

Does Government Expenditure Spur Growth In ECOWAS?

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Abstract

The paper attempts to investigate the relationship between government expenditure and economic growth in fifteen ECOWAS countries for the period of 2000-2010. The study adopts a panel data framework using the fixed and random effect model; the Hausman test employed in the model emphasized the appropriateness of the fixed effect model. The study found the indicator of government expenditure to induce a positive inelastic variation on economic growth; while the growth rates of government expenditure induce a nearly perfect inelastic negative variation on the GDP growth rates, this would not be unconnected with the weak fiscal discipline in the Nigerian economy. Our finding from estimation of growth rates is more pertinent to this study since the inclusion of rates would have accounted for the periodic effect. Prominent policy recommendation is the need to develop institutions that would ensure realistic, transparent and appropriate channelling of government expenditure towards productive economic activities.

Keywords: *Government Expenditure, Economic Growth, ECOWAS*

Jel Classification: *C33, H52, O55.*

1.0 Introduction

The relationship between government expenditure and economic growth has attracted considerable interest among economists and policy makers. There has been increasing interest among researchers, economists and scholars on the subject of government expenditure and economic growth in both developed and developing countries. The effect of government expenditure on economic growth has neither been resolved theoretically nor empirically. Government performs two functions: protection (security) and provisions of certain public goods. Protection function consists of the creation of rule of law and enforcement of property rights which helps to minimize risks of criminality, protect life and property, and the nation from external aggression. Under the provisions of public goods are defence, roads, education, health, and power, to mention few (Ogundipe and Oluwatobi 2013).

The macroeconomic performance of ECOWAS members varies across countries; some have good and high macroeconomic performance while for some it is low or stagnant when compared. For instance, the average inflation for Senegal within 2000-2010 was 2% compared to that of Nigeria which has been 12.5% within the same period. For Ghana, fixed investment has increased contribution to the growth of the country. It increased from 23% in the last decade to 30% in 2009 (Yvonne, 2010). However, the macroeconomic performance in ECOWAS has generally been dissatisfying despite a good number of political commitments aimed at to achieve stability in the various economies and convergence at the sub-regional level. Following statistics from the African Development Bank (ADB), government expenditure experiences yearly increases and this increase in government expenditure can be attributed to increase in population, inflation, foreign aid, continual development and so forth.

Government resources are channelled towards activities that are to lead to economic growth and eventually to development of the economy. ECOWAS an economic union which was set up to promote economic development and growth of its members has not been able to achieve this aim for the past three-half decades of its existence. It will be expected or rational that increase in government expenditure will lead to increase growth rate; Barro (1991) have argued that this is not often true for some countries especially the developing countries. According to Gwartney et al. (1998), "even though government expenditure on its core functions may enhance economic performance, there are good reasons to believe that growth will be retarded if government expenditure goes beyond its core functions into non-productive activities". Not only is government expenditure important during periods of recession from the Keynesian perspective but the fact that government success or failure depends on whether economic performance ranks high or low. For instance, the GDP by expenditure for Cote d'Ivoire in 2000 was -2.67% and by 2005, it was 0.02% (UN statistics), increase in government expenditure turns up resulting in minimal increase in growth rate.

Government expenditure consists of health, education, infrastructures and defence and so on. For instance, in Nigeria, there is continued increase in government expenditure due to the increase in the production and sales of crude oil and the increased demand for public goods

like roads, communication, power, education and so forth. Available statistics show a continual increase in total government expenditure (capital and recurrent) and its components. Recurrent expenditure was ₦461,600.00 million and ₦1,589,270.00 million in 2000 and 2007 respectively. Likewise, capital expenditure rose from ₦239,450.90 million in 2000 to ₦759,323.00 million in 2007 (Central Bank of Nigeria 2007, 2008). Unfortunately, the rising government expenditure has not led to any meaningful growth and development, as Nigeria ranks among the poorest countries in the world. Expenditure on education covers higher education, elementary and secondary education and libraries. Public safety or defence includes police protection, fire protection, corrections and protective inspection and regulation. Expenditure on environment and housing include natural resources, parks and recreation, housing and community development, sewerage and solid waste management. Expenditure on utilities includes operation, maintenance and construction of public systems of water supply, electric power, gas supply and transit. Insurance trust expenditure includes unemployment compensation, employee retirement, and workers' compensation. There have been continuous increases in government spending in all the above listed areas without any meaningful development evidences; as major indices of development still remain lowest in world rank.

3.0 Review of Literature

There has been intense debate by economists on the issue of if the government should intervene to correct short-run fluctuations in economic activity. There have been contributions from various economists such as Solow, Barro, Keynes, Wagner, e.t.c and various schools of thought such as the classical, neoclassical, Keynesian and so on.

Classical economists oppose the intervention of government while the Keynesian school of thought stands for government intervention. The classicalists believe that market forces bring the economy to long-run equilibrium through adjustment in the labour market. The classical and neoclassical economists deem fiscal policies as ineffective due to the well-known crowding-out effect. The crowding out effect implies that as government spending increases, public goods are substituted for private goods, hence lowering private spending on education, health, transportation and other goods and services. Based on the classical evaluation, when governments borrow to finance spending, pressures in the credit market result in higher interest rates which hinder private investment.

The Keynesian school of thought were in opposition with the view of the classical school of thought. The Keynesian school of thought suggested that government spending can contribute positively to economic growth. Thus, an increase in government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. Consequently, government expenditure increases the aggregate demand which brings about an increased output depending on expenditure multipliers.

The debate that fiscal policies enhance economic growth has gained additional anchor with the introduction of new growth theories. Unlike the neoclassical growth model formulated by Solow (1956) which did not propose the channels through which government spending may

influence long-run economic growth, the new growth theories suggest that there are both temporary effect from the government intervention during the transition to equilibrium and a possible long-term effect from government spending on economic growth.

From the classical, neoclassical and Keynesian point of view, they all had different view in regards to government expenditure and economic growth. The neoclassical who based their research on Solow (1956) growth model or its version in optimal growth formalized by Cass (1965) and Koopmans (1965) following previous proof in Ramsey (1928) were of the view that government expenditure is detrimental to economic growth in the long-run. It is as such because of the argument they brought forward. To them, government expenditure engenders the crowding out effect and in times of budget deficit, taxes are raised which increases production costs and leads to increased price and low demand or the government results to borrowing. Also, government spending discourages private investments. While the Keynesians say that government expenditure does not obstruct economic growth instead it accelerates it through full-employment, increased aggregate demand and so forth. Thus, government expenditure is regarded as an exogenous force that changes aggregate output.

However, Musgrave (1997) argued that what matters most for government spending is how effective it is. If the so called “productive” category of government spending is not effective, it can have a negative impact on growth. The marginal utility approach is one of the important theories developed in the 1920s which suggests an economic approach to determine the composition of expenditure and budgeting. According to this theory, the government spends its limited income on alternative services such that the marginal benefit is the same on all items. According to Pigou, “expenditure should be distributed between battleships and poor relief in such a way that the last shilling offered to each of them yields the same return”. Same principle was restated by Dalton thus “public expenditure should be carried just so far that the marginal social advantages of expenditure in all directions are equal and just balance the marginal social disadvantages of all methods of raising additional public income”.

Though an attractive theory, it however has some practical problems. First, it is not easy to quantitatively measure the benefits from different items of public expenditure such as defence. Second, this theory cannot be subjected to test which is due to the vast array of services and goals of government. Third, the government does not only consider the present satisfactions of the “community” but also the future interests. This theory is at best applicable to the use or distribution of a fixed sum rather than as a standard for determining the total size of public expenditure. However, Wagner’s law (1876) has a different direction of causality between government spending and economic growth. The Wagner’s law was propounded by Adolph Wagner in 1876. The law states that in the process of economic development, government expenditure tends to expand relative national income. Three pretexts are given to justify such a hypothesis: 1) public functions substitute for private activity; 2) economic development results in the expansion of cultural and welfare expenditures; 3) government intervention may be needed to manage and finance natural monopolies. That is, expanding government expenditure is seen as the product of economic development and not vice versa Bird (1971). The submit that the share of public sector in any economy will rise as economic

growth advances which is due to intensification of existing activities and extension of new activities. According to Wagner, social progress has led to increasing state activity with consequential increase in public expenditure. Wagner's law of public expenditure was one of the earliest attempts that emphasize economic growth as the basic determinant of public sector growth.

The displacement effect hypothesis of Peacock and Wiseman was based on the study titled "The Growth of Public Expenditure in the UK, 1961" and this provided an explanation for fluctuations in public expenditure over time. The assumption put forward is that government expenditure grows as result to growth in revenue. During settled times, people can be expected to develop conceptions of acceptable rates of taxation. The stable level of taxation will produce increasing amounts of revenue as well as expenditure. However, this does not explain the relative increasing growth in public expenditure. Change in the tolerance limit of people to the burden of taxation arises as a result of increased spending which is due to large scale social disturbances like wars, influx of refugees and so forth. The result is what is called "displacement effect". The displacement effect shifts expenditures and revenues to new higher levels. Therefore, a displacement effect is created when the earlier lower tax and expenditure are displaced by new and higher budgetary level.

According to Buchanan "the single best explanation for tremendous growth in the public sector of the economy and also for the increased concentration of expenditure in the federal government is provided by the predominant importance of expenditures, direct or indirect made necessary by wars and threats of war". War and military expenditures are the most important factors responsible for increase in public expenditure, other "social upheavals" and natural calamities like droughts, famine and so forth cause a substantial upward shift in public expenditure. These events lead to new emergency demands on government- new social welfare schemes, war pensions all leading to maintaining the level of expenditure after social upheavals.

Exogenous growth models were being used to evaluate the relationship between government spending and economic growth. The endogenous growth theory incorporates two fundamental assumptions: that private capital marginal productivity should be decreasing and the externality concept. Romer (1986) constructed a model that allowed endogenous positive long-run economic growth rate. With this result, it attracted more studies on public policy influence on economic growth. Lucas (1988) proposed his' endogenous growth model with human capital as the engine of continuous growth. Barro (1990) came up with a model which incorporated productive public spending. This kind of government spending increases private capital marginal productivity, for instance infrastructures. Barro identified a positive correlation between government spending and long-run economic growth. In Barro's model, productive government spending was modelled as an externality. He analyzed the impact of consumption spending in comparison with productive spending and concluded that flat-rate taxes are used to finance public consumption which lowers long-run growth.

Empirical analyses on the overall impact of government expenditure on long-run economic growth have been featured in several work, which include: Feder (1983), Ram (1983, 1986),

Grier and Tullock (1989), Romer (1989), Barro (1990, 1991), Levine and Renelt (1992) and so on. Most of these studies made use of cross-section analysis to link measures of government expenditure with economic growth which produced mixed evidence. Kormendi and Me-guire (1985) studied 47 countries in the post-World War II period, using data on total government "consumption" expenditures and other variables from International Financial Statistics. This measure of government spending excludes public investment and transfers but includes most expenditure on defence and education. Although the category is called consumption, it does not necessarily follow especially for defence and education. These public services enter mainly into utility functions rather than into production functions or as influences on property rights. Using data for each country averaged over roughly 20-year periods, Kormendi and Meguire found no significant relation between average growth rates of real GDP and average growth rates or levels of the share of government consumption spending in GDP.

Grier and Tullock (1987) extended the Kormendi-Meguire form of analysis to 115 countries, using data on government consumption and other variables from Summers and Heston (1984). They had the same concept of government spending with Kormendi and Meguire. The Grier-Tullock study was based on a pooled cross-section, time-series analysis, using data averaged over 5-year intervals. They found a significantly negative relation between the growth of real GDP and the growth of the government share of GDP, although most of the relation originated from the 24 OECD countries (Organization for Economic Co-operation and Development). Landau (1983) studied 104 countries on a cross-sectional basis, using an earlier form of the Summers-Heston data. He found significantly negative relations between the growth rate of real GDP per capita and the level of government consumption expenditures as a ratio to GDP. His definition of government consumption is the same as those used above. However, his regressions held constant a measure of investment in education, which would be one component of an economy's broadly defined investment. Since one channel for a negative effect of more government on growth involves a reduction in investment, the interpretation is different if a component of investment is held constant.

Barth and Bradley (1987) found a negative relation between the growth rate of real GDP and the share of government consumption spending for 16 OECD countries in the period 1971-1983. They also found that the share of government investment in GDP had a statistically insignificant effect on growth, although the point estimate was positive. That military spending positively affects economic growth in a sample of 44 less developed countries Singh and Sahni (1984), using the Granger-Sims methodology, examined the causal link between government expenditure and national income in a bivariate framework. Their empirical results, based on data for India, suggest that the causal process between public expenditure and national income is neither Wagnerian nor Keynesian.

Similarly, Ahsan, Kwan, and Sahni (1992) have used the same approach, but in a trivariate framework. Their interesting results indicate that while the US data fail to detect any causality between public expenditure and national income at the bivariate level, there was strong evidence of indirect causality from GDP to public spending via both money stock and budgetary deficits. Bohl (1996) applied tests of integration, co-integration and Granger

causality in a bivariate context, and found support to Wagner's law for only the United Kingdom and Canada, out of the G7 countries, 5 during the post-World War II period. Ghali's (1998) study is the only one that uses multivariate co-integration techniques, and examines the dynamic interactions between government size and economic growth in a five-variable system, consisting of the growth rates of *GDP*, total government spending, investment, exports, and imports. Using data from ten OECD countries, Ghali's study shows that government size Granger-causes growth in all countries of the sample.

Recently, Kolluri et al. (2000), using a bivariate framework, estimated the long-run relationship between gross domestic product and government spending in the G7 countries for the period 1960-1993. Most of their empirical findings confirm Wagner's Law for the G7 countries; that is, government spending tends to be income elastic in the long run. This disparate evidence calls for a re-examination of the differences in the causality results. Khan and Reinhart developed a growth model that examines separately the effects of public sector and private sector investments. Using cross-section data from a sample of 24 developing countries, they find that public investment has no direct effect on economic growth. Dakurah et al. (2001) used co-integration and error correction models to study the causal relationship between the military burden and economic growth for 62 countries and found no common causal relationship between military and growth among these countries. Using cross-sectional growth regressions, Benoit (1973, 1978) used the Spearman rank order correlation and regression analysis to show from 1950 to 1965. However, other studies found a negative relationship between defence spending and economic growth which is due to the negative impact on saving, investment or exports. Studies done by Fiani et al. (1984), Lin (1983), Deger and Smith (1985), Deger and Sen (1983) found a negative relationship between government spending and economic growth.

From the above empirical issues, one can notice the diversity in most of the results and this can be attributed to the use of different econometric techniques. And as such, this study will be making use of the panel data regression technique to ascertain the relationship between government expenditure and economic growth in ECOWAS within the time frame of 2000 to 2010.

4.0 Theoretical Framework

4.1 Background

Among the various theories on government expenditure and economic growth discussed in the previous chapter, the endogenous growth theory by Barro (1990) seems more appropriate in analyzing the relationship in government expenditure and economic growth.

Endogenous growth models such as Barro (1990), expect that government expenditure and taxation will have both temporary and permanent effects on growth. Distortionary taxation or productive government expenditures may affect the incentive to invest in human or physical capital, but in the long run this affects only the equilibrium factor ratios and not the growth rate, although there will in general be transitional growth effects. Endogenous growth models such as those of Barro (1990) and King and Rebelo (1990), on the other hand, predict that

distortionary taxation and productive expenditures will affect the long-run growth rate. The novel feature of the public-policy endogenous growth models of Barro (1990), Barro and Sala-i-Martin (1992, 1995) and Mendoza *et al.* (1997) is that fiscal policy can determine both the level of the output path and the steady-state growth rate.

Exogenous growth models were being used to evaluate the relationship between government spending and economic growth. The endogenous growth theory incorporates two fundamental assumptions: that private capital marginal productivity should be decreasing and the externality concept. Romer (1986) constructed a model that allowed endogenous positive long-run economic growth rate. With this result, it attracted more studies on public policy influence on economic growth. Lucas (1988) proposed his' endogenous growth model with human capital as the engine of continuous growth. Barro (1990) came up with a model which incorporated productive public spending. This kind of government spending increases private capital marginal productivity, for instance infrastructures. Barro identified a positive correlation between government spending and long-run economic growth. In 1990, Robert Barro published "Government Spending in a Simple Model of Endogenous Growth" article. The model was based on a consumer-producer representative agent set-up with production function:

$$Y = f(k, g) = AK^a g^{1-a}$$

The production function is instigated from Arrow and Kurz (1970), with g (per capita) productive public spending that improves the private capital marginal productivity and "k" representing producer's quantity of capital (private inputs). The per capita production function yields constant returns to scale. He considered the role of public services as an input to private production. It is this productive role that leads to a potentially positive linkage between government and growth.

In Barro's model, productive government spending was modelled as an externality. He analyzed the impact of consumption spending in comparison with productive spending and concluded that flat-rate taxes are used to finance public consumption which lowers long-run growth.

4.2 Model Specification

For the purpose of this study, the following model is deemed fit to capture the impact of government expenditure on the economic growth of ECOWAS. .

$$Y = K^\beta, L^\Phi, GE^\Psi$$

Where: K is capital stock, L is labour force and GE is government expenditure

Government expenditure can be represented by the general government final consumption expenditure which is a proxy for recurrent expenditures. This is due to data deficiency in the area of recurrent and capital expenditure of government for all ECOWAS countries.

$$\log Y = \alpha + \log K + \Phi \log L + \Psi \log GE + \mu$$

Where GE is general government final consumption expenditure as a proxy for recurrent expenditures. The apriori signs and magnitude of the above equation need not be since the parameters β , Φ and ψ are elasticities with conventional values of <1 for inelastic; $=1$ for unit elasticity and >1 for elastic.

In what follow, we introduce the panel framework into the model by introducing the country index and incorporating countries' unobservable individual effects into the equation.

$$\log Y_{it} = \alpha + \beta \log KAP_{it} + \Phi \log LAB_{it} + \psi \log GE_{it} + \mu_{xi} + \omega_{xt} + \epsilon_{xit}$$

Where i denotes country i , t denotes time and μ_{xi} is country i unobservable individual effects on growth. ω_{xt} is unobservable time effect for growth. ϵ_{xit} is the stochastic disturbance term such that $\epsilon_{xit} \approx i.i.d(0, \sigma_x^2)$ for growth. The specifications in which individual effects are incorporated are particularly justified in the developing economies of ECOWAS. In effect, the equation allows accounting for individual heterogeneity that if not taken into consideration can lead to biased estimates.

4.3 Data Sources and Measurement

The data used in the study were sourced from the World Development Index (WDI). These data include the stock of capital, labour force and government expenditure proxied by government general final consumption expenditure.

4.4 Results and discussion

From the fixed effect model, the indicator of capital stock, labour and government expenditure exert an inelastic significant variation on GDP. The result obtained from the random effect model shows similar trend. This implies that a proportionate increase in capital stock, labour force and government expenditure would lead to a lesser proportionate increase in GDP. The model hereby exhibits decreasing returns to scale.

Since the focus of our study is government expenditure and economic growth, it becomes pertinent to examine the growth rates form of the model. Table 3 shows the results from fixed effect, random effect and random effect with robust standard error estimate on the explanatory variables growth rate and the dependent variable. We included the robust option in order to give our estimate more significance.

The result from the estimation of growth rates shows an inelastic relationship between government expenditure growth rates and GDP growth rates; with a negative magnitude relationship. Following the result from our analysis, the share of government expenditure in GDP growth rates is very minimal. This result is valid based on the fact that if the government continues to increase her expenditure and not channelling this increase to the productive segment of the country, it is likely have non-productive effect, for instance, increase in military of a country has a negative effect on growth based on the study conducted by Griffin and McKinley (1992). Another reason for this negative relation can be attributed to the fact as government increases expenditure without corresponding increase in revenue,

government would in turn impose high tax rate which ultimately distorts savings and investments and in turn diminishes growth.

5.0 Recommendation and Conclusion

This study focuses on government expenditure and economic growth in ECOWAS for the period of 2000-2010. This study sort to find out how government expenditure contributes to economic growth using fifteen ECOWAS countries over the observed period. The study found general government final consumption expenditure to induce a positive relationship with economic growth, likewise labour force and stock of capital were found to exert positively on economic growth. The study also found the growth rates of labour force and capital stock to be positively correlated with economic growth but the indicator of the general government final consumption expenditure was found to be negatively related to economic growth rates; this would not be unconnected with lack of fiscal discipline in the Nigerian economy. The finding using growth rates is deem more appropriate as this captures periodic improvements in the state of the economy that could have arisen from fiscal or other policy changes and as well accounts for yearly effects.

Though it has been observed that government expenditure has a positive effect on growth, this does not imply a continual outrageous increase in government expenditure; as this could probably results in non-productive spending which according to theory has a negative effect on economic growth. Thereby government should ensure that increases in its spending should be channelled toward economic productiveness and based on its core functions. Likewise, it is pertinent that government spending is realistic and transparent. In the same manner, government should prioritize their expenditure. This implies that government should focus spending on the productive parts of the economy such as; health, education, creation of employment, electricity, roads, transportation and communication, and cut spending on the non-productive parts of the economy. Also, government should strengthen institutions capable of mitigating corruption and driving service delivery.

References

- Ahsan, Syed M., Andy C. Kwan, and Balbir S. Sahni (1992), "Public Expenditure and National Income Causality: Further Evidence on the Role of Omitted Variables," *Southern Economic Journal* 58(3): 623-34.
- Ahsan, Syed M., Andy C. Kwan, and Balbir S. Sahni (1996), "Cointegration and Wagner's Hypothesis: Time-series Evidence for Canada," *Applied Economics* 28: 1055-58.
- Arrow, K. and M. Kurz (1970), *Public Investment, the Rate of Return and Optimal Fiscal Policy*, Baltimore: John Hopkins University Press.
- Arrow, Kenneth J. (1962): "The Economic Implications of Learning by Doing," *The Review of Economic Studies*, 29(3), 155–173.
- Benoit, E. (1973). *Defence and Economic Growth in Developing Countries*. Lexington: Lexington Books.
- Barro, Robert J. (1991), "Economic Growth in a Cross-section of Countries," *Quarterly Journal of Economics* 106: 407-44.
- Bohl, Martin T. (1996), "Some International Evidence of Wagner's Law," *Public Finance* 51: 185-200.
- Cass, David (1965). "Optimum Growth in an Aggregative Model of Capital Accumulation."

- Rev. Econ. Studies 32: 233-40.
- Deger, S. (1986) "Military Expenditure in Third World Countries: the Economic Effects". London: Routledge and Kegan Paul.
- Deger, S and S. Sen (1990). "Military Expenditure: The Political Economy of International Security", *Stockholm International Peace Research Institute*, New York: Oxford University Press.
- Fiani, R., Annez, P. & Taylor, L. (1984). "Defence Spending, Economic Structure and Growth: Evidence among countries and over time". *Economic development and cultural change*, 32, 487-498.
- Ghali, Khalifa H. (1998), "Government size and economic growth: evidence from a multivariate cointegration analysis", *Applied economics* 31: 975-987
- Grier K. and Tullock G. (1989) "An empirical analysis of cross-national economic growth 1951-1980". *Journal of monetary economics*, 24(1), pp. 259-276
- Griffin, K and T. McKinley (1992). "Towards a Human Development Strategy", *Occasional Paper 6*, December
- Kolluri, Brahat R., Michael J. Panik, and Mahmoud S. Wahab (2000), "Government Expenditure and Economic Growth: Evidence from G7 Countries," *Applied Economics* 32: 1059-1068.
- Koopmans, Tjalling C (1965). "On the Concept of Optimal Economic Growth." *In The Econometric Approach to Development Planning*. Amsterdam: North- Holland.
- Landau, Daniel (1983), "Government expenditure and economic growth: a cross-section study", *Southern economic journal* 49:783-92
- Lim, D. (1983). "Another look at growth and defense in less developed countries". *Economic development and cultural change*, 31, 106-138
- Lucas, R.E. (1988). "On the mechanics of economic development". *Journal of monetary economics* 22, 3-42
- Michael B. (2000). "Testing the endogenous growth model: public expenditure, taxation and growth over the long run"
- Minea, A. (2008). "The role of public spending in the growth theory evolution". *Romanian Journal of economic forecasting*
- Musgrave, Richard A., and Peggy B. Musgrave (1980), *Public Finance in Theory and Practice*, New York, McGraw Hill.
- Ogundipe A.A and Oluwatobi S. (2013). Government Spending and Economic Growth in Nigeria: Evidence from Disaggregated Analysis. *Journal of Business Management and Applied Economics*
- Ram, Rati (1986), "Government Size and Economic Growth: A New Framework and some Evidence from Cross-section and Time-series Data," *American Economic Review* 76: 191-203.
- Ram, Rati (1987), "Wagner's Hypothesis in Time-series and Cross-section Perspectives: Evidence from 'Real Data' for 115 Countries," *The Review of Economics and Statistics* 69: 194-204.
- Romer, Paul M. (1986): "Increasing Returns and Long Run Growth," *Journal of Political Economy*, 94, 1002-37.
- Ramsey, Frank P(1928). "A Mathematical Theory of Saving." *Econ. J.* 38 : 543-59.
- Singh, Balvir, and Balbir S. Sahni (1984), "Causality between Public Expenditure and

National Income,” *The Review of Economics and Statistics* 66: 630-44.
 Tanaka, J. (2002). “A note on government spending on infrastructure in an endogenous growth model with finite horizon”. *Journal of economics and business*, 651-654
 Vamvoukas, J.L. (2004) “Government expenditure and economic growth: evidence from trivariate causality testing”. *Journal of applied economics*, vol. VIII, No 1, 125-152

Appendix

Table 1: Data Sources and Measurement

Variable	Description	Source	Measurement
<i>llab</i>	Labour force	World Development Indicators of World Bank	Number
<i>lkap</i>	Gross fixed capital formation	World Development Indicators of World Bank	Constant \$USD
<i>lge</i>	Government gross fixed consumption expenditure	World Development Indicators of World Bank	Constant \$USD

Table 2: Level Estimate Result

	Dependent Variable: <i>lgdp</i>		
	Fixed Effects	Random Effects	Random Effects (with robust S.E)
<i>llab</i>	0.9964486*** (0.0921855)	0.9016069*** (0.0710702)	0.9016069*** (0.1484699)
<i>lkap</i>	0.0682534* (0.0682534)	0.0916508*** (0.023786)	0.0916508** (0.0920503)
<i>lge</i>	0.1887025*** (0.1889882)	0.1916213*** (0.0176623)	0.1916213*** (0.044871)

Table 3: Growth rates Estimation Result

	Dependent Variable: <i>lgdp_gr</i>			
	Fixed Effects	Random Effects	Random Effects (with robust S.E)	Arellano-Bond dynamic panel-data estimation
<i>llab_gr</i>	0.9662023*** (0.1870402)	1.017978*** (0.3622015)	1.017978*** (0.2370581)	0.2279928* (0.4949736)
<i>lkap_gr</i>	0.0681822** (0.0650821)	0.0643613** (0.0666484)	0.0643613** (0.0634317)	0.08582*** (0.0457495)
<i>lge_gr</i>	-0.0835592** (0.0759044)	-0.0185736* (0.0726248)	-0.0185736* (0.1175693)	-0.0472847** (0.0667443)