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Fiscal Deficit and Economic Growth in the Gambia: A Search for Threshold

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Abstract

The key objective of this paper is to empirically estimate the level of fiscal deficit that is conducive to output growth in the Gambia between the period 1980 and 2009.

Keywords: Fiscal Deficit, Economic Growth, The Gambia

1.0 INTRODUCTION

The impact of fiscal deficits on economic growth has been the subject of extensive research over the past eight decades. The debate on the issue is far from settled. However three unique views on the debate can be gleaned from the literature. The Keynesians unequivocally advocate fiscal deficit spending by government believing that it has positive effect on economic growth, while the neoclassical argue that fiscal deficit is detrimental to economic growth. The Ricardian however, view the impact of deficits financing as being neutral to economic growth in the long run (Onwioduokit and Bassey, 2013).

The conventional wisdom that deficit is inimical to growth derived essentially from the neoclassical theory of output and employment, including its variants. The fundamentalist version assumes the economy to be continuously at the level of output corresponding to full employment, thus an increase in government spending financed by borrowing causes a rise in interest rates; higher interest rates reduce private investment, in so doing lower output growth. The modest version of the neoclassical theory as advanced by Blinder and Solow (1973) assumed the existence of unemployment in the short run, so that budget deficit, may have a positive impact on output. An increase in government expenditure, or a decrease in the tax rate, stimulates spending, output, and employment. However, once full employment has been achieved, the impact of continued government deficit becomes inflationary. From a policy perspective, both variants of neoclassical theory imply that higher investment, output, and employment and lower interest rates and prices over the long run can be obtained only by lowering the budget deficit. The carefully orchestrated fiscal austerity as the principal means to increase long-run economic growth, by the authorities of diverse political persuasions, is rooted in this fundamental theoretical perspective.

Another strand of the argument, pioneered by Keynes, is that high fiscal deficits step up capital accumulation and growth (Krishnamurthy 1984). Increase in fiscal deficit due to public sector investment, especially in infrastructure kindles growth in the private sector. Within an appropriate macroeconomic policy framework, increased public investment provides the private sector adequate momentum and incentives to increase investment which would translate to overall economic growth (Soumya, 2009).

Recent attempts to answer this critical question whether deficit is an enabler or an inhibitor to economic growth in selected West African countries included Onwioduokit (2012), Onwioduokit (2013) and Onwioduokit and Bassey (2013). Specifically, Onwioduokit and Bassey (2013) sought to establish the relationship between fiscal deficit and economic growth in the Gambia from 1980 to 2009 using ordinary least squares estimation technique. The empirical results showed that fiscal deficit affects the real economic growth positively and significantly with a lag of one year. The sign of the parameter estimate conformed to the presumptive expectation. The authors attributed the positive and significant relationship between the variables to the fact that the fiscal deficit in The

Gambia was essentially used in financing economic and social infrastructure during the study period. Thus the results support the Keynesian assertion that fiscal deficits have positive impacts on economic growth.

However, beyond the ascertaining of the impact of deficit on economic growth, there is need to ascertain the level of deficit that is consistent with growth. In other words, as part of the solution to the ambiguous findings on the impact of deficit on growth in the literature, recent studies including Onwioduokit (2012; 2012a; 2013) and Adam and Bevan (2003) on the subject have sought to establish the optimal level of fiscal deficit in both cross country and country specific studies.

Adam and Bevan (2003) noted that while a linear representation of the relationship between fiscal deficit and economic growth tends to fit the data reasonably well for a sample of the studied developing countries, it nonetheless masks important and policy-relevant non-linearities, especially at low levels of the fiscal deficit. In particular the authors showed that for a sample of low - and middle-income countries, the relationship is not linear: the gains to growth of fiscal contraction are most marked as the deficit falls from a high level, but these taper out well before the economy reaches a balanced budget position. The authors' empirical analysis suggests a statistically significant non-linearity in the impact of the budget deficit on growth at around 1.5% of GDP. However, they noted that the non-linearity reflects the underlying composition of deficit financing; a corresponding threshold effect characterizes the effect of seigniorage financing on growth.

The key objective of this paper is to follow up on Onwioduokit and Bassey (2013) to estimate the threshold level of fiscal deficit for the Gambia. The findings is expected to guide the Gambian authorities in the formulation and implementation of the fiscal policy as it would now be possible to empirically ascertain the level of deficit that is consistent with output growth. The second utility of this paper will be its contribution to the literature on the subject for the Gambia. To date there are no known studies on the threshold of fiscal deficit for the Gambia. The closest, Onwioduokit (2012) was a cross country study with The Gambia as one of the studied countries. The study will empirically estimate the threshold of fiscal deficit and economic growth in the Gambia between the period 1980 and 2009. The remaining part of the paper is organized thus: Part II dwells on theoretical and empirical reviews, while Part III contains a brief description of the relationship between fiscal deficit and economic growth in the Gambia. Part IV presents empirical methodology and results. The paper is concluded in Part V.

II.0 THEORETICAL AND EMPIRICAL REVIEWS

II.1 Theoretical Review

There is a near consensus that a persistently large budget deficit can turn out to be a major problem for the government and the economy. This arises because budget deficit has to be financed either from the issue of new government debt to domestic or overseas investors. However, if the budget deficit rises to a high level, the government may have to offer higher interest rates to attract buyers for its debt. In the long run, higher government borrowing today may mean that taxes will have to rise in the future and this would put a squeeze on spending by private sector businesses and millions of households.

In the long run, a high level of government borrowing adds to the accumulated national debt. This means that the Government has to spend more each year in debt-interest payments to holders of its bonds and other securities. There is an opportunity cost involved here because interest payments might have been deployed in more productive ways, for example an increase in spending on health services. It also represents a transfer of income from people and businesses that pay taxes to those who hold government debt and cause a redistribution of income and wealth in the economy. Again Neo-liberal economists believe that a rising share of GDP taken by the public sector has a negative effect on the growth of the private sector of the economy. They are skeptical about the benefits of higher spending believing that the scale of waste in the public sector is high – money that would be better off being used by the private sector.

Nevertheless others, especially the Keynesians have argued that a budget deficit can have positive macroeconomic effects in the long run if it is used to finance extra capital spending that leads to an increase in

the stock of national assets. For example, higher spending on the transport infrastructure improves the supply-side capacity of the economy promoting long-run growth. An increased public-sector investment in health and education can bring positive effects on labour productivity and employment.

Also increased deficit spending can be a stimulus to demand when other sectors of the economy are suffering from weak spending. The argument is that the government can and should use fiscal policy to keep real national output closer to potential GDP so as to avoid a large negative output gap. Maintaining a high level of demand helps to sustain growth and keep unemployment low.

Taylor (1985) presented an alternative theoretical framework, the classical growth cycles (CGC) model to demonstrate that the impact of budget deficits is far more complex than is generally predicted. The CGC model starts with the assumption that growth in output and employment is a persistent feature of the economy, in the short run and the long run. It assumes that investment decisions, rooted in profitability considerations and carried out in an uncertain world, are responsible for growth. This view contrasts with the standard view that growth is a long-run phenomenon resulting from exogenous changes in population and technology. Further, in a fundamentally uncertain world, there is no inherent reason why planned investment spending should match available savings and the mismatch is reflected in the demand for bank credit. Hence, the money supply is not under the total control of the central bank. If banks' profit expectations are the same as those of firms, banks will automatically extend to firms the credit they need, and the money supply will expand endogenously. The model also assumed that unemployment and excess capacity were recurrent features of the economy over the course of business cycles; however, structural unemployment (reflected in the relatively low employment rates of certain strata of the population) persisted over the long run when productive capacity is utilized at the normal level. Finally, the model embedded a social accounting matrix with fully articulated stocks and flows.

Ball and Mankiw (1995) in their contribution maintained that in the long run an economy's output is determined by its productive capacity, which is fundamentally determined by its stock of capital. When deficits shrink investment the capital stock grows more slowly than it otherwise would. Over a year, or two, this crowding out of investment has a negligible effect on the capital stock. But if deficits persist for a decade or more, they can significantly decrease the economy's capacity to produce goods and services. Furthermore, fiscal deficits by reducing national saving must reduce either investment or net exports. As a result, they must lead to some combination of a lesser capital stock and greater foreign ownership of domestic assets. If fiscal deficits crowd out capital, national income falls because a smaller fraction is produced; if fiscal deficits lead to trade deficits, just as much is produced, but less of the income from production accrues to domestic residents.

Taking the matter a step further, Devereux and Love (1995) investigated the impact of government deficit spending in a two-sector endogenous growth model developed by King and Rebelo (1990). They extended the model to accommodate an endogenous consumption leisure decision. The authors concluded that there is a positive relationship between lump sum financed government deficit spending and growth rates. They explained that, as in many "endogenous growth" models, the rate of growth are positively related to the rate of return on human and physical capital accumulation. The return on human capital accumulation is higher the greater the fraction of time spent working, in either sector. A higher rate of government deficit spending generates negative wealth effects, leading to a reduction in leisure and a rise in hours worked. Consequently, the rate of growth rises. Although government spending raises the long-run growth rate; it reduces welfare since government deficit spending is a less than perfect substitute for private spending.

Similarly, Yavas (1998) showed that an increase in size of fiscal deficit will increase the steady-state level of output if the economy is at low steady-state (i.e. underdeveloped), and will decrease the steady-state level of output if the economy is at a high steady-state (i.e., developed). He argued that in the underdeveloped countries a significant portion of the deficits is directed to the building of the infrastructure of the economy and this type of expenditure will have a stimulating effect on private sector production. In contrast, the developed countries already have most of their infrastructure built and a major part of their deficit spending is on welfare

programmes and various social services. Accordingly, the positive effect of spending on these programmes on private output will not be as great as that of expenditures on infrastructure.

Ahmed and Miller (2000) examined the effects of disaggregated government expenditure on investment using fixed- and random-effect methods. Using the government budget constraint, they investigated the effects of tax- and debt-financed expenditure for the full sample, and for sub-samples of developed and developing countries. The authors reported that, tax-financed government expenditure crowds out more investment than debt financed expenditure. Expenditure on social security and welfare reduces investment in all samples while expenditure on transport and communication induces private investment in developing countries.

Heitger (2001) viewed increases in size of government deficit arising from increased consumption as constraints on growth, while increases in size that arise from government investment should be positive in their effect on growth. His central hypothesis is that government expenditures on core public goods including the rule of law, internal and external and security have a positive impact on economic growth, but this positive impact of government tends to decline or even reverse if government further increases expenditures in a way that it also provides private goods. He stresses that two important reasons for a negative impact of excessive government spending on economic growth are the fact that the necessary taxes reduce the incentives to work, to invest and to innovate, and the fact that government crowds out more efficient private suppliers.

II.2 Empirical Review

Empirical findings on the relationship between fiscal deficits and economic growth have been uneven. Guess and Koford (1984) used the Granger causality test to find the causal relationship between fiscal deficits and inflation, gross national product, and private investment using annual data for seventeen OECD countries for the period 1949 to 1981. They concluded that fiscal deficits do not cause changes in these variables. Kormendi and Meguire (1985) conducted a cross-sectional study across forty-seven countries investigating the effects of monetary variance, risk, government spending, inflation and trade openness on growth. Specifically, with respect to government deficit spending, they found that the mean growth rate of the ratio of government deficit spending to output has a positive effect on GDP growth

Grier and Tullock (1989) repeated the work of Kormendi and Meguire (1985) on a larger sample of one hundred and thirteen (133) countries from which they constructed a pooled cross-section/time series data set. They tested for regularities in the data rather than robustness. They found that both the inflation rate and government deficit spending as a proportion of GDP were negatively related to growth. On the larger data set they found, contrary to Kormendi and Meguire, that the mean growth rate of the ratio of government deficit spending to output had a negative and significant impact on GDP growth.

The fact that a complex and non-linear relationship between fiscal deficits and growth exists has been empirically verified in endogenous growth models. For instance, Barro (1990) pointed out that different sizes of fiscal deficits have two effects on growth rate. Specifically, an increase in taxes reduces growth rate through disincentive effects, but an increase in government spending raises marginal productivity of capital, which raises growth rate. He argued that the second force dominates when the government is small, and the first force dominates when the government is large. Consequently, the effect of increased government spending on economic growth should be non-monotonic and various optimal size of government should exist. He showed that the government services are ‘optimally’ provided when their marginal product equals unity, ‘called Barro rule’. Interestingly, based on empirical findings Barro plotted an inverted U-shaped curve showing the relationship between growth rate and government deficit expenditure ratio.

Easterly et al (1992) reported a consistent negative relationship between growth and fiscal deficits. Fischer (1993) supported Easterly et al (1992) findings when they noted that large fiscal deficits and growth are negatively related. Among other variables such as inflation and distorted foreign exchange markets, he

emphasized the importance of a stable and sustainable fiscal policy, to achieve a stable macroeconomic framework.

Nelson and Singh (1994) used data on a cross section of seventy (70) developing countries during two time periods, 1970-1979 and 1980-1989, to investigate the effect of budget deficits on GDP growth rates. The GDP growth rate was used as the dependent variable. Among the explanatory variables in the study were government budget deficits, government revenue, defence spending, domestic private and public investment, population growth rate, per capita income, education, and the inflation rate. Their results suggested that defence spending and private investment have had a significant positive impact on economic growth both in the 1970s and the 1980s for the countries analysed. Government revenue had a negative impact on growth. The education variable provided no conclusive effects. Public investment had a positive impact on economic growth in the 1980s but had no impact in the 1970s. The study concluded that the budget deficit had no significant effect on the economic growth of these nations in the 1970s and 1980s.

Al-Khedair (1996) studied the relationship between the budget deficit and economic growth in the seven major industrial countries (G-7). The data utilized covered the period 1964 to 1993. The variable included in model were, budget deficit, the money supply, nominal exchange rate, and foreign direct investment. He found that the budget deficit has a significant positive impact on economic growth in France, Germany, and Italy. Overall results concluded that the budget deficit seems to positively and significantly affect economic growth in all the seven major industrial countries.

Kelly (1997) investigated the effects of public expenditure on economic growth among seventy three (73) nations (including developing and developed nations) over the period 1970- 89. This study used OLS to estimate economic growth as a function of various public expenditures including social expenditure, educational expenditure and other expenditures, and certain variables, which have been prominent in the empirical growth literature such as private investment, and the trade openness variable. This study found that public investment, and particularly housing expenditure, registered a uniformly positive and frequently significant relationship with growth. Although the results did not support a robust relationship between public investment and growth, it nevertheless conflicted with the crowding out thesis that dominated the theoretical literature. Social security expenditures are positively related to growth in each specification of the model and significantly so in several versions. The results are important because they suggested that nations may pursue social welfare and growth simultaneously. The results indicated that health expenditures are negatively and sometimes significantly related to growth, while those for education vary in sign and significance.

Jenkins (1997) motivated by the persistent deficits in Zimbabwe, examined public sector deficits and macroeconomic stability in Zimbabwe. The author identified an intense debt problem, drought and terms of trade shocks coupled with the government's unwillingness to engage in fiscal adjustment as fundamental macroeconomic setbacks in Zimbabwe. Findings of the study showed that uncertainty caused by the growing public-sector debt reduced private investment and further resulted in a decline in growth. The macroeconomic model explored by the researcher showed that the variable with greatest influence on overall growth was agricultural output. However, the budget deficit had an unambiguously negative impact on exports. It also reduced private welfare, worsened income distribution and reduced employment. The author concluded that the growth of government resulted in a drain on the economy, rather than facilitate economic growth and development.

Phillips (1997) critically analyzed the Nigerian fiscal policy between 1960 and 1997 with a view to identifying workable ways for the effective implementation of Vision 2010. He observed that fiscal deficits have been an abiding feature in Nigeria for decades. He noted that with the exception of the period 1971 to 1974, and 1979, there had been an overall deficit in the federal Government budgets each year since 1960. The chronic fiscal deficits and their financing largely by borrowing, he asserted, resulted in excessive money supply, worsened inflationary pressures, and complicated macroeconomic instability, resulting in negative impact on external balance, investment, employment and growth. He contended however that fiscal policy could be an effective

tool for moving Nigeria towards the desired state in 2010 only if it is substantially cured of the chronic budget deficit syndrome it has suffered for decades.

Ghali and Al-shamsi (1997) utilized co-integration and Grange causality to investigate the effects of fiscal policy on economic growth for the small oil producing economy of the United Arab Emirates over the period 1973-1995. They decomposed public spending into consumption and investment expenditures and showed how multivariate co-integration techniques could be used to test for the long-run relationships and the inter-temporal causal effects between government spending and economic growth. The study provided evidence that government investment had a positive effect on economic growth, whereas the effect of government consumption was insignificant.

Anyanwu (1998) deviated markedly from past studies that focused more on the effects of deficits and concentrated on the impact of deficits financing. He applied regression analysis to pooled cross-section and time series data for Nigeria, Ghana and the Gambia. The results did not reveal a significant positive association between overall fiscal deficits (and its foreign financing) and domestic nominal deposit interest rates. However, the author reported a significant positive relation between domestic financing of the fiscal deficits and domestic nominal deposit rates. He concluded that the concern of economists in the Sub-region should shift from the deficits itself to the manner of financing the deficit.
Bahmani (1999) investigated the long-run relationship between U.S. federal real fiscal deficits and real fixed investment using quarterly data over the 1947-1992. The methodology in this study was based on the Johansen-Juselius co integration technique. Their empirical results indicated that real fiscal deficits have crowded in real investment, supporting the Keynesians who argue for the expansionary effects of fiscal deficits, by raising the level of domestic economic activity, “crowd- in” private investment.

In recent times as the debate on fiscal deficits and growth progressed, more elegant models and empirical strategies have been explored in the analysis of the subject. Prominent among these include, Adams and Bevan (2002), Korsu (2009) and Keho (2010). Their findings are divergent.

Adams and Bevan (2002) assessed the relation between fiscal deficits and growth in a panel of forty five (45) developing countries. An overlapping generation’s model in the tradition of Diamond (1965) that incorporated high-powered money in addition to debt and taxes was specified. The estimation strategy involved a standard fixed effect panel data estimation and bi-variate linear regression of growth on the fiscal deficits using pooled data. An important contribution of the empirical analysis was the existence of a statistically significant non-linearity in the impact of budget deficit on growth. However, this non-linearity the authors argued reflected the underlying composition of deficit financing. In effect, Adams and Bevan posited that for a given level of government spending, a shift from a balanced budget to a (small) deficit may temporarily reduce distortions especially if the distortions impact growth rather than output. Based on a consistent treatment of the government budget, the authors found evidence of a threshold effect at a level of the deficit around 1.5 percent of GDP.

Furthermore, Gale and Orszag (2002) summarized the conclusions of almost 60 studies: of these fifty percent found a “predominantly insignificant” effect of fiscal deficits on interest rates and the other fifty percent a ‘mixed ‘or ‘predominantly insignificant’ effects. They argued that even when interest rates do not increase as a result of fiscal expansion (e.g., because of foreign capital savings replacing domestic savings) economic performance may still be negatively affected by persistent imbalances as capital stock accumulation declines, either because of a fall in domestic or foreign net investment. The authors indicated that a projected rise in the fiscal deficits-GDP ratio of 1 percentage result in an increase in the long term interest rates by 0.4 to 0.6 percentage points. In the same manner, Dai and Singleton (2003) findings indicated that a 1 percentage point increase in the deficits increases 10 year (interest) rate by 41 basis points. Furthermore, Laubach (2003) reported that fiscal deficit has a significant effect on interest rate. A one percentage increase in the projected deficit-to-GDP ratio is estimated to raise long term interest rates by approximately 25 basis points. Similarly, interest rate rises by about 4 basis points in response to a percentage point in the projected debt-GDP ratio.

Bogunjoko (2004) studied the growth performance in Nigeria. He adopted a linear equation of the production function as suggested by Ram (1989). In order to complement the single equation model and account for the interdependency of expenditure and growth in Nigeria, a vector autoregressive model of three variables namely real output, federal government expenditure and state government expenditure was employed. Based on the Ram – type production function, the empirical results showed that while the externality of the alternative expenditure (i.e. federal and state) was positive, the overall impact of the expenditure was growth retarding. This finding complemented the argument that federal and state expenditures are made without due reference to the absorptive capacity of the economy. His VAR model showed that, inter – temporally, the response of real output to state and federal expenditures is weak in the short run.

Robert Korsu (2009)'s finding supported the arguments of Jenkins (1997) and Mugume and Obwona (1998) who worked on Zimbabwe and Uganda, respectively. They argued that fiscal deficits were inimical to macroeconomic performance as a whole and advocated for fiscal restraint as a pathway to improving other sectors of the economy and welfare. Korsu (2009)'s work recognised economic growth, low and stable prices and healthy external balance as the macroeconomic policy objectives of the economy of Sierra Leone. These he argued have been hampered by the persistence of fiscal deficits following some background analysis and historical records. To provide empirical support to the background information, aggregate annual data for the period 1971 to 2005 were used in an econometric estimation. Predicated on an open economy model, equations for money supply, price level, real exchange rate and the overall balance of payments were specified. The empirical models were estimated using a 3-stage least square estimation technique. The estimated results showed that fiscal restraint improved the external sector of Sierra Leone by reducing money supply and the price level. The important contribution of Korsu's paper rested on the simulation experiments which differ from previous studies reviewed. The results pointed to the need for fiscal restraint and improved revenue generation to meet the expenditure requirements of the government.

In his contribution to the debate, Yaya Keho (2010) investigated the causal relationship between budget deficit and economic growth in seven member countries of the West African Economic and Monetary Union (WAEMU). One specific objective was pursued which was to examine if fiscal deficits were really bad for economic growth in all countries of the WAEMU. The study employed the granger causality test developed by Toda and Yamatoto (1995). Annual time series data on real GDP growth, ratio of gross fixed capital formation and public deficit or surplus as a percentage of GDP were used. Unlike most empirical works on granger causality tests, the empirical analysis was undertaken in a multivariate form using gross fixed capital formation as a control variable. This mediating variable related meaningfully to economic growth in traditional growth models and mitigated the possibility of distorting the causality inferences due to omission of relevant variables. A striking feature of the descriptive statistics of the variables was that low levels of economic growth were associated with persistent fiscal deficits. In addition, the correlation coefficients showed that deficit and economic growth were positively related. The empirical results were mixed across countries. In three cases the author found no causality evidence between fiscal deficits and growth. Findings also indicated a two-way causality in three countries, deficits having adverse effects on growth. Overall the author argued that the results gave support to the WAEMU budgetary rule aiming at restricting the size of fiscal deficits as a prerequisite for sustainable growth and real convergence.

It can be concluded from the empirical studies reviewed in this section that the overall results with respect to the impact of fiscal deficit and growth are ambiguous. Another important argument emerging from the review is that the exact impact of deficits on economic growth is difficult to measure and that for any meaningful inference of policy relevance must be essentially a country specific study.

III.0 RECENT DEVELOPMENTS: FISCAL DEFICITS, INFLATION AND OUTPUT

Domestic revenue/GDP ratio averaged 17.9 percent between 2001 and 2003. The ratio improved in the next four consecutive years (2004-2007) above 20.0 percent. The increase in revenue could principally be attributed to the commitment to fiscal transparency and accountability, and the response to the policy measures. However,

between 2008 and 2010, the ratio fell marginally to an average of 18.3 percent, on account of a drop in tax revenue. While non tax revenue as a percentage of GDP increased from 1.8 percent in 2008 to 1.9 percent in 2010 this was inadequate to counterbalance the slight decline in tax revenue. Grants as a percent of GDP in 2009 registered a strong growth of 5.1 percent from a paltry 0.9 percent in 2008. This surge in grants (26 percent of total revenue) was principally due to increases in project disbursement and programme grants. Thus, total revenues (including grants) improved from 20.6 percent in 2008 to 24.6 percent.

With regards to the expenditure, total expenditure and net lending averaged 25.0 percent between 2000 and 2002.The average ratio increased to 26.1 between 2003 and 2006. In 2007 and 2008, respective ratios of 22.8 and 23.0 were registered. However considerable improvement to 27.8 percent was achieved in 2010. The quicker pace of growth stemmed mainly from increased capital spending. Within this total, there had been a shift from recurrent to capital expenditure, with the latter growing by 33.9 percent in 2010 from 24.2 percent in 2008. The relationship between the three variables fiscal deficit, real GDP growth and inflation exhibited a mixed trend.

Given the more rapid growth rate of spending relative to revenue, the overall budget balance (excluding grants) worsened from a deficit of 3.3 percent of GDP in 2008 to 8.6 and 8.5 percent in 2009 and 2010, respectively. The deficit was financed from both external and domestic sources. Domestic debt as a ratio of GDP increased significantly by 26.1 percent in 2008 to 34.6 percent in 2010 as a result of Treasury Bills issued. The share of treasury bills to domestic debt widened from 79.7 percent in 2008 to 84.4 percent in 2010.

Inflation which was in double digits in 2002 and 2003 decelerated gradually over the review period to 2.7 percent in 2009 but nudged up to 5.8 percent in 2010. This was completely attributable to good harvest reinforced with a tight monetary policy stance of the Central Bank. A critical analysis of the inflation determinant (food and non-food), indicates that between 2000 and 2009, food inflation had always accounted for higher percentage contribution to CPI basket compared to non-food inflation, indicating that inflation in the Gambia could be dominated by high import content of food in the food basket.

In the last ten years (2001-2010) economic growth in the Gambia has been strong. Beginning from 2001, the real GDP growth rate had been constantly over 5.0 percent but for 2002, when a paltry 1.3 percent growth rate was achieved. The impressive growth experienced by the country was attributable to capital inflows, robust performance in tourism, telecommunication and construction.

Arising from the global economic slowdown which started in late 2007, that resulted in a decline in tourism, and in manufacturing production as well as wholesale and retail trade, the tempo of real GDP growth moderated to 5.6 and 5.0 percent in 2009 and 2010, respectively. The agricultural sector registered a growth rate of 5.5 percent compared to 3.6 percent in 2008, largely as a result of clement weather condition particularly, rains. The share of the service sector in GDP ranged between 54.6 percent in 2000 to 61.5 percent in 2009, fuelled by amplified activity in the construction, transportation and communications. The tourism sector was hard hit as the number of tourists' arrival in 2009 declined by 17.3 percent relative to 2008. Activities in the industrial sector were equally sluggish in 2010 and the share of the industry to GDP whittled down to 3.5 percent from 3.8 percent in 2008.

IV.0 ANALYTICAL FRAMEWORK, EMPIRICAL METHODOLOGY AND RESULTS

The analytical framework applied in this study basically tracks the Keynesian and borrows extensively from Onwioduokit (2012). Recalled that in an uncomplicated Keynesian framework, desired aggregate demand relationship is specified in the goods market as:

$$Y = C + I + G + (X - M) \quad (1)$$

with the following behavioural equations:

$$C = a + bY^d, \quad b > 0$$
$$Y^d = Y - T$$
$$I = \delta + \gamma i, \quad \gamma < 0$$
$$G = \bar{G}$$
$$X = s + \sigma e, \quad \sigma > 0$$
$$M = m + \phi Y^d, \quad \phi > 0$$

Where Y is output; C, consumption; I, investment; G, government spending which is assumed to be exogenous; X, exports; M, imports; Y^d, disposable income; T, tax revenue; i, interest rate; e, exchange rate.
In equilibrium (after substituting behavioural equations into the desired aggregate demand equation (5)), output will be given by

$$\bar{Y} = \frac{A}{\theta} + \frac{1}{\theta}\left(\gamma i + \sigma e + G - (b - \phi)T\right) \qquad (2)$$

Where $\theta = 1 - b + \phi, \quad A = a + \delta + s - m$

From equation (2), increasing taxes will reduce output, while increasing government spending will increase output.
But fiscal deficit (FD) is given by

$$FD = G - T \approx G - (b - \phi)T \qquad (3)$$

Fiscal deficit is the excess of government expenditure over its revenue. Assuming that the government derives its total revenue from tax sources (which is quite realistic), G-T gives the deficit position of the government. Since individuals do not spend all their income, the total revenue that could be generated from consumption expenditure is $(b - \phi)T$. Thus, subtracting this from government expenditure will give approximate position of the fiscal balance.
Putting (3) into (2) gives

$$\bar{Y} = \frac{A}{\theta} + \frac{1}{\theta}\left(\gamma i + \sigma e + FD\right) \qquad (4)$$

Given that the countries in the WAMZ are essentially small-open economies (without ability to influence international price developments) and for holistic treatment of the economy, the model is extended to incorporate the money sector as well as the external sector. The money market in an open economy can be represented by the following equations:

Money Demand Function: $\frac{M^D}{P} = kY + \lambda i, \qquad k > 0, \ \lambda < 0 \qquad (5)$

Money Supply Function: $\frac{M^S}{P} = m_1 \frac{B}{P} + m_2 i, \qquad m_1, m_2 > 0 \qquad (6)$

Equilibrium Condition: $M^D = M^S \qquad (7)$

where $P \equiv$ is the general price level, $B \equiv$ international reserves held by the central bank and m_1, m_2 are coefficients.

From the above money market model, the LM schedule[1] can be specified as

[1] The LM curve is used to determined equilibrium in the money market. The L stands for liquidity and M for Money.

LM Schedule: $$i = \psi\frac{B}{P} + \varphi Y, \qquad \psi < 0, \quad \varphi > 0 \qquad (8)$$

Given the importance of the external sector in the countries of study, the influence of the sector is incorporated through the balance of payments schedule. The balance of payments schedule is given as

BP Schedule: $$B = A_2 - \theta_0 Y + \theta_1 e + \theta_2 i, \qquad \theta_0, \theta_1, \theta_2 > 0 \qquad (9)$$

where A_2 is the aggregate of exogenous components in the net export function and $\theta_0, \theta_1, \theta_2$ are coefficients.

Putting equation (8) into (4) gives

$$Y = A_1 + \beta_1\frac{B}{P} + \beta_2 Y + \sigma e + FD \qquad (10)$$

where $\beta_1 = \frac{\psi\gamma}{\theta}$ and $\beta_2 = \frac{\phi\gamma}{\theta}$

Putting equation (9) into (10) produces

$$Y = A_1 + \frac{\beta_1}{P}\left(A_2 - \theta_0 Y + \theta_1 e + \theta_2 i\right) + \beta_2 Y + \sigma e + FD \qquad (11)$$

Isolating like terms and re-arranging equation (11) gives

$$Y = C + \frac{1}{P}\left(\alpha_1 e + \alpha_2 i\right) + \alpha_3 e + \alpha_4 FD \qquad (12)$$

where $1 + \beta_1\theta_0 - \beta_2 = \varphi, \quad C = \frac{A_1 + \beta_1 A_2}{\varphi}, \quad \alpha_1 = \frac{\beta_1\theta_1}{\varphi}, \quad \alpha_2 = \frac{\beta_1\theta_1}{\varphi}, \quad \alpha_3 = \frac{\sigma}{\varphi}, \quad \alpha_4 = \frac{1}{\varphi}$

Recasting the second term on the right-hand side of equation (12) in logarithmic generic term gives

$$Y = C + \lambda e + \alpha_2 i - \pi + \alpha_4 FD \qquad (12B)$$

where $\pi \equiv$ the rate of inflation and $\lambda = \alpha_1 + \alpha_3$.

In equation (12B), equilibrium output is positively related to fiscal deficit.

In a time series context, output is influenced by its own past level (output dynamics) which is consistent with accelerator principle. Equation (12B) can be restated as:

$$Y_t = c + \varpi Y_{t-1} + \alpha_2 i_t + \lambda e_t + \alpha_4 FD_t - \pi \qquad (13)$$

Recasting (13) gives

$$y_t = c + \delta_1 i_t + \delta_2 e_t + \delta_3 FD_t + \delta_4 \pi \qquad (14)$$

where $y_t = Y_t - Y_{t-1}$ which captures the change in GDP (growth rate of GDP) and $\delta_1, \delta_4 < 0$. Equation (14) is essentially an output (GDP) growth model which gives the long-run relationship between output growth (change in output) and fiscal deficit. This relationship is positive; implying the widening of fiscal deficit will improve growth. However, some empirical studies documented a negative relationship between growth and fiscal deficit, while some others established a positive relationship as given by the simple Keynesian framework.

From the supply-side of the economy, output is a function of capital stock and labour. A simple Cob-Douglas production function generates a growth model of the form

$$y = \omega_0 + \omega_1 \Delta \ln K + \omega_2 \Delta \ln L \qquad (15)$$

where K refers to capital stock, L refers to labour force growth, Δ is a change notation and $\omega_0, \omega_1, \omega_2$ are coefficients.

IV.1 Specification of Threshold Autoregressive (TAR) Model

In specifying the empirical model, the study relied on the theoretical framework. From both the demand and supply sides of the economy, variables such as interest rate, exchange rate, inflation, fiscal deficit, investment (change in capital stock) and labour were identified as the key variables explaining growth. However, it is appropriate to include in the empirical model those reform variables that also influence economic growth. In the Gambia, financial sector reforms have been undertaken, while trade liberalization policies have also been implemented. Hence, it is appropriate to include financial reforms variable and trade openness variable in the empirical model. The key variables in the empirical model are defined as follows:

Dependent variable

Y_{it} = $GDPG_t$ = Growth rate of real GDP

Independent variables

INV_t = Gross fixed capital formation as a ratio of GDP as a proxy for growth in capital stock.

Lab = Secondary school enrolment as a proxy for labour force.

Def_t = FD/GDP = Fiscal Deficit/GDP, excluding grants

Inf_t = Inflation rate

$Int_t = Interest\ Rate = Lending\ Rate$

M_2GDP_t = M_2/GDP ratio – measuring financial depth

Dep_t = Exchange Rate expressed as a given amount of local currency per US dollar (Depreciation/ appreciation)

OPN_t = Degree of openness of the economy, measured as $\left[\frac{Imports+Exports}{GDP}\right]$

Besides investment, labour force and fiscal deficit; other control variables included in the model are, namely, interest rate (int), exchange rate depreciation/ appreciation (dep), inflation (inf), financial deepening M2/GDP and openness index (OPN).

Interest rate has an important role in economic growth. Higher interest rates reduce the growth of consumer spending and economic growth. This is because more incentive to save in a bank rather than spend, more expensive to borrow, therefore less spending on credit and less investment; increase cost of mortgage repayments, therefore, reduce disposable income and therefore consumer spending. Consequently, an inverse relationship is expected between interest rate and economic growth. Exchange rate development impacts on the economic growth process. On balance we expect a positive relationship between depreciation and economic growth.

Inflation is another significant variable influencing output growth rate. This variable is especially significant for the WAMZ countries, where food price and other exogenous factors including high imports of food and intermediate products play very important role. In general, very high levels of inflation may undermine economic growth. However if the inflation rate is low, stable and sustainable, it may be interpreted as an indicator of macroeconomic stability that would enhance growth. And if the economy is at equilibrium higher inflation should impact adversely on growth. Hence, we expect to get inverse relationship with output growth.

Financial deepening measured by the ratio of M_2 to GDP essentially seek to capture the role of the financial sector development in economic growth. The conventional theory predicts a positive correlation between the level of financial deepening and economic growth. In modern economic theory the role of the financial sector is seen to be catalytic to the growth of the economy. Also, the index of openness proxy by the ratio of the sum of imports plus export over GDP is expected to positively influence growth, all things being equal, the more open the economy the more access to foreign capital that is expected to increase investment and economic growth. Thus, the level of openness of the economy is expected to positively impact on economic growth.

Budget deficit is another significant variable influencing output growth rate. This variable is especially significant for such developing countries including the Gambia, where fiscal discipline plays very important role. In general very high levels of fiscal deficit may undermine economic growth. However if the budget deficit is low, stable and sustainable, it may be interpreted as an increased demand for goods and services. And if the economy is below its equilibrium on Keynesian cross, higher fiscal deficit, that is increased government expenditures, should stimulate growth. Consequently we expect to get positive relationship with output growth.

The TAR model specifies that individual observations can fall into discrete classes based on the value of an observed threshold variable (Lee and Wong, 2005). Following the framework of Li (2005), based on the general framework provided and the foregoing variables identified, the threshold growth equation is explicitly specified as follows:

$$GDPG_t = \alpha_0 + \alpha_1 GDP_{t-1} + \alpha_2 Def_t[DM_t(Def_t < K^*)] + \alpha_3 Def_t[DM_t(Def_t > K^*)] + \alpha_4 INV_t + \alpha_5 inf_t + \alpha_6 int_t + \alpha_7 M2GDP_t + \alpha_8 Dep_t + \alpha_9 OPN_t + \alpha_{10} Labit + U_t \quad \text{.....16}$$

Where DM_t = Dummy variable with values 1 if $Def_t > K^*$ or 0 otherwise.

Def_t = Annual fiscal deficit - GDP ratio.

K^* = The threshold level of fiscal deficit/GDP which is to be calculated.

α_2 = The effect of fiscal deficit below the threshold level.

α_3 = The effect of fiscal deficit above the threshold level.

Other variables are as previously defined.

Where, $\alpha_1, \alpha_2, , \alpha_5, \alpha_6, \alpha_7, \alpha_8 > 0$ and $\alpha_3, \alpha_4 < 0$.

IV.2 Empirical Results

IV.2.1: Unit Root Test Results

Fundamentally we implemented both the Augmented Dickey-Fuller (ADF) and the Phillip-Perron (PP) tests for stationarity of the variables used in this study. The results are presented below.

Table 1: ADF Unit Root Test Results

VARIABLE	ADF-STATISTIC AT LEVEL	ADF-STATISTIC AT 1ST DIFFERENCE	CONCLUSION
DEF	-2.967767**	-	I(0)
DEP	-3.67322***	-	I(0)
INF	-3.679322	-3.689194***	I(1)
INV	-2.647120	-2.650145***	I(1)
LENDR	-3.679322	-3.689194***	I(1)
M2GDP	-4.309824	-4.323979***	I(1)
OPEN	-4.309824	-4.323979***	I(1)
RGDPG	-3.679322***	-	I(0)

Source: Authors' Computation *** Significant at 1%, ** Significant at 5%

The results of the unit root tests (ADF) show that all the variables with the exception of (the fiscal deficit, rate of depreciation, and real GDP growth rate) failed the unit root test at 5.0 percent level of significance in their level form. All the variables, however, passed the test for stationarity in their first difference form (Table 1). Similar results were recorded when we applied the Phillip Person (PP) to test for the existence of unit roots in the variables. The results are reported in table 9. As indicated in the Table 2, inflation, investment, lending rate, broad money as a ratio of GDP and the openness variable were stationary at first difference

Table 2: Phillip-Peron (PP) Unit Root Test Results

VARIABLE	PP-STATISTIC AT LEVEL	PP-STATISTIC AT 1ST DIFFERENCE	CONCLUSION
DEF	-2.967767**	-	I(0)
DEP	-3.679322***	-	I(0)
INF	-3.679322	-3.689194***	I(1)
INV	-2.647120	-2.650145***	I(1)
LENDR	-3.679322	-3.689194***	I(1)
M2GDP	-4.309824	-4.323979 ***	I(1)
OPEN	-4.309824	-4.323979***	I(1)
RGDPG	-3.679322***	-	I(0)

Source: Authors' Computation *** Significant at 1%, ** Significant at 5%

IV.2.2 Co-integration Tests Analysis

Having established that some of the variables are stationary at first difference I(1) while the rest are stationary at levels, that is I(0), it is necessary to examine further if there is a likelihood of a long-run relationship among the variables. That is to say, to examine if variables are co-integrated. Once this is established, it implies that although some of the variables exhibit random walk, there is a stable long-run relationship amongst them and that the randomness will not make them to diverge from their equilibrium relationship. To do this, we carried out the Engle-Granger two-step (EGTS) procedure on the variables that are I (1). The test involves first regressing these variables and obtaining the residuals. Next, the residuals are tested for unit roots by applying ADF framework. Once the results show a stationary process, it means that the variables are co-integrated. The result for this test is reported in Table 3.

Table 3: Cointegration Test Result-Engel Granger First & Second Steps Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INV	-0.761632	0.171952	-4.429340	0.0002
LENDR	1.411679	0.416809	3.386873	0.0023
M2GDP	-0.189375	0.171830	-1.102102	0.2809
OPEN	-0.313790	0.347652	-0.902599	0.3754
C	17.78456	16.96139	1.048532	0.3044
R-squared	0.542430	Mean dependent var		9.775000
Adjusted R-squared	0.469219	S.D. dependent var		10.74105
S.E. of regression	7.825362	Akaike info criterion		7.103629
Sum squared resid	1530.907	Schwarz criterion		7.337162
Log likelihood	-101.5544	Hannan-Quinn criter.		7.178338
F-statistic	7.409119	Durbin-Watson stat		1.515484
Prob(F-statistic)	0.000443			

Source: computed by the Authors

Engle-Granger Second Step Results

Null Hypothesis: RESID02 has a unit root

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.301770	0.0001
Test critical values:	1% level	-2.647120	
	5% level	-1.952910	
	10% level	-1.610011	

The ADF tests on the residuals at level confirm that the calculated ADF statistic (-4.301770) is greater (in absolute sense) than the tabulated critical value (-2.647120) at 1.0 percent level of significance. Thus, the null hypothesis of non-stationarity of the residuals is rejected. The obvious conclusion from these results is that the variables used in this study are co-integrated. That is, there is a stable long run relationship between them although there might be some deviations in the short run.

IV.2.3 Analysis of the Threshold Model Estimation Results

In this next stage of the estimation exercise and having regard to the results obtained from the earlier stages of the exercise, we proceed to test for the existence of a threshold relationship between fiscal deficit and economic growth. The existence of threshold in the relationship between economic growth and fiscal deficit is estimated using the procedure proposed by Hanson (1999). This procedure involves estimating threshold model (equation 22) by OLS method and computing the residual sum of squares (RSS) for the different or chosen threshold levels of deficit ranging from K = 1% to K = 10%. The threshold estimate of deficit is found by selecting the one that minimizes the RSS, and thus maximizing the adjusted R^2.

The results based on repeated estimation of the threshold model for the different values of expected threshold (K), are reported in Table 4. The first column labelled K, gives the range over which the search for the threshold is conducted. The dummy variable D_{1t} represents the effect of deficit beyond the chosen threshold (K) value while G_{2t} represents the effect for deficit higher the threshold. Only the explanatory variables that are statistically significant are reported along with the deficit dummies to conserve space.

As can be seen from Table 4, the minimization of RSS occurs at the threshold point 6.0 percent, where the RSS records the lowest values of 21.94. To further confirm the threshold effect, the adjusted R^2 from the estimation at 6.0 percent yields the highest value of 64.04 percent. A close study of Table 4 shows that the coefficient of deficit dummy for deficit above the threshold (G_{1t}), carries a positive sign, indicating that higher than -6.0 percent, the effect deficit on growth may be positive. Conversely, the coefficient of deficit dummy D_{1t}, representing effect of deficit beyond the threshold levels possess negative sign, suggesting that, deficit level in excess of -6.0 percent is detrimental to growth in The Gambia. Thus the threshold level of deficit for The Gambia is identified at 6.0 percent. It should be noted that the two parameters are statistically significant at conventional levels.

Table 1: The Gambia Threshold Model Results

K	Variable	Coefficient	Std. Error	t-Statistic	Prob.	RSS	Adjusted R^2
1%	D1*DEF	-0.702450	0.162235	-4.329841	0.0025	**32.17**	**0.47**
	G1*DEF	4.389476	4.132339	-1.062225	0.3191		
	RGDPG(-2)	-0.483611	0.138089	-3.502175	0.0081		
	M2GDP	1.710890	0.520655	3.286030	0.0111		
	DEF(-1)	0.680274	0.229608	2.962762	0.0181		
	DEP(-1)	-0.563772	0.141508	-3.984028	0.0040		
	LENDR(-1)	0.955905	0.278200	3.436032	0.0089		
	M2GDP(-1)	-1.387529	0.598050	-2.320088	0.0489		
	DEF(-2)	-0.458988	0.209939	-2.186297	0.0603		
	INF(-2)	-0.278376	0.115691	-2.406215	0.0428		

2%	D2*DEF	-0.702450	0.162235	-4.329841	0.0025	**32.17**	**0.47**
	G2*DEF	5.091925	4.146019	-1.228148	0.2543		
	RGDPG(-2)	-0.483611	0.138089	-3.502175	0.0081		
	M2GDP	1.710890	0.520655	3.286030	0.0111		
	DEF(-1)	0.680274	0.229608	2.962762	0.0181		
	DEP(-1)	-0.563772	0.141508	-3.984028	0.0040		
	LENDR(-1)	0.955905	0.278200	3.436032	0.0089		
	M2GDP(-1)	-1.387529	0.598050	-2.320088	0.0489		
	DEF(-2)	-0.458988	0.209939	-2.186297	0.0603		
	INF(-2)	-0.278376	0.115691	-2.406215	0.0428		
3%	D3*DEF	-0.506550	0.190785	-2.655081	0.0290	27.95	0.54
	G3*DEF	0.599628	0.829506	0.722873	0.4903		
	RGDPG(-2)	-0.530615	0.132594	-4.001804	0.0039		
	M2GDP	1.740784	0.485734	3.583822	0.0071		
	DEF(-1)	0.619133	0.209152	2.960200	0.0181		
	DEP(-1)	-0.557001	0.132056	-4.217931	0.0029		
	LENDR(-1)	0.844821	0.260843	3.238810	0.0119		
	M2GDP(-1)	-1.113487	0.487103	-2.285938	0.0516		
	DEF(-2)	-0.490107	0.197392	-2.482912	0.0379		
	INF(-2)	-0.251774	0.110531	-2.277848	0.0522		
	INV(-2)	-0.170460	0.084301	-2.022040	0.0778		
	M2GDP(-2)	-0.742861	0.362476	-2.049407	0.0746		
4%	D4*DEF	-0.776227	0.204576	-3.794320	0.0053	34.45	0.43
	G4*DEF	1.218400	0.747488	-1.629992	0.1418		
	RGDPG(-2)	-0.478295	0.142882	-3.347494	0.0101		
	INF	0.248511	0.119345	2.082287	0.0709		
	M2GDP	1.691257	0.539437	3.135227	0.0139		
	DEF(-1)	0.558736	0.251104	2.225121	0.0567		
	DEP(-1)	-0.561146	0.146926	-3.819246	0.0051		
	LENDR(-1)	0.917613	0.285260	3.216764	0.0123		
	INF(-2)	-0.325986	0.119568	-	0.0260		

				2.726360			
	M2GDP(-2)	-0.930672	0.448022	-2.077293	0.0714		
5%	D5*DEF	-0.859936	0.152199	-5.650075	0.0005	21.94	0.64
	G5*DEF	1.595583	0.412110	-3.871743	0.0047		
	RGDPG(-2)	-0.434908	0.115666	-3.760041	0.0055		
	INF	0.247852	0.085478	2.899600	0.0199		
	M2GDP	1.578148	0.433768	3.638233	0.0066		
	DEF(-1)	0.560648	0.187509	2.989972	0.0173		
	DEP(-1)	-0.524290	0.118473	-4.425399	0.0022		
	LENDR(-1)	0.797341	0.233324	3.417309	0.0091		
	M2GDP(-1)	-0.872891	0.440032	-1.983699	0.0826		
	DEF(-2)	-0.418112	0.173425	-2.410914	0.0424		
	INF(-2)	-0.281156	0.093643	-3.002418	0.0170		
	INV(-2)	-0.182584	0.075034	-2.433363	0.0410		
	M2GDP(-2)	-0.833423	0.320869	-2.597392	0.0317		
6%	D6*DEF	-0.859936	0.152199	-5.650075	0.0005	**21.94**	**0.64**
	G6*DEF	1.595583	0.412110	-3.871743	0.0047		
	RGDPG(-2)	-0.434908	0.115666	-3.760041	0.0055		
	INF	0.247852	0.085478	2.899600	0.0199		
	M2GDP	1.578148	0.433768	3.638233	0.0066		
	DEF(-1)	0.560648	0.187509	2.989972	0.0173		
	DEP(-1)	-0.524290	0.118473	-4.425399	0.0022		
	LENDR(-1)	0.797341	0.233324	3.417309	0.0091		
	M2GDP(-1)	-0.872891	0.440032	-1.983699	0.0826		
	DEF(-2)	-0.418112	0.173425	-2.410914	0.0424		
	INF(-2)	-0.281156	0.093643	-3.002418	0.0170		
	INV(-2)	-0.182584	0.075034	-2.433363	0.0410		
	M2GDP(-2)	-0.833423	0.320869	-2.597392	0.0317		
7%	D7*DEF	-0.868975	0.172684	-5.032165	0.0010	25.53	0.58
	G7*DEF	-1.531874	0.471812	-	0.0118		

				-3.246790			
	RGDPG(-2)	-0.451826	0.123906	-3.646533	0.0065		
	M2GDP	1.647110	0.465062	3.541702	0.0076		
	DEF(-1)	0.592947	0.200692	2.954516	0.0183		
	DEP(-1)	-0.519632	0.128898	-4.031352	0.0038		
	LENDR(-1)	0.812764	0.251672	3.229458	0.0121		
	DEF(-2)	-0.463093	0.186907	-2.477661	0.0383		
	INF(-2)	-0.282019	0.101169	-2.787599	0.0236		
	INV(-2)	-0.203392	0.085305	-2.384289	0.0442		
	M2GDP(-2)	-0.903469	0.351030	-2.573765	0.0329		
8%	D8*DEF	-0.769272	0.186554	-4.123599	0.0033	**33.37**	**0.45**
	G8*DEF	-1.124245	0.511636	-2.197354	0.0592		
	RGDPG(-2)	-0.417812	0.156897	-2.662966	0.0287		
	M2GDP	1.514831	0.573531	2.641238	0.0297		
	DEF(-1)	0.655133	0.230441	2.842957	0.0217		
	DEP(-1)	-0.519759	0.155050	-3.352199	0.0100		
	LENDR(-1)	0.849229	0.290486	2.923473	0.0192		
	DEF(-2)	-0.414119	0.216139	-1.915979	0.0917		
	INF(-2)	-0.294160	0.115527	-2.546241	0.0344		
	M2GDP(-2)	-0.778498	0.395008	-1.970843	0.0842		
9%	D9*DEF	-0.649137	0.189690	-3.422090	0.0091	**35.57**	**0.41**
	G9*DEF	-0.523301	0.374363	-1.397841	0.1997		
	RGDPG(-2)	-0.477996	0.145234	-3.291212	0.0110		
	INF	0.218812	0.108980	2.007814	0.0795		
	M2GDP	1.634063	0.567961	2.877071	0.0206		
	DEF(-1)	0.589103	0.248223	2.373283	0.0450		
	DEP(-1)	-0.541662	0.159817	-3.389261	0.0095		
	LENDR(-1)	0.887855	0.295172	3.007927	0.0169		
	INF(-2)	-0.278459	0.130921	-2.126927	0.0661		
10%	D10*DEF	-0.478510	0.123035	-3.889207	0.0046	**34.92**	**0.42**
	G10*DEF	-0.103979	0.286586	-	0.7261		

			0.362820	
RGDPG(-2)	-0.397014	0.147446	-	0.0274
			2.692599	
INF	0.243214	0.110089	2.209241	0.0581
M2GDP	1.482188	0.544469	2.722263	0.0262
DEF(-1)	0.542390	0.228241	2.376388	0.0448
DEP(-1)	-0.449487	0.147778	-	0.0160
			3.041643	
LENDR(-1)	0.820174	0.276259	2.968854	0.0179
M2GDP(-1)	-1.193211	0.564073	-	0.0673
			2.115348	
DEF(-2)	-0.421853	0.226264	-	0.0993
			1.864432	
INF(-2)	-0.216917	0.114278	-	0.0942
			1.898153	

Computed by the Authors:* Threshold level of Fiscal Deficit K* = 6 %

Further assessment of Table 4 reveals that, in line with the empirical literature (Onwioduokit and Apo, 2007), the measure of financial depth M2GDP has strong positive effect on growth. The coefficient of this variable was found to be statistically significant at level in all the regressions regardless of the value of the deficit threshold (K). The rate of depreciation maintains consistently negative signs and was statistically significant. This suggests that the depreciation is detrimental to economic growth in The Gambia. This could be explained by the dominant nature of primary products, particularly groundnut, with prices exogenously determined in the country's export mix. Given the record of deficit in The Gambia, and the empirical evidence from other developing countries including Barro (1990) and Dar and AmirKhalkhali (2002), who indicted that different sizes of deficits have two effects on growth rate, the location of deficit threshold for The Gambia at 6.0 percent seems both plausible and realistic.

Table 5 presents another interesting finding of this study. As can be seen from the table, the effects of deficit, measured by the signs of the coefficients of the deficit dummies G_{2t} are generally positive at deficit rates and above 6.0 percent. Similarly the effects are equally negative for values of deficits beyond 6.0 percent. The policy implication is that incurring deficit in excess of 6.0 percent will be detrimental to growth. Thus the range of 1 to 6 percent provides the arena for a *carte du jour* of policy choices on deficit that would be consistent with economic growth in The Gambia.

Table 5: The Gambia Deficit Financing Threshold Conducive for Growth

	D_{1t} = Effect of deficit below K		G_{2t} = Effect of deficit above K	
K	**Coefficient**	**Effect**	**Coefficient**	**Effect**
1%	-0.70245	Negative	4.38947	**Positive**
2%	-0.70245	Negative	5.0919	**Positive**
3%	-0.5065	Negative	0.5996	**Positive**
4%	-0.7762	Negative	1..2184	**Positive**
5%	-0.8599	Negative	1.5955	**Positive**
K*=6%	**-0.8599**	**Negative**	**1.5955**	**Positive**
7%	-0.8689	Negative	-1.5318	**Negative**
8%	-0.7692	Negative	-1.1242	**Negative**
9%	**-0.6491**	**Negative**	**-0.5233**	**Negative**
10%	**0.4785**	**Negative**	**-0.1039**	**Negative**

Source: computed by the Authors. K* = 6% = Maximum rate of deficit conducive for growth.

IV.2.4 Diagnostic Tests Results

Diagnostic tests were conducted at the 6 percent threshold model. Diagnostic results for the optimal level of deficit are depicted in Table 6.

Table 6: The Gambia Diagnostic Test at 6 Percent Threshold

TEST TYPE	STATISTIC	VALUE	PROBABILITY	REMARKS
Normality	Jarque Bera	1.018094	0.601068	Normally distributed residuals
Serial Correlation (LM)	F-statistic	0.017551	0.9827	No serial correlation
Heterescedasticity (ARCH)	F-statistic	0.084491	0.7737	No heteroscedasticity
Stability	Cusum squares	Within bands		Stable

Source: Computed by the authors

The residuals for all the estimated equation were found to be normally distributed and stable. No serial correlation and heteroscedasticity were observed in the equation, implying that the estimates are reliable and consequently, can be relied on for policy formulation purposes.

V SUMMARY AND CONCLUSION

The paper sought to estimate the threshold level of fiscal deficit that is conducive economic growth in the Gambia from 1980 to 2009. The results obtained from the estimation exercise are fairly robust and satisfactory, in that the variables conformed largely to *a priori* expectation in terms of statistical significance. However, some of the variables were wrongly signed. The empirical results show, for example, that fiscal deficit affects the real economic growth positively and significantly with a lag of one year. The sign of the parameter estimate conforms to the presumptive expectation, given that the fiscal deficit in The Gambia was essentially used in financing economic and social infrastructure during the study period. Thus the results support the Keynesian assertion that fiscal deficits have positive impacts on economic growth.

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