

# Impact of Major Economic Variables on Economic Growth of Pakistan. A Time Series Analysis (1967-2017)

ATIF JAHANGER

Ph.D. Scholar

Zhongnan University of Economics and Law, School of Economic  
Wuhan, China

## Abstract

*This research examines the impact involving macroeconomic variables like Government Spending expenditure, Gross capital formation, Households, and NPISHs Final consumption expenditure and Export of goods & services on GDP of Pakistan within the light involving 50-year time-series data from 1967 to 2017. The research was a secondary data-based, ordinary least squares (OLS) regression, unit root test, and Error Correction test have been applied to estimate the short-run and long-run relationship between GDP and macroeconomic variables. Data were taken from intending for these variables through the website of the World Bank. The study found that there's a significant effect of Government Spending expenditure, Gross capital formation, Households, and NPISHs Final consumption expenditure and Export of goods & services of GDP, in the long run, at 1% and 5% level. Based on the results and investigation it is recommended that the Government adopted a tight export policy due to low export because the results suggest that export provides a significant effect but not a very positive relation to GDP.*

**Keywords:** Gross capital formation, Government Spending expenditure, Export, Economic growth and ARDF test.

## **1. INTRODUCTION:**

For the economic development of the countries, one cannot imperative the significance of the rate at which the gross domestic product (GDP) is increasing (Balassa, B. 1985)[1]. After independence, the rate of economic growth of Pakistan is higher than the South Asian economic growth rate. But over time economic growth of Pakistan was exaggerated by a variety of problems including the burden of foreign debt, political instability, high imports and poor exports lack of realization of the economic policies for several years. Pakistan economy at the recession stage when two wars with India first in 1965 on and second war in 1971. Therefore, in 1971s, a civil war has started, the industries have nationalization, high inflation, finance and education, flooding, petroleum prices and recession in the world market due to India's war and Bangladesh independence. The economy improved in the 1980s by adopting deregulation policies by the policymakers and government. Economic growth decelerated once more in the 1990s with the standard movement of GDP growth of 4.4percent per year and dull TFP. Political volatility, frequent changes in government, poor macroeconomic management, weak governance, and unfavorable external environment were more leading than the positive impact of economic policies of deregulation, liberalization, and privatization and established in 1991. The current growth speeding up has also been accompanied by a related augment in the investment ratio from 15.5 percent of GDP in 2001-02 to 20 percent in 2005-06.

Growth things a lot as it is often considered as the 'holy grail' of economic policy for any country. This simplistic eminence on economic growth is due to its contribution in the direction of reducing Of Unemployment and poverty {(Roemer & Gugerty, 1997)[2], (Hull, 2009)[3] & (Mckay & Sumner, 2008)[4]}, Budget deficits {(Ahmad, 2013)[5] & (Roubini & Sachs, 1989)[6]} income inequality {(Kuznets, 1955)[7] & (Gallo, 2002)[8]} and subsequent social miseries (Helliwell, Layard & Sachs, 2012)[9] Economic Growth can estimate a country's economic build, can look up living values , public services and step up investment (Anwer & Sampath, 1999)[10] particularly in developing countries like Pakistan.

Ogunleye and Olorunfemi (2006)[11] investigation and used co-integration analysis to test the long-run relationship between

public expenditures and industrial growth in Nigeria. The experiential results explain that there is a long-run positive relationship between total government expenditures GDP with an R-squared of 0.748. ( Ram, 1986 [12]; Dar & AmirKhalkhali, 2002)[13] assuming that an inverted-U relationship exists between the scale of government and economic growth. On the other hand, Landau (1983, 1986)[14,15] found that public expenditure expansion hurt national income growth for both developed and less developed countries. Volkov (1998)[16] investigate that government expenditure has both short and long-run relationship on the economic growth in Ukraine. Test (2011)[17] looks at that the consumption expenditure cointegrated with economic growth, which supports the Keynesian consumption function. William G. Tyler (1981)[18] has evaluated and results shown the significant positive relations between growth and other economic variables in which the growth of manufacturing output, total exports, and manufacturing exports, investments are included.

## 2. METHODOLOGY AND DATA COLLECTION:

This research is secondary and time series data based. The study is a long term analysis as 50 years of data for the period of 1967-2017 was used for this study. The data were collected from the handbook of statistics on the following:

- World Bank Website

$$GDPT = \beta_0 + \beta_1 G\_Spendingt + \beta_2 Gross\_CFt + \beta_3 House\_Ht + \beta_4 Xert\_GSt + \epsilon t$$

Where

GDPT	=	GDP Per Capita
G_Spendingt	=	Government Spending expenditure
$\beta_2$ Gross_CFt	=	<i>Gross capital formation</i>
$\beta_3$ House_Ht t	=	<i>Households, and NPISHs Final consumption expenditure</i>
$\beta_4$ Xert_GSt	=	<i>Export of goods &amp; services</i>
$\epsilon t$	=	Error Term

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<b>Variables</b>	<b>Proxy</b>	<b>Data Source</b>
<b>Dependent Variable</b>		
Economic Performance	GDP Per Capita at PPP (\$)	World Development Indicators 2018
<b>Independed Variables</b>		
Government Spending expenditure	General government final consumption expenditure (current US\$)	World Development Indicators 2018
Gross capital formation	Gross capital formation (% of GDP)	World Development Indicators 2018
Households, and NPISHs Final consumption expenditure	Households and NPISHs Final consumption expenditure (current US\$)	World Development Indicators 2018
Export of goods & services	Exports of goods and services (current LCU)	World Development Indicators

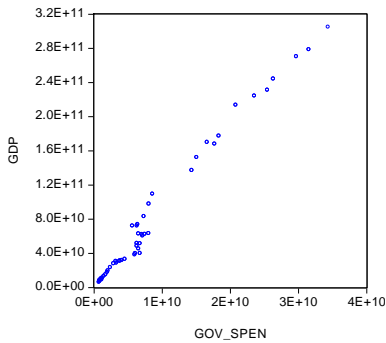
**3. EMPIRICAL RESULTS:**

**3.1. Correlation Patterns between variable in Scatter plot Graphs:**

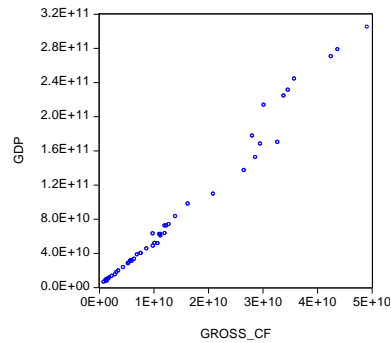
Examining a scatterplot graph allows us to obtain some ideas about the relationship between GDP and other variables. When the points on a scatterplot graph produce a lower-left-to-upper-right pattern (see Figure # 1, 2, 3, 4), we say that there is a positive correlation between the GDP and other variables. This pattern means that when the score of one observation is high, we expect the score of the other observation to be high as well, and vice versa. We observe that the relationship between the variables is linear relationship exists between variables.

### 3.2. Interpretations

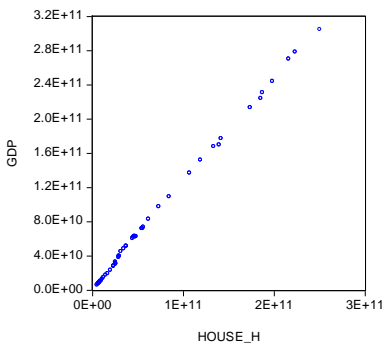
**Figure #1**  
Scattered graph between GOV\_SPEN and GDP:



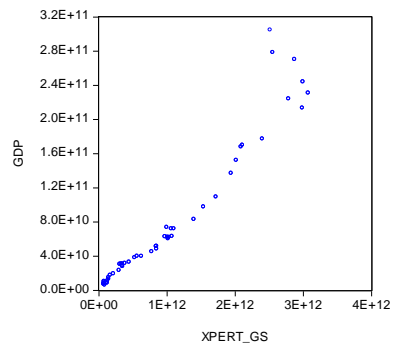
**Figure #2**  
Scattered graph between GROSS\_CF and GDP:



**Figure #3**  
Scattered graph between HOUSE\_H and GDP:



**Figure #4**  
Scattered graph between XERT\_GS and GDP:



### 4. UNIT ROOT TEST:

This study test for stationary of the endogenous and exogenous variables within the framework of the Augmented-Dickey-Fuller (ADF) test procedure. This test is important to avoid spurious regression which is a common problem when estimating a regression line with data whose generated process follows a time trend. The augmented Dickey -Fuller (ADF) and Phillips-Perron (PP) tests of stationarity were used( Dickey and Fuller, 1981; Phillips and Perron, 1988)[19].

**Table No: 1. Phillips-Perron Unit Root Test for the Variables**

Variables	ADE test Statistics					
	I(0) (Level)		I(1) (First difference)		I(2) (Second difference)	
	T	C	T	C	T	C
GDP	8.87	-1.95	-0.41	-1.95	-7.83	-1.95
GOV_SPEN	7.18	-1.95	-1.69	-1.95	-8.42	-1.95
GROSS_CF	5.36	-1.95	-3.87	-1.95	—	—
HOUSE_H	8.00	-1.95	-0.38	-1.95	-9.43	-1.95
XPERT_GS	1.99	-1.95	-5.52	-1.95	—	—

*Source: Authors' Estimation*

Table no:1 shows the empirical results for the unit root test. Each series is tested at a different level and found to have a unit hence non-stationary at different levels. GDP, GOV\_SPEN &HOUSE\_H is stationary at 1(2) at a 5% significance level. ADF is again employed at first difference shows that GROSS\_CF and XERT\_GS are stationary at I(1) at 5% level of significance.. so there is no unit root and variables are not co-integrated.

## 5. ERROR CORRECTION METHOD:

Johansen cointegration test is utilized to check the long-run development of the variables (Johansen 1988; Johansen 1991). In this method, all variables should be integrated at the same order i.e integrated at 1st difference. If the results showed that all variables are cointegrated, then we will check the error correction model (ECM).

**Table No 2: ECM results**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.89E+08	2.73E+08	1.058999	0.2954
D(GOV_SPEN)	0.800795	0.319009	2.510257	0.0158
D(GROSS_CF)	0.587552	0.242797	2.419929	0.0197
D(HOUSE_H)	0.871879	0.059339	14.69313	0.0000
D(XPERT_GS)	0.006314	0.001919	3.289588	0.0020
ECM(-1)	-0.381596	0.142934	-2.669742	0.0106
R-squared	0.969664	Mean dependent var		5.95E+09
Adjusted R-squared	0.966217	S.D. dependent var		8.59E+09
S.E. of regression	1.58E+09	Akaike info criterion		45.30972

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Sum squared resid	1.10E+20	Schwarz criterion	45.53917
Log likelihood	-1126.743	Hannan-Quinn criter.	45.39710
F-statistic	281.2851	Durbin-Watson stat	1.990698
Prob(F-statistic)	0.000000		

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*Source: Authors' Estimation*

Table no:2 shows the empirical results for the regression analysis. The overall model is a good fit because the probability value of the f-statistic is less than 0.05. The coefficient of the determination is 0.9696, which means that 96% variation explained by the explanatory variable to the dependent variable. The coefficient of government spending is positive and statistically significant. It means that if one unit increased the government spending then ultimately the GDP increased by the 0.8007 unit. This is also a good trend for a particular economy. The coefficient of Gross capital formation is positive and statistically significant. It means that if one unit increased the Gross capital formation then ultimately the GDP increased by the 0.5875 unit. This is a good trend for a particular economy. The coefficient of Households and NPISHs Final consumption expenditure is positive and statistically significant. It means that if one unit increased the Households and NPISHs Final consumption expenditure then ultimately the GDP increased by the 0.8718 unit. This is a very good trend for a particular economy. The coefficient of Export of goods and services is positive and statistically significant. It means that if one unit increased the Export of Good and services then ultimately the GDP increased by the 0.01 unit. This is not good for a particular economy.

The results of the ECM indicate that there is a long-run equilibrium between variables. The coefficient of the one-period lag residual is negative and significant which represents the long-run equilibrium.

## **6. CONCLUSIONS:**

The empirical finding of this study is to observe the relationship of the dependent variable with the independent variables throughout 50 years of data from 1967 to 2017. The least ordinary test, unit root test, Error correction Model are used to estimate the long-run and short-

run relationship between variables. The results of the ECM indicate that there is a long-run equilibrium between variables. Government spending in Pakistan does have a positive impact on economic activity. Pakistan has one of the lowest tax-to-GDP ratios and consequently, Government spending in Pakistan is also low in comparison to other developing countries. According to the results of ECM indicate that if Government spending expenditure is increased by 1 unit than 0.80 will be increasing. The government needs to make sure that increment in government expenditure does not hurt the economy, particularly the economy of people within the country. If increment in government expenditure will lead to higher taxes costs or higher borrowing which result in higher interest payable, government expenditure might not achieve its purpose of accelerating economic growth.

The estimation from the findings for growth revealed that there is a positive relationship between growth and capital formation if Gross capital formation is increased by 1 unit than 0.59 units will be increased. If households and NPISHs Final consumption expenditure are increased by 1 unit than 0.87 will be increased so we can see that in all the variables the highest coefficient was from the household's final consumption expenditure and that should be the focus since it also has a positive relationship with GDP growth. If the export of goods and services is increasing by 1 unit than 0.01 unit will be increased. This is not good for a particular economy.

## **7. POLICY RECOMMENDATIONS:**

I suggest and my point of view if the government should make a multipronged strategy towards the promotion of exports.

1-The first point should be the instant supply of cheap energy to the industry. ‘

2-The second point should be to build foreign partnerships with technical universities and to build industry-academia linkages to put together innovative and high tech R&D based products.

3-The third point should be to not only give the loans to the youth but to inform, train and educate the youth about the new avenues and possibilities of exports.

4-The fifth prong should be to focus on the services sectors export. Pakistan is currently the third-largest country in freelancing IT



export services to the world but we need to transition from the services based model in the IT sector to a product-based model where we can build IT products and sell them to the whole world.

5- Government should focus on these policies that embark increase and diversification in exports and decrease in imports. Local markets and infant industries should be promoted and subsidized.

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