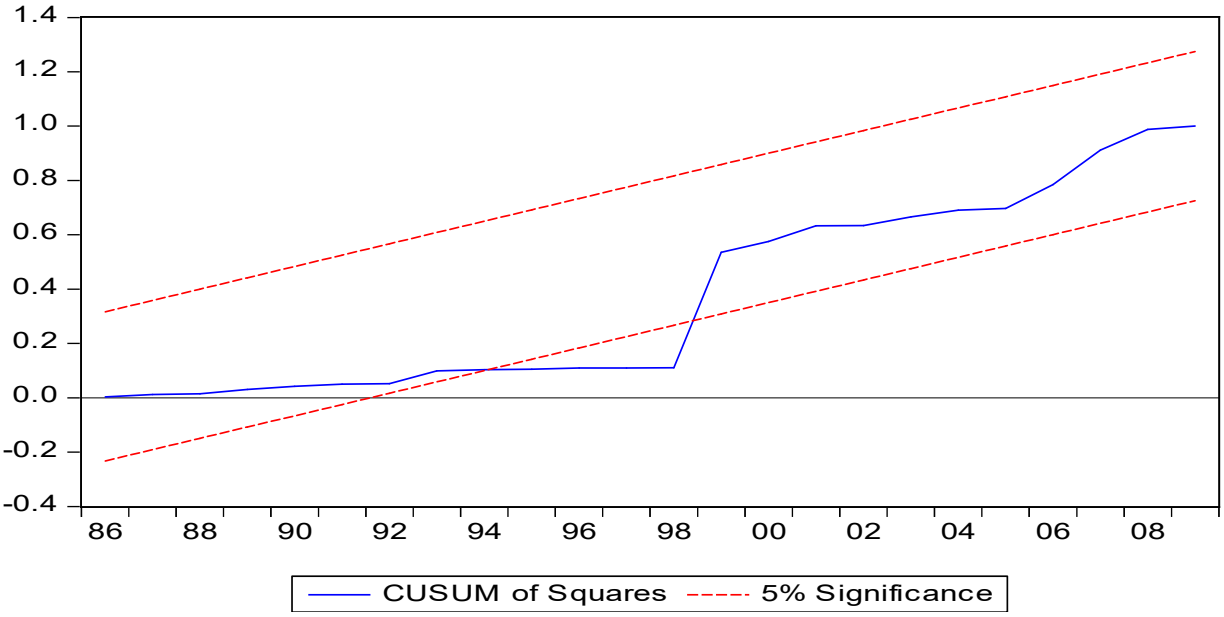


Figure 3: CUSUM Square



The CUSUM test shows the constancy of the limitations. According to our outcomes it indicates blue line lie between the red region means that our parameters are stable. The second figure

indicates the blue line lies outside the red line in time period from 1994 to 1998; it may be due to some economic shocks. In this time period may be economy faced some shock and due to that parameters are showing instability.

4.4 Descriptive Analysis

The descriptive analysis of four independent variables is mentioned in below table. Where, mean, standard deviation, minimum and maximum values of 36 observations are included in this table. The defense and development values are in thousands while health and education values are in percentages. However, mean value of defense expenditures is 117820.4, standard deviation is 95384.28, minimum value is 10168 and maximum value is 378135. Furthermore, mean value of development expenditures is 52736.25, standard deviation is 83309.38, minimum values are 4616 and maximum value is 316446. The least but not last the value of health is 0.748, 0.172, 0.51 and 1.19 for mean, standard deviation, minimum and maximum respectively. Finally, values for variable education consists of 2.427, 0.302, 1.837 and 3.022 mean, standard deviation, minimum and maximum values respectively.

Table 2: Descriptive Analysis

Variables	***Observation***	***Mean***	***Standard Deviation***	***Minimum***	***Maximum***
Defense	36	117820.4	95384.28	10168	378135
Development	36	52736.25	83309.38	4616	316446
Health	36	0.747	0.172	0.51	1.19
Education	36	2.426	0.302	1.838	3.022

5. Conclusion and Recommendations

The public outlays show very significant title role in economic growth of every country and it is compulsory for every country because it demands from general people. The public expenditures

should be completed in better and appropriate way and on deserving place. There is significant amount of literature is available on community expenses and economic growth. In some studies GDP used as proxy for economic growth, whereas most of literature shows positive effect on GDP by public expenditures in emerging and developed countries as well. But few studies showed negative impact of some variables also. Al-Shatti (2014) and Gisore *et al* (2014) results showed negative effect of education expenditures and GDP.

This analysis is an addition to literature and it describes the public expenditures impact on economic growth in Pakistan. It shows which variable is positively affected and which variable is negatively effect on economic growth. However, education, health, development and defense expenditures collectively used in this study, which is not used in previous studies and this gap is filled by our study. The time series data is used and stationarity unit root test is applied to identify the stationary and non-stationary among variables at constant or trend level. Finally simple OLS method is applied and the results show that there is progressive association among development expenditures, health expenditures and GDP, while defense and education expenditures variables indicate negative impact on economic growth. This study concludes with these remarks and recommends that public expenditures should increase on development and health expenditures rather than education and defense expenditures. These education and defense expenditures are also important but government should increase spending on health facilities and on development services. These expenditures can be helpful to increase economic growth.

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