IMPACT OF PUBLIC SECTOR EXPENDITURES ON ECONOMIC GROWTH OF PAKISTAN: SOME EVIDENCE FROM DEMOCRATIC REGIME

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ABSTRACT

This study shows empirical relevance between public sector expenditures like investment in agriculture sector, investment in education sector, investment in transport and communication on Pakistan's economy in democratic regime. Study used quarterly based data taken from 1988-2008. Econometric tests indicate the positive and significant impact of all these variables on economic growth. Study also considered the impact of inflation (negative but significant) and political stability (positive but not significant) on economy since these two factors can't be ignored in any case. JEL Classification: A11, C5, C8, E6, O4, O11.

Keywords*: Pakistan, GDP, Agriculture, Education, Transport & communication & Inflation*

INTRODUCTION

Economic Growth is a path through which production capability of an economy is prospered by improving national income and output. Economic growth is also concerned with investment in chief determinants of an economy thought which full employment is possible, literacy level, technological use and capital stocks is enhanced in economic growth (Behzad, 2012). Economic development is not possible without sustainable economic growth. Economic growth has a positive association with improvement of life style of people, food, health and education's availability to people and these facilities are granted by government which is called public sector expenditures. Public expenditures represent those spending which are made by a government on joint needs and wants of its nation such as infrastructure, education, crops and employees' pension etc. In developing countries, public expenditures not only accelerate economic growth but also play a constructive role in reducing poverty and inequalities prevail in income distribution of society. Through Public expenditures, government control economies as these are important tools for government. These have long lasting impact on economy that is the reason that economists give importance to this tool.

Public expenditures may be classified on the basis of functions for which they are incurred i.e. revenue expenditures (current expenditures which are incurred on civil administration, education, defense forces, public health and maintenance of government offices), capital expenditures (expenditures on long lasting assets such as land, building and machinery), transfer expenditures (expenditures against which doesn't have any subsequent return) and un-transferable expenditures (which are related to creation of income/output) (Samulson, 1954). The debate on how autocratic

and democratic political systems affect the process of economic growth is ongoing. Since times of Adam Smith the influence of political systems on the economic growth of any country is a matter of attention. However, the generally accepted fact is that the economic performance has informal influence on the business, institutional and political environment of any country. The political economists are still discovering the inter-link between democracy and economic performance Plümper & Martin, 2003).

Democracy promotes freedom to select their ruler according to their own choice, give them freedom of belief, thoughts and speech as well, enhance law and order situation. It plays a fundamental role in improving human capital while autocracy is against basic political freedom and civil rights. Democratic nations are more effective in resolving differences**,** dealing with catastrophes and major public health crises. With little exceptions**,** most of developed countries are also democratic states. The main objective of this paper is to empirically investigate the impact of public sector expenditures (agriculture, education, transport and communication) on economy of Pakistan during democratic regimes.

LITERATURE REVIEW

Let we take review of few important relevant studies: Loto (2011) empirically studied the impact of government sector expenditures on economic growth in Nigeria for a period from 1980 to 2008 by using time series data. He took five major sectors of Nigerian's economy to evaluate the performance of public expenditure upon these. He applied error correction model and ordinary least square methods by using following model to evaluate results:

G= αa + α1**+ α2H+ α3SEC+ α4Ag+ α5TC+μ**

Where G= Economic Growth, E= Education, H= Health, SEC= security, Ag= agriculture, TC= Transport & communication

He concluded that a positive relationship is found among economic growth and public sector expenditures on agriculture and education sectors, where impact of agriculture sector was negative while education was found to be insignificant in short run. Public sector expenditure on national security, health and transport sectors was also positively related to growth. Significant results were obtained for heath sector while transport and security sector were found positive but insignificant in short run.

Mehmood, et al. (2010) developed the following model to analyze the relationship between democracy and economic growth in Pakistan.

Δ (GDPV) = $\lambda 0 + \sum \lambda i \Delta$ (GDPV) t-1+ $\sum \lambda \Delta$ (DCI)t-1 + (ECM)t-1

Where GDPV = Gross Domestic Product Volume, DCI = Democracy Index

ECM = Speed of Adjustment back to co-integrated relationship.

By applying data they found a positive association between democracy and economic growth in Pakistan and according to them democracy played a magnificent role in economic growth in Pakistan.

Helliwell (1994) explored the cross-sectional data of 125 years over the period from 1960 to 1985 in order to evaluate the two-way linkage between democracy and economic growth. Results showed existence of an affirmative relationship and also found that through investment democracy encourages economic growth. Democracy has negative and insignificant direct effect on economic growth. However, the general results of the growth study did not find any regular net effect of democracy on subsequent economic growth. Barro (1996) empirically analyzed democracy and growth's relationship. He took 100 countries' data from 1960 to 1990. According to findings, the positive effect on growth included small government's consumptions, free markets, high human capital and rule of law. According to study if these kinds of variables and the GDP at initial level were held stable, the overall impact of democracy on growth was weakly negative. Improvement in the living standards was calculated by the infant's mortality rate, male and female primary school attainment and substantially rises in country's real per capita GDP. His analysis pointed out that democracy and growth relationship is increasing when democracy is at its low levels but this relationship turned negative when a specific level of democracy is achieved.

Rodrik (1997) empirically investigated the democracy and economic performance for a panel of about 90 countries for the period from 1970 to 1989. The empirical findings of the study did not discovered much of the association between democracy and economic growth but still democracy proved a better system than autocracy because it handled adverse stock much better than autocratic system, democracies were more stable and provide more stability than autocracies, initial education, income and the quality of government institutions were controlled in it, in democracies wage rates were high than other system and democracies yield long run growth rate than autocracies. Rivera (2002) took a cross counties data from 1960 to 1990. He prepared a model to examine how long-run growth is effected by quality of governance in democracies**.** In the model, all those institutions which were sincerely functioning in the long run controlled the action of corrupt officials and lesson corruption, which resulted in technological moderation that showed the way to long-run economic growth. Empirical results proved a positive democracy's impact on growth through quality and good governance.

Baum & Lake (2003) statistically investigated the democracy's direct and indirect effect on economic growth through on human capital i.e. education and public health. They took cross-sectional data for 30 years and a panel of 128 countries had been used. According to their findings, democracy effect indirectly by increasing secondary education in non-poor countries and through increasing life expectancy in poor countries. The democracy had no statistically

significant direct effect on growth. Zakaria & Fida (2009) carried out an empirical study to find out the relationship between democratic institutions and variability of economic growth in Pakistan. They took time series data from 1947 to 2006**.** The variables under study were Per capita output growth rate, democracy index, human capital, government consumption, trade openness and inflation rate, and oil prices. The empirical results highlighted the positive role played by all variables except rising oil prices, in determining growth. However, they proved that democracy has negative impact on economic growth to some extent in Pakistan.

MATERIAL AND METHODS

The econometric growth model is used in this study which is based on the work of Loto (2011). For estimation purpose equation can be taken in log linear form

LGDP= α0 + α1LEdu+ α2LAg+ α3LTC+α4 Linf +α5 pol.st +Q1+Q2+Q3+μt

GDP=Gross Domestic Product, is dependent variable of our research study. Economic growth of country is measured by it. It shows the total market value of goods and services produced with in an economy in a specific year. Education sector (Edu), Agriculture sector (Ag), Transport and Communication sector (TC), Inflation (Inf) (measured by consumer price index) are independent variables of the study. Political stability (PS) is dummy variable of the study.

Since political and Law and order situation in Pakistan is really disturbed and frequent changes have been seen in political scenario. Quarters with smooth political situation will be assigned with value '1' and with severe political disturbance will be assigned with value '0'. Where α1 to α4 are the elasticity and μt is the error/disturbance term with standard properties. This study made use of secondary data from 1988 to 2008. Data for all variables (except political stability)) is collected from various issues (1997-98, 2005-06, 2008-09) of Economic Survey of Pakistan and Pakistan Bureau of statistics.

Following are the alternate hypothesis of the study:

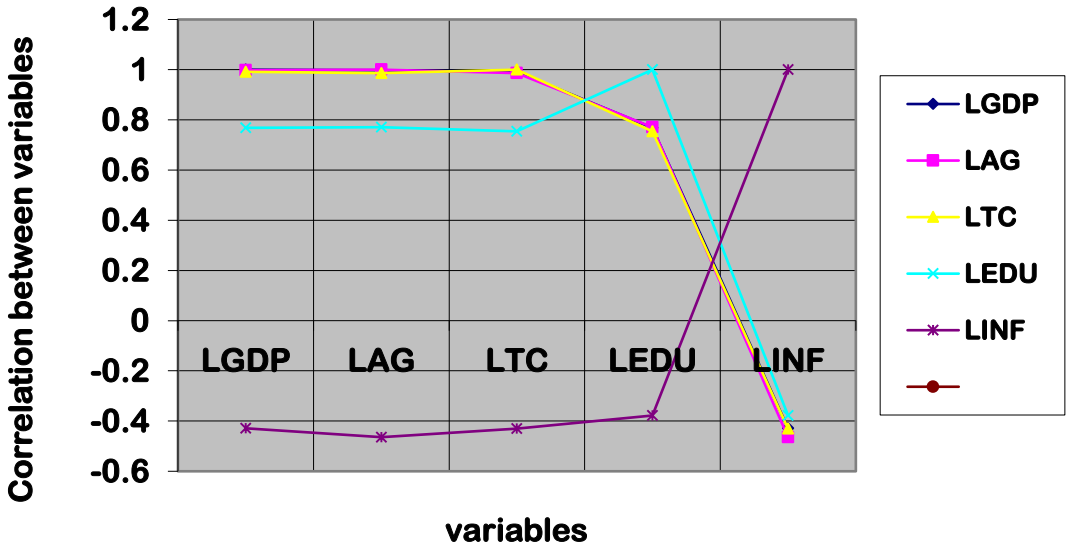
$H_{1=}$ αLGDP/ αLAg>0 (positive).
$H_{2=}$ αLGDP/ αLTC>0 (positive).
$H_{3=}$ αLGDP/ αLEdu>0 (positive)
$H_{4=}$ αLGDP/ αLinf<0 (negative).
$H_{5=}$ αLGDP/ αLPol.st>0 (positive).

RESULTS AND DISCUSSION

For analysis purpose correlation, Ordinary Least Squares and Error Correction Model were used. Let them discuss one by one.

Correlation Matrix

The Correlation Matrix given in diagram describes the GDP's association with other independent variables during democratic regime. The calculated results are same as anticipated by the study. The main focus of this study is on LGDP to other independent and relevant variables. The results described that LGDP did not have zero correlation with any variable.



The above figure shows the high correlation exists between variables. It should be between -1 to +1. The correlation matrix describes that there is a strong and positive correlation exist between LGDP and all explanatory variable except LINF which shows a negative and independent association with LGDP. The correlation between LGDP and independent variable LAG is .99816 which is also nearer to 1 it means a strong correlation exists between these variables which indicates that any raise in investment in LAG can cause LGDP to increase and vice versa.

The LGDP and LTC correlation is .99172; it is also a strong correlation. However, correlation between LGDP and independent variable LEDU is slightly weak i.e. .76866 as compare to other explanatory variable although it is still a strong association. However, LGDP and LINF showed a negative, weak and independent correlation (-.42922).

Unit Root Test

Unit root test employs Augmented Dickey Fuller (ADF) test for estimation of model in which each variable is analysis of the order of integration. The data stationarity is checked by this test. The table 1 below shows the calculated value of all variables by ADF test.

Table 1 ADF TEST

Variables	ADF statistic with trend	ADF statistic without trend	Conclusion
LGDPMP	-1.1336 -7.0336	-.081855 -7.1759	**I(1)**
LAG	-1.3411 -7.3511	-.11056 -7.4727	**I(1)**
LTC	-3.3316 -6.7324	-.48809 -6.8625	**I(1)**
LEDU	.75997 -3.5483	2.0608 -3.4134	**I(1)**
LINF	-1.8859 -5.9941	-1.8509 -6.0789	**I(1)**

95% critical value for all variables **with trend** = -3.5348 **without trend** =-2.9422

The results of test statistic given in the table above indicate that calculated values of variables are less than the critical or tabulate/ standard value in with and without time trend calculations. In order to obtain desired resulted, ADF test is conducted at first difference. In the next step of ADF test all those variables which were non-stationary at level turned stationary at first difference. So the ADF test shows the null hypothesis for the test is rejected. The results of unit root test revealed that null hypothesis couldn't be rejected on the level. However, when ADF test is conducted at first difference the variables are integrated of order one I (1). Therefore the null hypotheses for all variables are rejected. Thus it is clear that government sector expenditures and economic growth for democratic regime are non-stationary at their levels become stationary at first difference.

Ordinary Least Squares Estimation

The results obtained through econometric analysis of ordinary least squares estimation is applied on data of democratic regime reveals that overall effect of all variables is significant which prove that the model is significant.

The estimated OLS equation states that LGDP as:
LGDP=Coefficient (Standard Error)

$$\underset{}{\text{LGDP}} = \underset{(.11971)}{2.4835} + \underset{(.039150)}{.83380\ \text{LAG}} + \underset{(.026484)}{.13788\ \text{LTC}} + \underset{(.031727)}{.090342\ \text{LEDU}} - \underset{(.0071008)}{.052035\ \text{LINF}} +$$

$$\underset{(.0048451)}{.0057876\ \text{PS}} + \underset{(.0035597)}{.9368\text{E-}3\text{Q1}} + \underset{(.0035501)}{.4107\text{E-}3\text{Q2}} + \underset{(.0037049)}{.0022844\text{E-}3\text{Q3}}$$

R^2 .99919, $\bar{R}^2$ .99900, F-stat.F (8 34) 5258.7[.000] D.W-statistic .54879

The estimation of OLS indicates that GDP is dependent variable while expenditures on agriculture sector (AG), expenditures on transport and communication sector (TC), inflation (INF), expenditures on education sector (EDU) and political stability (PS) are independent variables. The empirical results of OLS measurement showed the existence of a positive association among dependent variable and all public sector expenditures and political stability except inflation that showed negative impact. Optimistic results are obtained in agriculture area as it shown an affirmative impact on gross domestic product in short run condition. Previous studies results have replicated in this study. GDP boost up to 83% when a unit increase in agriculture sector is raised by 1%. Education, transport and communication sector have also shown positive and significant impact on GDP. If spending in transport and communication sector are increases by 1% then the suppleness of GDP is enhance up to 13%. The GDP boosts up to 9% if investment in education sector is increased by 1%. Investment in education sector is considered as investment in human capital because education enhances skills and qualities of nation and it will ultimately increase productivity which will bring positive change in overall economy.

There was a pessimistic association is found between inflation and GDP. The 1% increase in inflation depresses GDP by 5%. Political stability showed a non-significant but positive impact.R^2 the coefficient of determination that enlightens the amount of variance accounted for in the relationship between dependent and independent variables. The fitness of goodness of any regression model is measured by it. The value of R^2 lies between 0 and 1. If the calculated value is nearer to 1, the better is fit. In the above results, the values of R^2 and adjusted $\bar{R}^2$ were .99919 and .99900 respectively. As these values are nearer to 1 which showed goodness of fit of this the model. The calculated value also means 99% variation in GDP is elucidate by independent variables. The F-test calculates that average effect of independent variable on dependent. The high calculated value of F-test as compare to tabulated value indicates that effects of independent variables on dependent were significant but different. The Durbin-Watson test was also applied to find out the presence of serial correlation (which is a relationship between values separated from each other by a given time lag in residual from a regression analysis). The calculated value of Durbin Watson by Ordinary least square method is .54879 which was below accepted value that's why Error Correction Regression Estimates were employed.

Error Correction Model (ECM) Estimates

The above ECM equation estimation states that LGDP as

LGDP = 2.4373+.83384 LAG + .12947 LTC + .075008 LEDU - .053546 LINF +
(.078596) (.025491) (.017523) (.020784) (.0046065)
.0035796 PS + -.0017354Q1 +-.0014100Q2 + .0019021Q3 + . 69720 F (-1)
(.0033111) (.0023264) (.0023124) (.0024015) (.11473)
R^2 .99966, $\bar{R}^2$ .99956, F-stat.F (9, 32) 10418.0 [.000] D.W-statistic 1.9611

The long run effects are measured by ECM estimation. The short run impact of all sectors was positive and significant except inflation's effect which once again showed a significant negative impact. The impact of PS is although positive but not significant. Improvement was seen in the value of R^2 and $\bar{R}^2$. The value of Durbin-Watson statistic of 1.96 proves the presence of co-integration between variables. As DW statistic's calculated value did not lie down in critical or rejection region therefore, it is said that DW statistic value is within acceptance range. It accepted in this case that serial correlation did not present in regression errors. The ECM estimation described that the model was very significant. The long run estimation of model by ECM given above shows, the any long run change in LAg, LTC LEdu and PS have a positive effect on the long run changes in LGDP whereas long run change in LINF has a negative impact on long run change in LGDP just like in earlier situation. Hence, the estimation parameters $\alpha 1$, $\alpha 2$, $\alpha 3$, $\alpha 4$ and $\alpha 5$ are the long run marginal impact on LGDP.

CONCLUSION

The central idea of this study is to show the econometric impact of public sector expenditures on Pakistan's economy only in democratic periods, for this purpose secondary data was used from 1988-2008. For in depth study, preference was given to convert annual data into quarters. Investment in agriculture sector, investment in education sector, investment in transport and communication sector, inflation and political stability were independent variables of the study while economic growth was dependent variable of the study. Research work reveals the impact of all these variables (all public sector expenditures and political stability) was positive and significant on economic growth except inflation in both short run and long run.

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