

Impact of Expenditure on Economic Growth in Pakistan

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Abstract

This study aimed to find out the impact of expenditure on economic growth in Pakistan, using the time series data for the period 1972 to 2013. Secondary data was acquired from World Development indicators and Pakistan Bureau of Statistics. Augmented Dicky Fuller Test (ADF) was applied to check the stationarity of the data. In addition, Johansen Cointegration and Granger Causality tests were applied to empirically investigate the relationship between the variables (expenditure and economic growth) in Pakistan. The results of Cointegration test have indicated that there is no relationship between expenditure and economic growth in the long run.

Keywords: Public Expenditure, Cointegration, Wagner Law, economic growth, Causality

Introduction

Theoretically the two opposite views about relationship between economic growth and public expenditure are Keynesian and Wagner's view. According to Wagner (1890) public expenditure rises as a result of rise in real per capita income known as Wagner's Law. In short the rise in government expenditure is the outcome of economic growth and causality should run from national income to Gov. Expenditure. While Keynesian considers economic growth as an independent variable and economic growth is due to public expenditure. Similarly, Keynes support rising government expenditure for enhancing economic growth (short term & long term growth). Furthermore, in Keynesian view causality should goes from government expenditure to national income.

Several empirical studies have been conducted in countries around the world for empirical investigation of existence of the Keynesian and the Wagner's Hypothesis. The studies of Srinivasan (2013) and Ebaidalla (2013) supports Wagner's Law. However, the empirical studies like Sevietenyi (2013) do not support Wagner's Law.

There are six various version of Wagner hypothesis. First model which is given by Peacock-Wiseman (1961), second model is presented by Gupta (1967), third model by Goffman (1968), fourth model by Pryor (1969), fifth by Musgrave (1969) and sixth model is given by Mann (1980). The Models are given below

Model 01: $\ln(Gex) = \alpha + \beta \ln(Gdp) + u$

Model 02: $\ln(Gex/Pop) = \alpha + \beta \ln(Gdp/Pop) + u$

Model 03: $\ln(Gex) = \alpha + \beta \ln(Gdp/Pop) + u$

Model 04: $\ln(Gce) = \alpha + \beta \ln(Gdp) + u$

Model 05: $\ln(Gex/Gdp) = \alpha + \beta \ln(Gdp/Pop) + u$

Model 06: $\ln(Gex/Gdp) = \alpha + \beta \ln(Gdp) + u$

Where \ln = natural log, $Gexp$ = Government Expenditure, Gce = Government Consumption expenditure, Pop = population

This study aimed to test the two hypotheses about expenditure and economic growth for Pakistan.

Literature Review

Nkiru and Daniel (2013) examined the relationship among economic growth and government expenditure by using Error Correction Mechanism for Nigeria from 1977 to 2012. Expenditure on education was taken as government expenditure for Nigeria in this study. They found significant and positive effect of expenditure on growth. Similarly, Sevietenyi (2012) also conducted study for Nigeria and find that Wagner Law does not exist in Nigeria. However, the results are supporting Keynesian hypothesis. He used Toda-Yamamoto Granger Causality test and Cointegration test for empirical analysis.

Abbas and Afzal (2010) tested the validity of Wagner hypothesis for Pakistan. They have used time series data (1960-2007) of Pakistan and used Cointegration and Granger Causality test. They have examined the Wagner Law for four periods in Pakistan and the four periods are 1960-1972, 1981-1991, 1981-2007, and 1991-2007. According to their results Wagner Hypothesis doesn't hold for the period 1981-1991. The results of causality test have shown that among fiscal deficit and public spending there is unidirectional causality. Similarly, income and fiscal deficits have also unidirectional causality. However, causality does not exist between income and public spending.

Shams and Murad (2009) tested the Wagner Law in Bangladesh by using Granger Causality and Cointegration test from 1972-73 to 2007-08. They have tested all the five versions of Wagner Law for Bangladesh. According to author's findings there is absence of Wagner Law in Bangladesh.

Ageli (2013) results have shown existence of Wagner's hypothesis in Saudi Arab from 1970-2012. For empirical analysis he used six different versions of Wagner's Law by using Error Correction Mechanism (ECM) and Cointegration for GDP (real) and GDP (non-oil). Likewise, the study of Mahjoub (2013) has also shown the existence of Wagner Hypothesis in Sudan. Similarly, Srinivasan (2013) results have also shown the existence of Wagner hypothesis in India from 1973-2012.

In addition, Huang (2013) examined the Wagner Law for Taiwan and China. He used Toda and Yamamoto causality test and Bound test for annual data from 1979 to 2012. The result of

both tests indicates absence of causality among variables (national income and government expenditure) for both countries. In addition, in long run there is no relationship among national income and government expenditure in China and Taiwan.

Methodology

For empirical investigation of long run relationship among Expenditure (LnEXP) and economic growth (LnGDP) we have used Johansen Cointegration and Causality Test. The reason for choosing these tests is to find out the causal and long run relationship between variables. Johansen test has been used for knowing the long run relationship and Granger causality test is used to check the causal relation among variables of the study. Similarly, Augmented Dicky Fuller Test is used to check the stationary and non-stationary of the data. For this study the variables are Gross national expenditure and Gross domestic product of Pakistan. The period of study for this research is from 1972-2013 and main data sources are World Development indicators and Pakistan Bureau of Statistics. For this research we have followed the studies of Afzal & Abbas, 2010; Shams & Murad, 2009; Ebaidalla, 2013; Sevietenyi (2012) and Husnain (2011).

Granger Causality Test

Following model is proposed for Granger Causality test

$$\text{LNGDP}_t = \beta_0 + \sum_{i=1}^n \beta_1 \text{LNGDP}_{t-1} + \sum_{j=1}^n \beta_2 \text{LNEXP}_{t-1} + \mu_t$$

$$\text{LNEXP}_t = \lambda_0 + \sum_{j=1}^n \lambda_1 \text{LNGDP}_{t-1} + \sum_{j=1}^n \lambda_2 \text{LNEXP}_{t-1} + v_t$$

Where LNEXP_t = Natural logarithm of Expenditure

LNGDP_t = Natural logarithm of Gross Domestic Product

μ_t & v_t = Error Term

Data Analysis And Results

Acquired secondary data was processed and analyzed using E-Views-7 software. Table-1 shows the results of Augmented Dicky Fuller (ADF) for variable expenditure (LnEXP) and Gross domestic product (LnGDP). Both variables are transformed into natural logarithm form represented as LN. Initially, both variables LnEXP and LnGDP at level are non-stationary. They became stationary at first difference.

Table 01: ADF test Results

At level	intercept	Trend and intercept	None
LnGDP	-2.392178	-4.109037	5.464954
LnEXP	-2.397851	-3.979417	4.922859
At First Difference			
LnGDP	-2.704410*	-2.533484*	-1.677877*
LnEXP	-2.573587*	-2.451130*	-1.718813*

*Shows significance level at 5 %.

From the results of trace statistics (Table 2) **trace statistics < critical value**, therefore, we cannot reject null hypothesis and hence we conclude that variables are not integrated.

Similarly, from results of Max Eigen Statistics (Table 3), we cannot reject null hypothesis because **max. Eigen stats < critical value** which means variables have no long run relationship among each other.

Table 02: Trace Statistics

Hypothesized Number of Cointegration	Eigenvalue	Trace stats	Critical value (5%)	Prob.
None	0.249	13.827	15.495	0.089
At most 1	0.058	2.394	3.841	0.122

Note: Values are rounded to three figures after decimal.

Table 03: Maximum Eigenvalue

Hypothesized Number of Cointegration	Eigenvalue	Trace stats	Critical value (5%)	Prob.
None	0.249	11.433	14.265	0.134
At most 1	0.058	2.394	3.841	0.122

Note: Values are rounded to three figures after decimal.

The results of Pairwise Granger Causality test have shown no causality between LnGDP and LnEXP which indicates the non-existence of Wagner's Law and Keynesian Law in Pakistan during study period.

Furthermore, the findings of this study are consistent with the empirical studies conducted by Sevietenyi (2012) for Nigeria, Shams & Murad (2009) for Bangladesh and Huang (2013) for Taiwan and China. However, the findings of this study are inconsistent with studies of Nkiru & Daniel (2013) and Srinivasan (2013) etc.

Table 04 Pairwise Granger Causality Test

Ho (Null Hypotheses)	Observations	F-Stats	P-value
LNGDP does not Granger Cause LNEXP	40	2.28971	0.1163
LNEXP does not Granger Cause LNGDP		1.63160	0.2101

Note: at lag 2

Conclusion

The research aims at analyzing impact of expenditure on economic growth in Pakistan. Variables of the study are initially non-stationary (at level) and they are converted in to stationary by taking first difference. The results of Cointegration have shown that there is no any relationship in long run among growth and expenditure. Similarly, the findings from pairwise causality test also indicated no causal relations among the variables. The findings from this study are consistent with the findings Shams & Murad (2009) and Sevietenyi (2012).

However, this empirical research doesn't supporting the Keynesian and Wagner hypothesis in Pakistan. The implication from this study is that expenditure is not an important tool for achieving growth rate in Pakistan.

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