THE RELATIONSHIP BETWEEN GOVERNMENT EXPENDITURE, ECONOMIC GROWTH AND POVERTY REDUCTION IN NIGERIA

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ABSTRACT: *This study examines the relationship between government expenditure, economic growth and poverty reduction in Nigeria using time series data over the period 1980-2013. Employing modern time series econometric techniques such as unit root tests, bound test co-integration approach and error correction techniques within an ARDL framework which yields more robust estimates.It is found that government spending affect economic growth positively and significantly by increasing real private investment and fixed capital accumulation which increase capital accumulation, reduction in current account deficit, external debt burden and improve education/skills of the households by improving human capital. Findings emerge from this study that government expenditure has significant short run impact on poverty reductions in its lag form in which it might be examined by the role of fiscal policy in alleviating poverty of current year in Nigeria.The study suggested policies the role of government should be extended to ensure the magnitude and the quality of private investment as high as possible.*

KEY WORDS:-Government Expenditure, Economic growth, poverty reduction, ARDL Analysis

INTRODUCTION

Government expenditure plays a vital role in economic growth and poverty reduction throughout the world. According to Keynesian approach, public spending may increase the aggregate demand which further stimulates the economic growth and employment. The size of government expenditures and its effect has been an issue of continued interest for decades the received literature, essentially of an empirical nature, has proceeded at two levels.

One set of studies has explored the principal causes of growth in the public sector. Wagner's Law -the "Law of increasing expansion of public and particularly state activities" (Wagner, 1893) - is one of the earliest attempts that emphasises economic growth as the fundamental determinant of public sector growth.Most of the studies try to investigate that government spending is positively related with economic growth. While increase in government spending may leads to fiscal deficit. But if government reduces their expenditure it may adversely affect the economy, but the excess of government expenditure due to the current expenses or unproductive use over the taxes collection capacity of economy creates fiscal deficit.

In most of the developing countries, fiscal deficit is financed through internal and external borrowing. The internal borrowing affects the interest rate and it crowds out the private investment in the long run. While external borrowing leads to current account deficit and appreciation of exchange rate which further decreases the net export of the country. Zaidi (2005) stated that poverty of Pakistan was removed or reduced significantly by increasing government expenditure on public sectors. Samite (2004) government spending in Agriculture sector of Iran in 2004 show that it leads to falling of rural poverty and as result as, we can emphasis to value added and employment in Agricultural sector for poverty reduction. Jiranyakul and Brahmasrene (2007) investigated the relationship between government expenditures and economic growth in Thailand for the period 1993 to 2006 and employed Standard Granger Causality test and Ordinary Least Square (OLS) method. The results showed a unidirectional causality from government to economic growth without feedback.A recent study using time series data for the period 1980 to 2013 for Nigeria and using ARDL analysis to examine the nature of government expenditure and its impact on economic Growth and poverty along with private investment, and secondary school enrolment using as a human capita

STUDY DESIGN AND METHODOLOGY.

The study employed secondary sources of data. The nature of data is time series data that will cover over the periods of 1981-2013. The data of macroeconomic variables was obtained from different institutions such as WB, MOFED, NBE, IMF, CSA and HDI.

Government expenditure and economic growth: The explicated econometric model formulated as

$$LnGDP_t = \delta + \beta_1 lnGCt + \beta_2 lnPI_t + \beta_3 SEt + \beta_4 lnGE_t + \varepsilon_t \text{---------------- (2.1)}$$

Whereas GDP real growth domestic product, proxy for growth, GC gross fixed capital formation as share of GDP, PI real private investment, SE secondary school enrolment and GE government expenditure proxy for budget deficit

Unit Root Procedure: While the bounds test for co-integration does not depend on pre-testing the order of integration, the variables need to either be I(0) or I(1) or mutually integrated and not I(2).Hence the need to test for unit root to ascertain the

absence or otherwise of I(2) variables cannot be Overemphasized (Gloria owia,2008) and Wondeferehu, Temesgen and Jibiril (2015).

The ARDL Co integration Approach: This approach provides a simultaneity method of assessing the short- and long-run effects of one variable on the other (Bentzen and Engsted 2001). Pesaran and Shin (1999) originally introduced the ARDL modelling approach and Pesaran et .al. (2001) later extended it. To estimate bound test procedure co-integration, the estimated conditional ARDL model to test the long run relationship between poverty and its determinants variables is as follows.

$$\Delta \ln GDP_t = \delta + \sum_{i=1}^{p} \breve{\alpha} i \Delta \ln GCt - 1 + \sum_{i=1}^{p} \beta i \Delta \ln PIt - 1 + \sum_{i=1}^{p} \theta i \Delta \ln SEt - 1 +$$
$$\sum_{i=1}^{p} \phi i \Delta \ln GEt - 1 + \beta_1 \ln GC_{t-1} + \beta_2 \ln PI_{t-1} + \beta_2 \ln SE_{t-1} + \beta_3 \ln GE_{t-1} + U_t ----(2.3)$$

The parameters $\breve{\alpha}$, β, θ, ϕ, and ¥ denote the short-run dynamics of the model to be estimated via the error correction framework and β1, β2, β3, β4, and β5 represent the long-run parameters. α is the constant term (drift) in the ARDL model and U_t is the white
noise error term.

In the second step, once co integration is established the conditional ARDL (p1, q2, q3, q4, q5, q6) Long run model for RGDP can be estimated as: by using above the re-parameterization of ARDL which is done by the help of (verbic, 2004).
$$LnGDP_t = \delta + \sum_{i=1}^{p} \delta 1 \ln GDPt - 1 + \sum_{i=1}^{p} \delta 2 \ln GEt - 1 + \sum_{i=1}^{p} \delta 3 \ln GCt - 1 +$$
$$\sum_{i=1}^{p} \delta 4 \ln SEt - 1 + \sum_{i=1}^{p} \delta 5 \ln PIt - 1 + U_t --------2.4$$

The estimation of (3) involves selecting the orders of the ARDL (p, q1, q2, q3, q4) long-run model using AIC and SBC.
$$\Delta LnGDP_t = \delta + \sum_{i=1}^{p} \Delta \pi i \ln GDPt - 1 + \sum_{i=1}^{p} \Delta \alpha i \ln GCt - 1 + \sum_{i=1}^{p} \Delta \beta i \ln PIt - 1 +$$
$$\sum_{i=1}^{p} \Delta \theta i \ln SEt - 1 + \sum_{i=1}^{p} \Delta \phi \ln PIt - 1 + \text{€} ecm_{t-1} + U_t -------2.5$$

The coefficients of parameters are dynamic coefficients of the model's convergence to equilibrium, € is the speed of adjustment to long-run equilibrium following a shock to the system and ECM error correction mechanism.

Government expenditure and poverty reduction: The researcher uses similar model suggested by Ravalli on (1997), Ravalli on and Chen (1997) and Adam and Page (2005) to explore the impact of government expenditure on poverty. Thus its explicit econometric form is
$$Lnpv_t = \beta + \alpha_0 \ln GDPt + \alpha_1 \ln SE + \alpha_2 \ln IN_t + \alpha_3 \ln GE_t + PIt + \varepsilon_t ---------------- (2.6)$$

Whereas pv, poverty measure ,whether head count ratio or poverty gap or both due to availability of data GDP, real growth domestic product, IN income inequality, the

coefficients of explanatory variables will expected to be, α_0, α_1, α_2, and α_3 negative, positive, positive/negative respectively. The estimated conditional ARDL model to test the long run relationship between poverty and its determinants variables is as follows.

$$\ln\Delta pov_t = \delta_0 + \sum_{i=1}^{p} \gamma i \Delta \ln RGDPt - 1 + \sum_{i=1}^{p} \eta i \Delta \ln INt - 1 + \sum_{i=1}^{p} \psi i \Delta \ln GEt - 1 + \sum_{i=1}^{p} \psi i \Delta \ln PIt - 1$$
$$+ \delta_1 \ln pov_{t-1} + \delta_2 \ln RGDP_{t-1} + \delta_2 \ln IN_{t-1} + \delta_3 \ln GE_{t-1} + \alpha_3 \ln PI_{t-1} + U_t --2.7$$

All parameters are similarly defined as growth model. Next the long run ARDL (p, q1, q2, q3) for poverty can be estimated as.

$$Lnpov_t = \sum_{i=1}^{p} \delta 1 \ln povt - 1 + \sum_{i=1}^{q1} \delta 2 \ln RGDPt - 1 + \sum_{i=1}^{q2} \delta 3 \ln INt - 1$$
$$+ \sum_{i=1}^{q3} \delta 3 \ln GEt - 1 + \alpha_4 \sum_{i=1}^{q4} \ln PIt - 1 + U_t -------------- 2.8$$

The estimation of above model, involves by the information of SBC. Finally, its error correction model becomes.

$$\ln\Delta pov_t = \delta + \sum_{i=1}^{p} \beta i \Delta \ln povt - 1 + \sum_{i=1}^{p} \gamma i \Delta \ln RGDPt - 1 + \sum_{i=1}^{p} \eta i \Delta \ln INt - 1 +$$
$$\sum_{i=1}^{p} \psi i \Delta \ln GEt - 1 + \sum_{i=1}^{p} ¥ \Delta \ln PIt - 1 + \zeta ecm_{t-1} + U_t --------2.9$$

Where β, γ, η, ψ and $¥$ are short run dynamic coefficients of model to adjustments of equilibrium, ζ speed of adjustment, ECM error coercions mechanism.

RESULTS AND DISCUSSIONS

Government expenditure and economic growth

The result shows that in all the three cases the variables are non-stationary in their levels. This is shown by the computed results which are less than the critical values in absolute term both at 5%, 1% and 10%. The variables in first difference are however, stationary. This implies that all the variables are integrated of order one.

The bound tests results of ARDL model

The calculated *F*-statistics are reported in appendix. For Eq. (4)F(*LNRGDP,LNSEt ,LNIt, LGEt*) = 5.94 .From these results, it is clear that there are long-run relationships between the variables because its calculated *F*-statistics are higher than the upper bound critical value of 4.09 at the 5 % level. Evidence of co-integration relationships between the variables also rules out the possibility of estimated relationship being 'spurious'.

Results of the Long Run Relationship.

The results indicate that, an increase in secondary school enrolment leads to encourage economic growth. Expenditure on education emphasizes positive impact on growth. Government investing on school enrolments (leads to improve human capital) has possibly improved human development outcomes thereby boosting long-run growth. The narrow base of education and health sectors and the highest priority given to primary education and basic preventive health care by government could probably explain the effect.On the other hand the coefficient of real

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GDP is statistically significant at 5% percent level, indicating that if the country were to increase her government expenditure especially on Education, health and capital goods at 1 percent, growth rate per capita will increased by 0.70340percent.

The coefficient of government expenditure is consistent with Fan and Rao (2003) it shows that government expenditure is positively correlated with the economic growth and output as it considered as a sign of macroeconomic stability. Theoretically, if the government spending factor in Ethiopia increases, it increase opportunities of increasing per capita by reducing income inequalities among peoples and consequently boosts the growth.

Short Run Dynamics

These studies examined that the variables in the model are co integrated provides support for the use of an error correction mechanism (*ECM*), so that we can use short run dynamics.
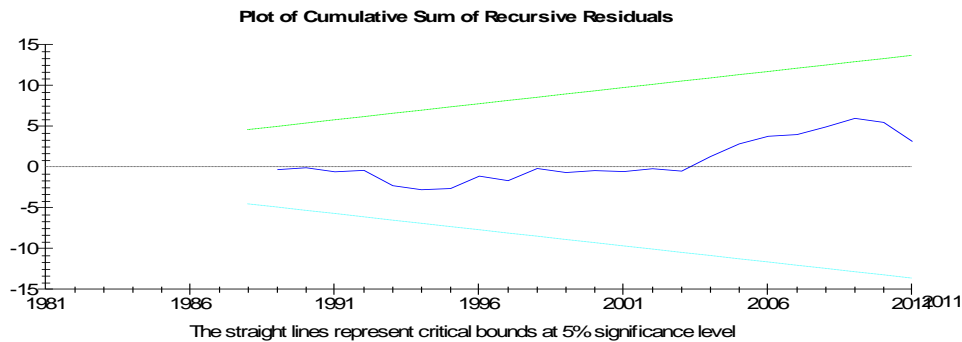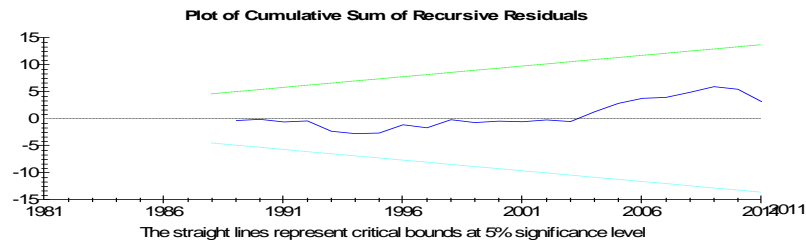
The results suggest the coefficient of the real *GDP* has the theorized in literature review positive sign indicating a positive impact on economy of Ethiopia in the short run which is consistent with the long run results. This means that, in the short run, investing on education has both long and short run positive impact and significant impact on economic growth of Ethiopia. When we came to real private investment, has positive impact on growth of economy which is consistent with long run impact, but statistically insignificant in long run. The evidence shows there should be some restrictions or policy measurements on real private investments in long run to have significant as short run.

Finally, the error correction term ECM_{t-1} which increases the speed of adjustment to restore equilibrium following shock has the expected negative sign and is statistically significant at 1 percent, thus reinforcing the attainment of a long run equilibrium relationship among the variables. The size of the error correction term (-0.4456) precisely indicates that around 45% of the deviation from the long run equilibrium is corrected every year. This suggests a relatively somewhat high speed of adjustment from the short run deviation to the long run equilibrium.

Testing for structural break and ARDL model diagnostic.

To complement this study it is important to investigate growth equation are stable or not for the entire period of study. The methodology used here is based on the cumulative sum (*CUSUM*) and the cumulative sum of squares (*CUSUMSQ*) tests proposed by Brown et al (1975) and on my first paper. Figures 5.1clearly indicate that both the *CUSUM* and *CUSUMSQ* plots lie within the 5% critical bound thus providing evidence that the parameters of the model do not suffer from any structural instability over the period of study.

Figure 3.1 Plot of CUSUM and *CUSUMSQ for growth model*

Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

The result of the diagnostic test confirms the adequacy of the model. That is, the null of there is no serial correlation is not rejected at any conventional significant level which shows that there is absence of serial correlation (autocorrelation) at the 5% significance level and the null assumption of constant variance between the regression of squared residual is not rejected at any of significance level which indicates that there is no hetroscedastcity problems.

Government expenditure and poverty reduction

The variables in their first deference suggests that stationary. By using similar procedure like growth models there is evidence of Co-integration relationship between the variables.

RESULTS OF THE LONG RUN RELATIONSHIP

The Result shows that there is inverse relationship between government expenditure and poverty as if expenditures are on the development side like development of social facilities, public utilities, infrastructure, overhead capital generation, health and education so it can reduce poverty in long run. So the real matter of concerned is the composition of government expenditure. But usually the increase in public expenditure causes fiscal deficit which distort economy Governments take different measure to reduce fiscal imbalances like cut in development expenditure, subsidies and social expenditures which affects the welfare. If the reduction in fiscal deficit is a matter of concern then Government can be reduced fiscal deficit by increasing productivity and growth rather reducing expenditure.

Finally, the results indicate that, an increase in economic growth leads to reduction in poverty incidence which is consistent with analysis of poverty reduction (Adam and page, 2005). That is to say, in the long-run, an increases in real output has the potential of improving poverty in Nigeria. The results, indicate that if the country were to increase her *GDP* by 1 percent, poverty incidence will reduce by 0.137 percent.
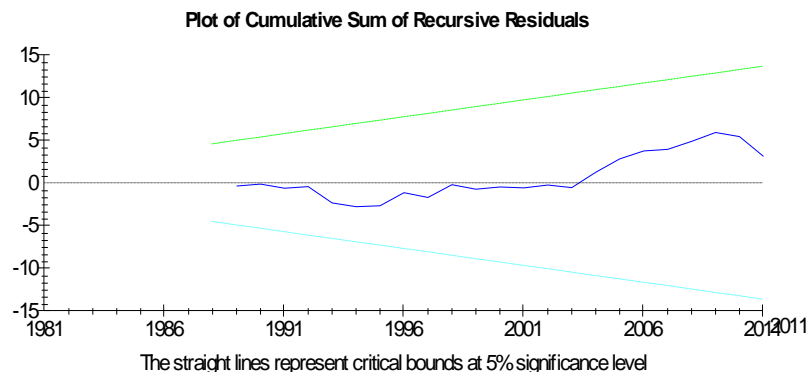
Short Run Dynamics

The coefficient of the real *GDP both in lags and normalized form* has the theorized negative sign and significant, specifying a positive impact on poverty reduction which is consistent with the long run results. This means that in the short run, growth in economic activities in Nigeria has the potential of reducing poverty. The short run impact of government expenditure on poverty is negative and significant as Benneth (2007) which might be examined the role of fiscal policy in alleviating poverty in Nigeria. The short run impact of poverty with respect to income inequality (Gini coefficient) is positive and significant which is according most of the theorized review. This positive and significant relation indicate that at a given rate of economic growth, poverty reduces more in low inequality countries, as opposed to high inequality countries, so the income inequality variable is positive and significant (Adam and Page, 2005.
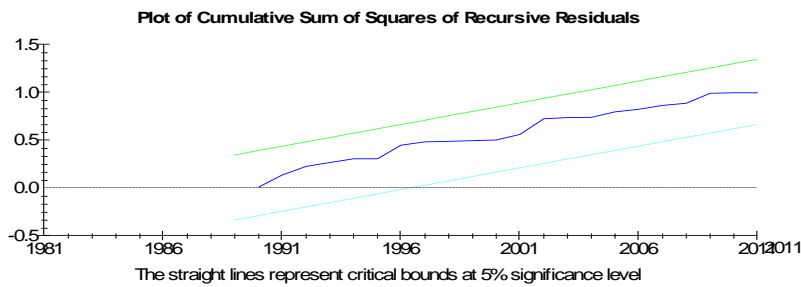
Finally, The size of the error correction term (-0.5231) precisely indicates that around 52% of the deviation from the long run equilibrium is corrected every year. This suggests a relatively high speed of adjustment from the short run deviation to the long run equilibrium poverty levels.

Testing for structural break and model diagnostic

By applying the same procedures as growth model, The methodology used in poverty model based on the cumulative sum (*CUSUM*) and the cumulative sum of squares (*CUSUMSQ*) tests proposed by Brown et al (1975). Figures 5.2 shows that both the *CUSUM* and *CUSUMSQ* plots lie within the 5% critical bound thus providing

Figure 3.2 plot of *CUSUM* and *CUSUMSQ for poverty model*

Plot of Cumulative Sum of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Plot of Cumulative Sum of Squares of Recursive Residuals

The straight lines represent critical bounds at 5% significance level

Evidence that the parameters of the model do not suffer from any structural instability over the period of study.

Finally diagnostic tests were conducted on the ARDL to confirm the presence of serial correlation, normality of the residuals, model specification as well as heteroscedasticity

CONCLUSIONS AND POLICY RECOMMENDATIONS

The researchers analyze that government spending affect economic growth positively and significantly by increasing real private investment and fixed capital accumulation which increase capital accumulation, reduction in current account deficit, external debt burden and improve education/skills of the households by improving human capital. Findings emerge from this study that government expenditure has significant short run impact on poverty reductions in its lag form in which it might be examined by the role of fiscal policy in alleviating poverty of current year in Nigeria. In addition to these a strong and statistically significant long run impact on poverty reduction by accomplishing fiscal policy , through direct increase in the incomes of the poor, thus redistribution of income from rich to poor.

Government expenditure should draw some policy implications like as the guiding principle for public investment should be complimentary rather than compete with private investment, prudent fiscal policy should be pursued to widen and strengthen the revenue base in order to avoid costly or distortionary financing of the ever increasing government expenditure government investment to be productive, qualified civil servants should be attracted and motivated. Finally, government has a bigger responsibility in creating stable and conducive economic and political environment, building general consensus and mobilizing its people in development endeavor if the country has to direct itself into long-run growth.

The major limitation the study encountered, Most of the time series data were not in quarterly format and therefore variables such as real *GDP*, Government expenditure , secondary school enrollment etc, had to be used in their annual form and had no compiled file for Gini index which is proxy for income inequality . An attempt to extend the data length to 20014/15 or further was constrained by unavailability of these macro series from domestic official sources as the researcher had to fall on mainly foreign sources such as the World Bank, IMF, among others at a tremendous financial expense. Thus, future studies on government expenditure on economic growth and poverty reduction in Ethiopia should extend the context of the present study by

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simultaneously estimating a robust relationship between economic growth, poverty reduction and government spending (investment) by incorporating other relevant variables such as health expenditure (investment), education investment, Research and development, Science and technology, etc. particularly by panel time series data.

REFERENCES

Abramovitz, Moses (1983*)*, "Review of Towards an Explanation of Economic Growth", *Journal of Economic Literature,* pp: 783-82

Alexiou, C. (2009). Government Spending and Economic Growth: Econometric Evidence from the South Eastern Europe (SEE). *Journal of Economic and Social Research*, *11*(1), 1-16.

Adam and Page (2005), "Do International Migration and Remittances Reduce Povertyin Developing Countries/", World Bank, Washington, DC, USA.Arif .G Remittancesand investment at the household level in Pakistan. PIDE Research report #166.

Baharumshah et al. (2009), "Formulate ARDL analysis how to run by mixing I (o) and I(1) variables",

Bahmani- Oskooee (2004), Robust estimation on analysis of Autoregressive distributive ladEstimate cointegration approach.

Barro, Robert J (1990), *Macroeconomic Policy,* by the president and fellows of Harvard Collage, USA

Benneth, O., 2007. Fiscal policy and poverty reduction: some policy options for Nigeria, AfricanEconomic Research Consortium, Aerc research Paper 164.

Cashin, Paul (1995), "Government Spending, Taxes and Economic Growth," *IMF Staff Paper,* Vol.42 (June), pp. 237-269

Daniel, K.T., Abel, F., Eric, O.A., and Emmannuel, E. A., (2008), Buoyancy and Elasticity of Tax: Evidence from Ghana", *Journal of Monetary and Economic Integration*, Vol. 10(2), PP., 36 – 64.

Dickey and Fuller (1981), "Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root," *Econometrica*, Vol. 49

Dutt, Swarna D. and Dippak, Goshe (1997), "An Empirical Examination of Public Expenditure-Economic Correlation: The case of Mexico," *The Southwest Oklahoma Economic Review,*Downloaded from Internet

Ehadie, J. (1994). "Fiscal Decentralization and the Size of Government", *World Bank Policy Research Working Paper*, No. 1387, Washington, D.C.

Elbadwi (1992) "Determinants of Expatriate Workers' Remittances in North Africa and Europe," *World Bank Policy Research Working Paper* 1038 (Washington: World Bank).

Engle, R. and Granger, C., (1987), "Cointegration and error correction: Representation, estimation and testing", *Econometrica*, Vol.55, PP.251-276. Available at http://ideas.repec.org/a/ecm/emetrp/v55y1987i2p251-76.html

Engle, R.F. and C.W.J.Granger (1987), "Cointegration and Error Correction: representation, Estimation, and Testing," *Econometrica.* Vol.55 (92), pp.251-276

*Fan, shenggen and Rao, Neetha (2003), "*Public Spending in Developingcountries: Trends, Determination, and Impact", EPTD Discussion PaperNo. 99, USA.

Federal NegaritGazetta (1995)., "The Constitution of the Federal Democratic Republic of Ethiopia", Proclamation No. 1, 1st Year.

Ghatak and Siddiki (2001), "Techniques for testing the constancy of regression relations over time", *Journal of the Royal Statistical Society*.

Gordon, Roger, (1983), "An Optimal Tax Approach to Fiscal Federalism," *Quarterly Journal* of *Economics*, Vol. 97, pp. 567–86.

Granger, C.W.J., (1986), "Developments in the Study of Cointegrated Economics Variables," *Oxford Bulletin of Economics and Statistics*, Volume 48, PP.213-28.

Grossman, P. 1989. "Fiscal Decentralization and Government Size: An Extension," *Public Choice*, Vol. 62 (6).

Gujarati (2004), *Basic Econometrics*, 4th edition, McGraw-Hill, Inc

Harris, Richard (1995), *Cointegration Analysis in Econometric Modeling,* London, University of Portsmouth, Prentice Hall.

Johansen and Juselius (1990), "Maximum Likelihood Estimation and Inference on Cointegration with applications to the demand for Money", *Oxford Bulletin of Economics and Statistics*, *52*, 169-210.

Johansen, S., (1988), "Statistical Analysis of Cointegration Vector," *Journal of Dynamics and Control*, Volume.12, PP.231-254.

Leach, Graeme (2002), "We are Going the Wrong Way-Tax and Spend Fiscal

P Lin, S.A.Y. (1994), "Government Spending and Economic Growth", *Applied Economics,* Vol 26, 83-94olicy", *IoD Policy Paper*, London

Samuelson, Paul A. and Nordhaus, William D. (1989), "Economics", 13th ed.,McGraw-Hill, Singapore.

Teshome, Mulat (1994), "Institutional Reform, Macroeconomic Policy Changeand the Development of Small-Scale Industries in Ethiopia", *StockholmSchool of Economics,* Working paper No. 23.

Yaya, K. (2010), Budget Deficits and Economic Growth: Causality Evidence and Policy Implications for WAEMU Countries, European Journal of Economics, Finance and AdministrativeSciences, ISSN 1450-2887 Issue 18 .

Zaidi, S. A.,(200), The Issues in Pakistan Economy, Oxford University Press, Karachi

Zafar, Z.; Zahid, M.,(1998) Macroeconomic determinant of economic growth in Pakistan, The Pakistan Development Review, 37: 2 125-148