EFFECT OF GOVERNMENT EXPENDITURE ON AGRICULTURE OUTPUT PERFORMANCE IN KENYA

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Abstract

Government expenditure is a key segment for guaranteeing a nation assigns and spend budgetary resources to accomplish a robust economic performance. However, the achievement of macroeconomic objectives, from time immemorial, has been a policy priority of every economy whether developed or developing. Despite many studies, government expenditure still remains an important issue in global debates. Over the past three decades, government spending has been growing at rapid rate in Kenya. The objective of this study was to examine effect of government expenditure on agriculture output performance in Kenya. The study adopted annual time series data for the period 1980 to 2016 in Kenya where time series properties were conducted and ARDL model was used to achieve the objective of the study. The study found out a positive relationship between government expenditure and agriculture output performance.

Keywords: Government expenditure, sectoral output, inflation, ARDL, public debt service

INTRODUCTION

Government expenditure is a key segment for guaranteeing a nation assigns and spend budgetary resources to accomplish a robust economic performance (World Bank, 2015). In any case, the accomplishment of macroeconomic destinations, from time immemorial, has been an approach need of each economy whether developed or developing (Akanni and Osinowo,

2013). However, in spite of numerous examinations, government expenditure still remain a vital issue in worldwide level headed discussions. The subject of level headed discussion is regardless of whether government expenditure invigorates the output execution of various sectors in the economy.

All-inclusive fast extension of public expenditure happened in the vicinity of 1960 and 1980 in light of the fact that the majority of the nations were not occupied with war and there was no discouragement. As per the investigation (Diao, et al., 2007) it is contended that agriculture is essential for advancement in Africa since larger part of the populace dwells in rural regions, and no less than 70 percent of workforce in Africa is occupied with agriculture. Furthermore, in numerous nations in Africa, development in farming is best technique of reducing poverty and advancing general growth of economy.

Nonetheless, Kenya's experts, in articulating their vision for the next two decades of Kenya's improvement, seen obviously that financial approach would need to assume a basic part in affecting the pace at which the economy will develop and its ability to manage the key difficulties that will emerge throughout the following several decades. Residential policy challenges incorporate a high populace development, fast urbanization, and huge shortcomings in infrastructural limit, insufficient levels of ventures, and weights for decentralization. External difficulties incorporate security chances and additionally an indeterminate worldwide monetary development condition. Financial strategy won't just influence macroeconomic security, yet additionally whether Kenya can progress to a higher monetary development way, lessen its high destitution rate, and address its considerable pay, resource, and local imbalances (Kamau et al., 2010).

Overview of the Kenyan fiscal policy and GDP

Kenya economic performance has been mixed since autonomy and it is intriguing to know part of monetary and related factors over this period. The economic performance amid the main decade of autonomy was amazing in 1963. However, the development of real GDP arrived at the average of 6.6% every year over the period 1964 – 1973, and contrasted positively to New Industrialized Countries (NICs) in East Asia. This exceptional execution is ascribed to consistency of monetary strategy, advancement of smallholder rural cultivating, high local request, and extension of market for residential output inside East African district. The second decade 1974 to 1990 denoted the finish of simple development alternatives and the rise of intense external stuns which, together with impulsive financial and money related administration, introduced a time of moderate and industrious economic reduction with average real GDP tumbling to 5.2% over the period (Republic Kenya, 2016a).

In third decade, impacts of expansionary fiscal policy of the earlier decade, which prompted the foundation of profoundly ensured however horribly wasteful private enterprises and state companies, started to cause genuine strain on the economy's rare assets. Spending shortfalls expanded quickly, fares and imports reduced, made the economy to perform inadequately with normal real GDP declining to 4.2% across the period. The descending winding proceeded in the fourth decade of independence. A blend of poor financial and fiscal approach administration, outer and inward stuns and political occasions brought about the most noticeably awful monetary execution in short history of the nation. The normal genuine GDP tumbled to 2.2% in the vicinity of 1990 and 2002. The uncertain inquiry to Kenyan approach creators and in fact numerous observers of the nearby economy is, the thing that turned out badly, and what cure, assuming any, is there for Kenya's financial rejuvenation. (Republic of Kenya, 2013).

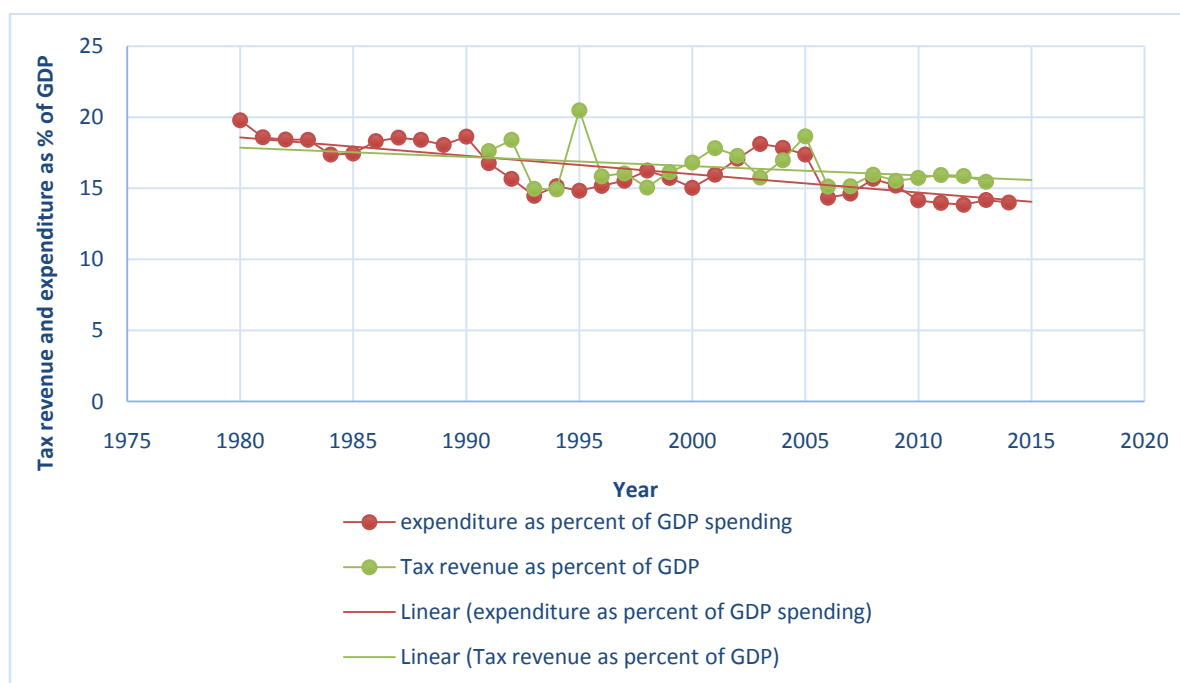Figure 1 shows the trend of fiscal policy in Kenya since 1980 up to 2015:

Figure 1: Tax revenue and government expenditure as percent of GDP in Kenya

Source: World Bank, (2015)

Agriculture sector GDP growth

Republic of Kenya, (2015) clarifies that agricultural sector keeps on overwhelming and is the foundation of the Kenya's economy. Although 15% of the land is adequately fertile and rainfall is equally appropriated in those regions, it is as yet the single critical sector in the economy to invigorate output development. In 1980, agriculture represented 33% of general GDP in Kenya

while in 1990, the addition to GDP increase to 30 percent. In the year 2000, it expanded to 32 percent, 2005 the division including fishing and forestry represented 24% of GDP while in 2011, esteem agriculture sector added to general GDP tumbled to 23 percent. In 2006 agribusiness utilized 75 percent of working populace contrasted with 80 percent in 1980. Around one-portion of aggregate horticultural area yield is non-market subsistence production. Nonetheless, farming is the second biggest supporter of Kenya's GDP, after the service sector. The fundamental predominant trade edits out the nation incorporate tea, coffee and horticultural produce, which are the primary development segments and important for add up to send out income. In 2005 agriculture represented 23% and tea 22% of the aggregate export earnings for the nation, while coffee declined concerning world costs representing just 5% of the export earnings. Figure 2 shows the performance of agriculture sector as percent of GDP.
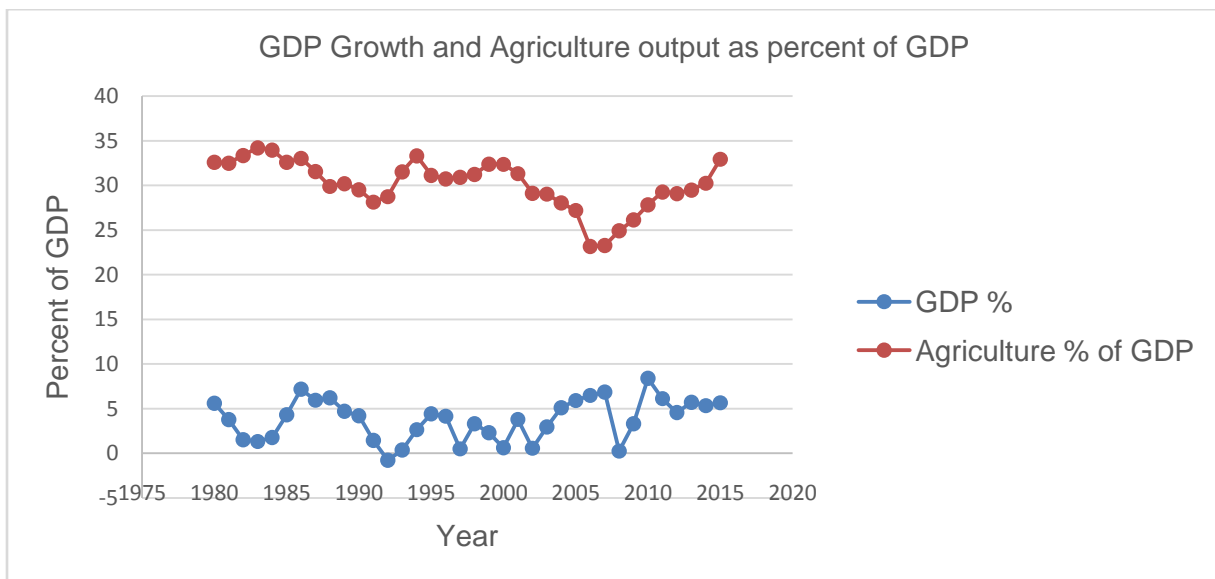

Figure 2: GDP Growth and Agriculture sector as percentage of GDP.

Source (World Bank, 2015)

Statement of the Problem

Government expenditure is a key component for ensuring a country allocates and spend budgetary resources to achieve a robust economic performance. However, government expenditure has been rising faster than revenue and on the other hand fiscal deficit has been persistently increasing because of the inability of the government to reduce the expenditure to the level that is sustainable. Several studies attempted to determine the effect of government expenditure on economic growth (Maingi, 2010; Muthui et al, 2013; Muturi & Kwendo, 2015). Most of these studies had mixed results and neglected the sector specific performance of the

economy. The disregard of these imperative areas in the current literature created observational gap for which the exploration was done and establish policy inferences from past investigations. However, despite many studies, government expenditure still remains an important issue in global debates. The concern is whether or not government expenditure stimulates the performance of different sectors in the economy. One perspective believes that administration association in monetary activity is essential for development, however contradicting views holds that administration activities are inherently inefficient and in this way restrained instead of advance development in various sectors of the economy. Whereas Kenya has implemented several productivity improvement interventions in the past, the country's level of productivity remains dismally low and is responsible for the low, unstable and unsustainable economic growth. However this study seek to determine the effect of government expenditure on agricultural output performance in Kenya.

LITERATURE REVIEW

Theoretical Literature

Several hypotheses have been put forward to explain government expenditure effects on sector output performance. For instance; Keynesian theory put forward by Keynes (1936) hypothesized that when government change tax collection level and government expenditure in the economy, it impacts the aggregate demand and the levels of financial action with main goal of accomplishing macroeconomic destinations of value steadiness, full employment and growth of an economy. Keynes proposed that increasing government spending and decreasing tax rates are the most ideal approaches to fortify aggregate demand, and decreasing expenditure and expanding charges after the economic boom starts. Furthermore, Endogenous Growth model is hypothesis postulated by Romer and Barro where it holds that economic growth is basically the aftereffect of endogenous and not outer powers. (Barro, 2009) postulated that a society with incredible work efficiency has a high level of aggregate factor productivity since all firms are identical and each produces some output. He further expressed human capital investment, development and knowledge are great contributors for growth of an economy. Other hypotheses include political constraint model which concerns public expenditure determination and Musgrave Rostow theory which states that in the beginning periods of financial development and advancement, public spending ought to be encouraged.

Empirical Literature

Amanja & Morrissey (2005) conducted a study on fiscal policy and economic performance in Kenya utilizing time series analysis from 1964 to 2002. The study found out that fiscal policy is

important for growth to take place in an economy. Productive expenditure and government investment played a significant role in determining growth of real per capita income in Kenya. Productive expenditure had a solid negative impact on growth, recommending that synthesis of this expenditure class should have been re-considered with a view to rearranging it so that it add to monetary development.

Maingi (2010) conducted a study on the relationship between government expenditure and growth of the Kenya economy utilizing annual time series data for the period 1963 to 2008. The study applied Vector Auto Regressive (VAR) estimation technique and discovered that over the long haul, expenditure on economic affairs, defense, education, government investment, general administration and services and physical infrastructure had positive effect on economy of a country. On the other hand, in short run health care, public order and national security had positive impact on economic growth while public debt servicing had negative impact on economic growth. Besides, the examination found a bi-directional causality between the segments of expenditure and economic growth hence feedback effect.

Oseni (2013) analyzed the effect of fiscal policy on sectoral yield in Nigeria from 1981 to 2011 using a multivariate cointegration approach. The effect of monetary approach on sectoral yield in Nigeria uncovered by the standardized cointegration coefficients showed that each financial arrangement variable had distinctive effect on every division in the economy. Besides, the examination found that the administration should expand allotments to the agriculture and modern parts which improve the advancement of an economy.

Muthui, *et al* (2013) led an investigation on the impact of public expenditure components on financial development in Kenya from 1964 to 2011 utilizing VECM to appraise the information. The investigation discovered that administration consumption segments on defense negatively affected financial development, education had a blended association with monetary development. Consumption parts on health, transport and communication and open request and security was found to have a positive association with monetary development. The positive relationship of peace and security was on the grounds that for organizations to flourish in the economy peace is a critical factor for business condition.

Gisore et al.(2014) directed an investigation on impact of government consumption in East Africa nations from 1980 to 2010 The examination utilized a board disaggregated settled impact model and discovered that to accomplish quickened financial development and feasible advancement, government spending ought to make a favorable situation for private segment improvement and repairs showcase disappointments. Notwithstanding, the examination found that populace development and overpopulation upsets the development yield per specialist because of consistent losses to work and reliance impact. The discoveries recommended that

East African nations should build consumption on wellbeing and resistance which upgrades human capital development while horticulture and instruction use be lessened.

Osinowo (2015) examined the impact of fiscal policy on sector output in Nigeria and found out that variables of fiscal policy influence the output of each sector differently, where aggregate fiscal expenditure depicted positive relationship with most of the sector's output of the economy except agriculture sector.

Summary of the Literature

It is evident that empirical studies done in most countries applied different techniques of estimation thereby giving different results. Most of the studies done revealed that there was positive effect of fiscal variables on output in the manufacturing sector (Onyekachi, 2013). Also study on the impact of fiscal policy on sectoral output in Nigeria found that there was positive impact of fiscal variables on agriculture and industry sectors (Oseni, 2013). Furthermore expenditure on different sectors including agriculture and services were found to have positive results (Maingi, 2010) while others had mixed results on agriculture. (Muthui et al., 2013) found mixed results on public expenditure components on economic growth. However, there are limited studies on government expenditure and sector output performance, hence there is need for sector specific studies in order to establish how government expenditure affects the sector output performance.

METHODOLOGY

The study espoused a non-experimental research design since it focused on statistical relationship between two variables but does not include manipulation of the independent variable. However, it relies on interpretation, observation or interaction to come into a conclusion and for range of variables to be measured. The study used time series data for the period 1980 to 2016 in Kenya for the following variables; government expenditure, nominal exchange rate, inflation rate, terms of trade, total debt service, public investment and real interest rates.

The empirical model borrowed from changed version of Ram (1986) model was specified as follows:

$$Y = f(GExp, TDS, INF, NER, PInv, RINT, TOT) \tag{3.1}$$

Where, Y is the sector output, $GExp$ is the total government expenditure, TOT is the terms of trade, $RINT$ is the real interest rate, $PInv$ is the government investment TDS is the total debt service, INF is the inflation rate, NER is the nominal exchange rate.

Specifically the empirical equation to estimate the objective was expressed in explicit form as follows:

$$Y_t^{Agr} = \beta_0 + \beta_{11}GExp + \beta_{12}PINV + \beta_{13}TDS + \beta_{14}INF + \beta_{15}NER + \beta_{16}RINT + \beta_{17}TOT + \varepsilon_{11}$$

(3.2)

Where, β_0 is a constant, $\beta's$ are proxy for independent variables while ε_{11} is the error term.

To achieve the objective, annual time series data for the period 1980 to 2016 was collected and time series tests was conducted .This study used secondary data from the annual statistical abstracts, economic reports, World Bank reports and annual economic Surveys prepared by the Kenya National Bureau of Statistics and the Development Estimates prepared by the National Treasury. The quantitative data was summarized and analyzed using Eviews 9 econometric software. The objectives was addressed by estimating the equation using ARDL.

ANALYSIS AND FINDINGS

Descriptive Statistics

The statistics showed that Agriculture output as a percentage of GDP averaged 30.299 from 1980 to 2016 and median of 30.739, meaning that the data was symmetrical signifying that the government spent more in the sector. The data had minimum value of 23.157 in 2006 and maximum of 35.597 in 2016 meaning that the production in the sector was increasing over the period of the study. However, the skewness of -0.683 showed that the data was negatively skewed and tail was longer to the left. Since the skewness is between -1 and -0.5 the data is moderately skewed and kurtosis of 3.213 shows that the distribution is mesokurtic since the value is almost 3, meaning the data is normally distributed. The standard deviation of 2.905 is higher indicating that the data deviates with greater margin from the mean.

The descriptive statistics also showed that on average government expenditure in Kenya was 16.245 over the period 1980 to 2016 and median of 15.753 which is not the same. Skewness of 0.194 showed that the data is skewed to the right, explaining why mean was greater than the median. The minimum government expenditure was 13.641 and maximum was 19.803 in 2016 and 1980 respectively. This showed that spending was higher in the beginning of third decade because of expansionary fiscal policy of the earlier decade, which prompted the foundation of economy ensured however horribly wasteful private enterprises and state companies, which caused genuine strain on the economy's rare assets (Republic of Kenya, 2013). The standard deviation of 1.791 showed that data had a high variation from the mean during study period.

Unit Root Tests

In exact investigation, non-stationarity of time arrangement information is a lasting issue. To avoid evaluating and getting false outcomes, the investigation conducted test for stationarity using Augmented Dickey-Fuller test (ADF) and Phillip-Perron test (PP). The unit root test results in appendix 1 show that, for inflation rate (INF), real interest rate (RINT) and public investment (PINV) the test statistics was greater than the critical value at 5 percent for both ADF and PP test in absolute terms. Thus, the study rejected the null hypothesis of non-stationary at level and accept the alternative hypothesis of stationarity, therefore the variables were integrated of order I (0). On the other hand, agricultural output (AGR), government expenditure (GE), total debt service (TDS), terms of trade (TOT) and nominal exchange rate (NER) were non-stationary at level but became stationary at first difference, thus integrated of order one I (1).

Long-Run relationship between agricultural output and selected variables

The objective of the study was to determine the effect of government expenditure on agricultural output performance. This was achieved by running autoregressive distributed lag model (ARDL) of Agriculture output (AGR) alongside government expenditure (GE) and other control variables.

Table 1 ARDL Results

Dependent Variable: Agricultural output performance				
Method: ARDL				
Included observations: 34 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AGR(-1)	0.270688	0.195198	1.386737	0.1845
GE	0.884981	0.275633	3.210720	0.0045
INF	0.043676	0.032272	1.353385	0.1947
NER	0.134305	0.042801	3.137890	0.0064
TDS	0.247450	0.210296	1.176676	0.2565
TOT	-0.116972	0.045461	-2.572999	0.0204
PINV	0.047133	0.022722	2.074323	0.0505
RINT	-0.071964	0.043351	-1.660055	0.1164
C	-0.499644	0.620387	-0.805375	0.4324
R-squared	0.818218	Mean dependent var		0.065672
Adjusted R-squared	0.625075	S.D. dependent var		1.516428
S.E. of regression	0.928526	Akaike info criterion		2.994614
Sum squared resid	13.79455	Schwarz criterion		3.802687
Log likelihood	-32.90844	Hannan-Quinn criter.		3.270190
F-statistic	4.236332	Durbin-Watson stat		2.327591
Prob(F-statistic)	0.002951			

The ARDL results in Table 1, shows that the coefficients of government expenditure, nominal exchange rate and public investment are positive and statistically significant at 5 percent level of significance indicating that the variables have a long-run positive effect on agricultural output performance which was consistent with theory that increase in government expenditure lead to an increase in output. The coefficients of inflation and total debt service are positive but are statistically insignificant indicating that there was structural break in the economy. The coefficient of terms of trade is negative but the values are statistically significant at 5 percent level of significance in influencing the agricultural output performance that is a 1 percent increase in terms of trade leads to a 0.117 decrease in agricultural output performance. On the other hand, coefficient of real interest rate is negative but statistically insignificant at 5 percent level of significance where a 1 percent increase in real interest rate leads to a 0.071 percent decrease in agricultural output performance. However, the constant coefficient of -0.5 explains that, when the independent variables are zero, the dependent variable will be -0.5.

SUMMARY AND CONCLUSIONS

The main objective of the study was to find out the effect of government expenditure on agriculture output performance in Kenya. The reason for the study was based on the fact that government expenditure has been rising faster than revenue and fiscal deficit has been persistently increasing because of the inability of the government to reduce the expenditure to the level that is sustainable. The study found out that government expenditure had a positive impact on the output in the agriculture sector, implying that increasing government expenditure by 1 percent it leads to agricultural output performance increasing by 0.27 percent. On the other hand, total debt service had positive impact thus deterring the growth of an economy. Inflation, Nominal exchange rate and public investment had positive effect on agriculture output performance implying a positive relationship between the output and the variables. Real interest rate and terms of trade had negative effect on agriculture output performance.

The study concluded that government expenditure affected output of the agriculture sector positively, thus consistent with theory that increasing government spending is the most ideal approach to fortify aggregate demand, and decreasing expenditure and expanding charges after the economic boom starts.

POLICY IMPLICATIONS AND AREAS FOR FURTHER RESEARCH

The study established that government expenditure affected the agriculture output performance in the Kenyan economy positively. The results implied that this causation should be vital tool for designing government expenditure policies in the economy. However, the government should

ensure that it increases expenditure allocation in the sector in order to spur growth of a nation. The main focus of the study was limited to the effect of government expenditure on agriculture output performance in Kenya. The study proposes further investigation on the effect of government expenditure on other sectors in Kenya and determine their short term and long term effect on the economy.

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APPENDICES

Appendix 1: Unit root test results

Variable	Type of test	Form of test	Test statistics	Conclusion
Agr (Level)	ADF	Intercept	-1.9083	Non-stationary
		Trend and intercept	-1.4328	
	PP	Intercept	-1.431	Non-Stationary
		Trend and intercept	-0.275	
Agr (1stDifference)	ADF	Intercept	-3.658	Stationary
		Trend and intercept	-3.846	
	PP	Intercept	-3.562	Stationary
		Trend and intercept	-3.655**	
Man (Level)	ADF	Intercept	-2.351	Non-Stationary
		Trend and intercept	-2.296	
	PP	Intercept	-2.445	Non-Stationary
		Trend and intercept	-2.393	
Man (1st Difference)	ADF	Intercept	-6.115	Stationary
		Trend and intercept	-6.053	
	PP	Intercept	-6.152	Stationary
		Trend and intercept	-6.092	
Ser (Level)	ADF	Intercept	-1.240	Non-stationary
		Trend and intercept	-0.059	
	PP	Intercept	-1.317	Non-stationary
		Trend and intercept	0.409	
Ser (1stDifference)	ADF	Intercept	-5.215	Stationary
		Trend and intercept	-5.950	
	PP	Intercept	-5.217	Stationary
		Trend and intercept	-5.970	
GE(Level)	ADF	Intercept	-1.868	Non-stationary
		Trend and intercept	-2.602	
	PP	Intercept	-1.840	Non-stationary
		Trend and intercept	-2.701	
GE(1st Difference)	ADF	Intercept	-5.237	
		Trend and intercept	-5.133	Stationary
	PP	Intercept	-7.304	
		Trend and intercept	-6.998	Stationary
INF(Level)	ADF	Intercept	-3.381**	Stationary
		Trend and intercept	-3.517***	
	PP	Intercept	-3.442**	Stationary
		Trend and intercept	-3.579**	
TDS(Level)	ADF	Intercept	-0.607	Non-stationary
		Trend and intercept	-2.928	
	PP	Intercept	-0.775	Non-stationary
		Trend and intercept	-2.732	
TDS(1st Difference)	ADF	Intercept	-4.405	Stationary
		Trend and intercept	-4.473	
	PP	Intercept	-4.244	Stationary
		Trend and intercept	-4.124**	

NER(Level)	ADF	Intercept	-0.549	Non-stationary
		Trend and intercept	-1.877	
	PP	Intercept	-0.547	Stationary
		Trend and intercept	-1.964	
NER(1st Difference)	ADF	Intercept	-5.614	Stationary
		Trend and intercept	-5.529	
	PP	Intercept	-5.609	Stationary
		Trend and intercept	-5.521	
RINT(Level)	ADF	Intercept	-4.086	Stationary
		Trend and intercept	-4.035**	
	PP	Intercept	-4.111	Stationary
		Trend and intercept	-4.073**	
PINV(Level)	ADF	Intercept	-4.073	Stationary
		Trend and intercept	-4.340	
	PP	Intercept	-3.947	Stationary
		Trend and intercept	-3.949**	
TOT(Level)	ADF	Intercept	-2.265	Non-stationary
		Trend and intercept	-2.465	
	PP	Intercept	-2.413	Non-stationary
		Trend and intercept	-2.626	
TOT(1st Difference)	ADF	Intercept	-5.769	Stationary
		Trend and intercept	-5.711	
	PP	Intercept	-5.809	Stationary
		Trend and intercept	-5.752	

Note: ***stationary at 10%; ** stationary at 5%; * stationary at 1% levels of significance

ADF Asymptotic Critical Values with intercept only

Test critical values:	1% level	-3.626784
	5% level	-2.945842
	10% level	-2.611531

ADF Asymptotic Critical Values with trend and intercept

Test critical values:	1% level	-4.234972
	5% level	-3.540328
	10% level	-3.202445