



Impact of Government Expenditure on Economic Growth of Pakistan

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ARTICLE DETAILS	ABSTRACT
History Revised format: May, 2021 Available Online: Jun, 2021 Keywords Government Expenditure, Ordinary Least Square (OLS), ADF, GDP per Capita, Fiscal Policy	This study explores the effects of government spending on Pakistan's economic growth. From 1980 through 2020, the study employed annual time series data. The study applied ADF Test to check data stationary. The study also applied Ordinary Least Square (OLS) method to estimate the association between gross domestic product and Government Expenditure, Inflation and GDP per capita. The results of OLS method show there is positive and significant impact of Government expenditure and GDP per capita on economic growth. While, Inflation has negative and significant impact on economic growth. The study suggests that expansionary fiscal policy can be used by government to stimulate the economy during a recession.

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1. Introduction

Economic growth is the increase in the production of economic commodities and services from one period of time to the next. Historically, gross national product (GNP) or gross domestic product (GDP) were used to measure aggregate economic growth. The Gross Domestic Product (GDP) of any growing or developed country determines its economic growth. Any type of fluctuation in the gross domestic product will affect the country overall economic growth. In any country, the increment in Gross Domestic Product means that the economic growth of the country is going toward a better situation and if the Gross Domestic Product of a country is diminished it means that the economic growth of that country is going to decrease. In short, economic growth takes place when a country Gross domestic product increases.

All government consumption, investment, and transfer payments are included in government spending or expenditure. In order to reduce poverty, government spending is crucial. Economic development and employment can be stimulated by increasing public spending, according to the Keynesian viewpoint. Government spending cuts, on the other hand, could have a negative effect on the economy. Despite its wealth in natural resources, Pakistan is a developing country with a slow economic growth rate. Due to the differences in resource utilisation between industrialised and developing countries, the growth rates of the two groups of countries diverge. Exports, imports, and government expenditure all have a favourable impact on Pakistan's economic growth, according to the report.

Long-term economic growth requires macroeconomic stability. Since 2010, macroeconomic indices have fluctuated often and frequently in Pakistan's economy. A large fiscal deficit gap was a result of inefficient and unplanned government expenditures and low revenue production, which contributed to macroeconomic instability. Since 2005, the country has experienced an average growth rate of 4.7 percent. Whereas the government's goal was 5.4% Per capita income climbed by 1.3 percent in 2017-18 and declined by 9.4 percent in 2018-19. " (Government of Pakistan, 2019). It is possible to increase the economic potential of a country through fiscal and structural reforms, which can drive growth in numerous ways, both short and long term.

Increasing the tax burden on businesses and individuals produces distortions in the economy, reducing output and growth. Pakistan's inflation is examined empirically in this paper. To be more precise:

- To assess the correlation between the level of inflationary and the factor of growth in the economy;
- To quantify the link among economic productivity factor and aggregated public spending;
- To evaluate the association between the financial expansion component, the inflation rate, and distributed unequally public spending, i.e. government current expenditure and government development expenditure; and
- To investigate the orientation of significant relation between rising prices, productivity expansion, and public sector development expenditure.

Even though the common agreement is that public spending, whether periodic or capital, particularly on physical and social infrastructure, can be economic expansion, financing such spending to provide vital infrastructure transportation, electric power, information technology, hygiene and sewage, waste management, schooling, and health—can be economic expansion (for example, the negative effect associated with taxation and excessive debt). The extent and structure of government spending will impact the pattern and form of economic growth.

Theoretically and experimentally, the impact of government spending on economic growth has yet to be fully explored. Even though there are a variety of theoretical perspectives on the matter, it is generally accepted that a large government budget is a cause of economic instability or stagnation. The conventional wisdom, on the other hand, is not supported by empirical research. Only a few studies have found a positive and substantial relationship between government spending and economic growth, while others have found a considerably negative or no relationship between an increase in government spending and a rise in real production.

2. Literature Review

Rehman et al. (2020), findings from Pakistan concerning the link between the structure of government expenditures and economic growth Pakistan's economic growth from 1973 to 2018 will be examined through a variety of government spending. ADL has been used to assess the data based on the ADF test results. A recent analysis indicated that the impact of public expenditure components on per capita GDP, such as spending on R&D and subsidies, as well as education and employee remuneration, remained positive and considerable. While interest payments on loans and military expenditures have a notable and detrimental influence on Pakistan's per capita output. Specifically, the study advises that government spending on research and development, education and employment should be increased.

Awan et al (2018), investigate the impact of government expenditures on economic development in Pakistan. The study says that government uses monetary policy and subsidies in development countries to enhance economic growth. The study investigates that in the short run, relative monetary policy negatively effects growth in the long run, inflation is anchored to a certain level, they will be far more confident of investing in the domestic economy. The finding predicts that the improvement of technology in economy expanded share of open consumption in gross national output. The financial analysis will acknowledge the expenses of a somewhat higher government obligation load to get unemployment down and help development.

Dhrifi, A. (2018), Health-care expenditures, economic growth and infant mortality: Evidence from developed and developing countries. Researchers used a simultaneous equation model to examine the effects of health care spending on child death rates in 93 rich and developing nations with data spanning the years 1995–2012. Further research shows that public health spending has a bigger impact on death rates at lower development levels, while private health expenditure has a favourable impact on child mortality at higher development levels.

Chandio et al. (2016), Government spending in Pakistan has a direct consequence on agriculture and economic growth. Data from the Pakistan Statistical Yearbooks and Economic Survey of Pakistan are used in this study to assess from 1983 to 2011, the influence of public expenditure on agriculture and economic growth in Pakistan was examined. The data were analysed using the ADF unit root test, the Johansen Co-integration test, and the OLS methodology. Government expenditure on agriculture, agricultural output, and economic growth have a long-term link in Pakistan, according to the results of the Johansen Cointegration Test. According to the regression study, agricultural production and public spending have a considerable impact on Pakistan's economic growth.

Ali et al. (2015), analyzed the influence of defence spending on economic growth in Pakistan as measured through time. An economic analysis of Pakistan's economic growth between 1980 and 2013 is presented in this study. 2SLS approach is used to estimate a three-equation model in order to examine the positive and negative influence of defence expenditure on growth in the economy. The model's findings indicate that Pakistan's economic growth is slowed both directly and indirectly by defence spending.

Muhammad et al. (2015), Spending and Economic Growth in Pakistan was investigated. An analysis of Pakistan's economic growth using data for the period is the goal of this research. In this case, the research period is 1972 to 2013. Statistical Bureau of Pakistan and World Development Index provide secondary data. To transform stationary data into non-stationary, the ADF test was employed. It was found that there was no long-term correlation between spending and national income.

Lahirushan et al. (2015), A study of Asian countries examines the impact of government expenditures on economic growth. In the context of panel data of Asian countries from 1970 to 2013, the quantitative methodology incorporates cointegration, panel fixed effects models, and Granger causality. The random effects panel OLS model is utilised. Study's fascinating conclusion was similar to above methodology. Initial empirical data indicate that government spending has a significant beneficial impact on the Gross Domestic Product in the Asian region. Second, in Asian countries, government spending and economic growth show a long-term association.

Khan et al. (2014), Pakistan's economic growth trends are determined by a variety of factors. Pakistan's economic growth factors from 2008 to 2012 were analysed in this study. The rate of GDP growth has been used as a measure

of economic development. As compared to government expenditures, imports and exports had a less effect on the GDP. When it came to government expenditures and GDP, the correlation was high, but the impact of exports and imports was less pronounced. As a result of the restricted amount of time available for investigation, this research may differ from previous studies.

Sheikh et al. (2014), Investigates the relationship between Pakistani defence spending and the country's economic growth in India. Pakistan and India are examined using a supply-side model (Fader-type) over the period 1972 to 2010. Both Pakistan and India have a two-sector model where the combined effect of the civilian and defence sectors is favourable for economic growth. There is no change in the sign of the coefficients for the civilian and defence sectors. Exports have a good and considerable effect on both countries. En outre, all models have maintained the same overall performance and explanatory power. Pakistan and India both benefit from the defence sector, according to the Fader-type and Augmented Fader-type models. Two- and three-sector models in Pakistan show a negative externality effect, but the four-sector model demonstrates a good externality effect.

Khan et al. (2014) In Pakistan, the authors explore the factors that determine economic growth tendencies. Utilizing time series data for the period 1972 to 2013, the research project intends to determine the impact of expenditure on economic growth in Pakistan. Statistical Bureau of Pakistan and World Development Index provide secondary data. To transform stationary data into non-stationary, the ADF test was employed. On the long run, the results of the integration demonstrate that there is no correlation between expenditures and national income.

Christie et al. (2014), investigates the impact of government spending on economic growth. The nonlinear hypothesis is tested. According to theoretical models, between 1992 and 2004, The link between government size and long-term economic growth was non-linear in a group of 25 transition economies. It is difficult to verify this idea empirically in cross-country studies due to government spending endogeneity and the difficulty in identifying precise intersection sites. The nonlinear hypothesis is explored by integrating linear equation into a cross-country growth regression. Using a sample-splitting architecture, the technique identifies and tests changes in the slope. The findings give justifications of the non-linear hypothesis for a diverse group of countries.

Attari et al. (2013) Pakistan's inflation, economic growth, and government spending from 1980 to 2010 was the subject of a research. In Pakistan, the study examines the relationship between inflation, economic growth, and government spending. According to the study, the government's expenditures are broken down into two categories: current expenditures and development expenditures, respectively. From 1980 to 2010 data was taken for analysis. To study this link, econometric procedures such as the ADF unit root test, the ARDL, the Johansen cointegration, and the Granger-causality test are utilized. Because government expenditure has positive externalities and connections, econometric methodologies lead to the conclusion that there is a long-term relationship between inflation rate, economic growth, and government spending.

Ali et al. (2013), analyses the composition of government spending and economic growth in Pakistan. The study attempts to investigate the role of subcategories of government spending in Pakistan during democratic and military governments from 1972 to 2009. The autoregressive distributed lag (ARDL) model was used in the investigation. The findings indicate that Pakistan experiences contractionary fiscal expansion. Furthermore, the coefficient of development expenditure has a beneficial effect on economic growth. It lends support to the public

capital hypothesis, which claims that public and private investments complement one another. The findings also suggest that current spending has little effect on economic growth. The study suggests that, in order to achieve macroeconomic stability, the government should eliminate wasteful spending and increase resource mobilization.

Muritala et al. (2011), discusses the connections between public expenditure and economic growth in Nigeria using supporting studies. The paper used an econometric model with the OLS methodology to empirically examine the patterns and impacts of government spending on real GDP growth rates in Nigeria during the last two decades (1970-2008). The findings show that there is a positive relationship between real GDP and recurrent and capital spending.

Baum, N. D., & Lin, S. (1993), Using cross-sectional data from industrialised and developing nations over the period 1975-1983, this study investigates the impact of three main types of government expenditures on economic growth: defence, welfare, and education. According to the findings, government expenditure growth rate had a beneficial impact on both cross sectional and time series data.

3. Theoretical Framework

According to the Keynesian Hypothesis, public programmes and initiatives are supported by government spending, resulting in economic growth. To stimulate economic activity and growth, Keynesian economists believe that the government should intervene in the economy by increasing expenditure on government welfare and public works (Ageli, 2013; Dilrukshini, 2009). As a result of increased government expenditures on infrastructure and social services the private sector is better able to invest, hence creating jobs and promoting economic growth (Ono, Palley 2011, 2013).

In 1956, Robert Solow and Trevor Swan published a neoclassical economics model of long-term economic growth. Economic growth rates over the long run are determined by exogenous variables, according to this concept. A few examples of exogenous variables include capital accumulations and labour increases. Economic equilibrium is predicted to be reached in the long term under the classic Solow model. This implies that poorer countries should expand quicker and eventually catch up to the wealthy countries, which makes sense. I'm interested in Mankiw, Romer, and Weil's (1992) expanded version of the Solow-Swan neoclassical growth model. The data can be used to construct an explicit theoretical foundation for empirical growth regression using this approach. A solid empirical foundation for economic growth can be established by using the MRW model.

Data and Methodology

Annual Time Series Data from 1980 to 2020 were used in the present study to determine the relationship between dependent and independent variables. The data of different variables like GDPPC, Government Expenditure, and inflation are collected from official website of World Development Indicator.

Ordinary Least Square (OLS) Technique

It was determined that dependent and independent variables were related using the Ordinary Least Square (OLS) technique in the present study. As the name suggests, OLS is used to estimate the unknown parameters in a Linear Regression Model. Dependent and independent variables have logarithmically expressed data. According to this formula, the estimated equation is:

$$\text{GDP} = f(\text{Government Expenditure, Inflation, GDP per Capita})$$

The Multiple Regression Model of the study is:

$$\text{GDP} = \beta_0 + \beta_1 \text{GE} + \beta_2 \text{INF} + \beta_3 \text{GDPPC} + \mu_i$$

4. Results and Discussion

Here, empirical data will be analyzed.

Descriptive Statistics:

	<i>GDP</i>	<i>GE</i>	<i>INF</i>	<i>GDPPC</i>
<i>Mean:</i>	117.2010	12.92776	8.207073	714.4424
<i>Median:</i>	72.31000	7.121000	7.840000	534.3039
<i>Maximum:</i>	314.5600	36.84700	20.28000	1482.213
<i>Minimum:</i>	23.69000	2.377000	2.520000	303.0510
<i>Std. Dev:</i>	93.81074	10.57917	3.809431	385.8285
<i>Skewness:</i>	0.812988	1.023643	0.654290	0.680611
<i>Kurtosis:</i>	2.159629	2.606736	3.625393	1.938257
<i>Observations:</i>	41	41	41	41

Sources: Calculation by Using E-views 9

The summaries of descriptive statistics of observations of 41 are given in the table above. The first row shows the average of GDP, Government Expenditure, inflation and GDP per capita is (117.2010), (12.92776), (8.207073) and (714.4424) respectively.

In the table's second-to-last row, the values for skewness are listed. Dissimilarity and inequities in data distribution are represented by skewness. If the mean is in the middle and top point of the bell curve and mean median and mode are same, the data distribution is skewed. Here in the table we can see that, GDP, Government Expenditure, Inflation and GDP per capita are positively skewed because their mean value is greater than their median value.

Last row shows the values of Kurtosis, it shows the flatness and Peakness of the data to normal distribution. Kurtosis of greater than 3 indicates a very peaked probability distribution, and is referred to be Leptokurtic. Kurtosis of less than 3 indicates flatness in the data distribution, which is known as platykurtic. In the table below, we can see that the values of variables (GDP, Government Expenditure, Export, Import) are less than 3, so these variables are platykurtic and the value of variable Inflation is greater than 3, it is known Leptokurtic.

Pair – Wise Correlation:

Commonly, the Pair-Wise coefficient of correlation is used to identify the problem of multicollinearity. Multicollinearity is characterised by strong coefficients of correlation for more than one variable.

<i>Variables</i>	<i>GDP</i>	<i>GE</i>	<i>INF</i>	<i>GDPPC</i>
<i>GDP:</i>	1.000000			
<i>GE:</i>	0.918116	1.000000		
<i>INF:</i>	-0.006544	-0.006124	1.000000	

GDPPC: | 0.905141 0.970336 0.008477 **1.000000**

Sources: Calculation by Using E-views 9

The above table shows the correlation matrix of all variables. The results show that GDP (1.000000) shows positive correlation with GDP. GE (0.918116) and GDPPC (0.905141) are highly correlated with GDP. This shows the problem of co-linearity, other variable like inflation (-0.06544) shows negative correlation with GDP and shows less co-linearity with GDP.

Unit Root Test

The present study applied ADF unit root test to check the stationary of the data. The results of the ADF unit root test are present in the table below.

<i>Variables</i>	<i>At Level</i>		<i>At 1st Difference</i>		<i>Conclusion</i>
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
GDP	-----	-----	0.0045	-----	1(1)
GE	-----	-----	0.0000	-----	1(1)
INF	0.0472	-----	-----	-----	1(0)
GDPPC	-----	-----	0.0009	-----	1(1)

Sources: Calculation by Using E-views 9

The above table shows ADF Unit Root Test. A time series data set is checked to see if it is stationary or not by using this function. It examines the null hypothesis that there is no unit root in a time series sample by using the ADF test. In this table the variables GDP, GE and GDPPC are stationary at 1st Difference intercept. The variable INF is stationary at Level intercept.

Ordinary Least Square Results:

The table below shows the effect of independent variables on dependent variables.

Ordinary Least Square Method

Dependent Variable Log of GDP

40 Observation from 1980 to 2020

<i>Variables</i>	Coefficients	Std. Error	t-Statistics	Prob.
GE	2.221023	0.228180	9.733651	0.0000
INF	-0.276393	0.085910	-3.217256	0.0028
GDPPC	0.139299	0.004090	3.405595	0.0000
C	-29.86743	1.337615	-2.632888	0.0000
GDP(-1)	0.188457	0.030908	6.097399	0.0000
R²:	0.999576	Durbin-Watson Test:		2.072146
Adjusted R²:	0.999527			

Sources: Calculation by Using E-views 9

The coefficient of GE has a favorable and considerable consequence on the gross domestic product, according to the findings of the study. It shows that one percent increase in Government expenditure it will (2.221023) unit increase in gross domestic product. The value of coefficient of variable INFLN put negative and significant impact on gross domestic product. it shows that one percent increase in Inflation it will (0.276393) units decrease in gross domestic product. The results support the findings of Attari et al. (2013).

The value of coefficient of variable GDP per capita put positive but significant impact on gross domestic product. It shows that, one percent increase in GDP per capita it will increase (0.139299) units in gross domestic product. The result supports the findings of Rehman et al. (2013).

The more the fellow of Adjusted R-squared, the more the fate model is. The ideal value of Adjusted R-squared is 1. The value of Adjusted R-squared is (0.999527). which is nearer to 1. it means model is good.

Durban-Watson value lies between 0 to 4. 2 is ideal value of Durban-Watson. If Durban-Watson value is greater than 2, In this case, autocorrelation is negatively correlated with the data. Autocorrelation exists when the Durban-Watson value falls below 2 and does not exist when the Durban-Watson value exceeds 2. Because there is no autocorrelation in this case, Durban-Watson has a value of (2,072146).

Auto – Correlation:

The autocorrelation problem is test by Breusch – Godfrey Serial Correlation LM test. The table below shows the results of Breusch – Godfrey Serial Correlation LM test.

Breusch – Godfrey Serial Correlation LM Test

<i>F – Statistic</i>	1.341467
<i>Prob.</i>	0.2753

Source: Calculation by Using E-views 9

The problem of autocorrelation is undertaken by taking lag of dependent variable. The probability value is insignificant it shows there is no autocorrelation.

Heteroskedasticity Test:

The problem of heteroskedasticity is test by Breusch – Godfrey test. The table below shows the results of Breusch – Godfrey test for Heteroskedasticity.

Heteroskedasticity Test Breusch – Pagan – Godfrey

<i>F – Statistics</i>	0.720498
<i>Prob.</i>	0.5838

Source: Calculation by Using E-views 9

The above table shows the results of Breusch – Pagan – Godfrey test for heteroskedasticity. The probability value is insignificant which show that there is no heteroskedasticity in the data.

5. Conclusion

As the name implies, this study's major objective is to analyze how government spending in Pakistan influences economic growth. These results are measured by using data for the period from 1982 through 2020. Present study

examines public expenditure and economic development. The study explored the beneficial association between government spending and economic growth using previous literature evaluations. As a result of this work, the Solow Swan growth theory is better understood. According to Keynesian theory, more government expenditure on infrastructure and social programme contributes to create a more favorable climate for the private sector, which is also addressed in this study.

First, descriptive statistics are used to analyse the data collected in the study's first phase. Second, the present study used the ADF test to determine whether the data were steady. This study's next stage explores the relationship between variables and GDP. An ordinary least square (OLS) method is also used in the present study to examine co-integration as well as the relationship between dependent and independent variables. Government expenditure and GDPPC have a favourable and considerable impact on economic growth, according to the study. On the other hand, inflation has a negative and considerable influence on the economy. An expansionary fiscal policy is suggested as a means of stimulating the economy during a recession, according to this study. Moreover, the study advises that Pakistani policymakers should be mindful of the impact of government spending on economic growth and implement policies that are conducive to Pakistan's economic development.

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