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Article

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Fiscal Policy and Private Investment in Selected West African Countries

Joseph A. Omojolaibi[1], Tochi-Nze P. Okenesi and Ekundayo P. Mesagan

This study sets out to examine the nexus between fiscal policy and private investment in five selected West African countries using annual data from 1993 to 2014. Employing Fixed Effect Model for Panel data ordinary least square approach, the results showed the existence of a significant crowding in effect of government capital expenditure and tax revenue while non-tax revenue showed a crowding out effect. Recurrent expenditure and external debt also showed crowding out effects but these were insignificant. The accelerator effect of output growth was also found to be insignificant across the countries over the time period. The study called for concerted efforts from these countries to channel funds towards capital projects and also restructure the tax systems to prevent the negative effects of public debt on private investment.

Keywords: Fiscal Policy, Private Investment, West African Countries, Public Debt, Growth.

JEL Classification: H3; E2; E65.

1.0 Introduction

In any economy, one of the main drivers of growth and sustainable development is the efficient and effective utilization of private resources (private investment) in the economy (European Commission, 2014). This notion is driven by opinions from empirical studies in the past which suggest that private sector led growth has a greater effect on the economy than public sector led growth (Levine and Renelt, 1992; Oshikoya, 1994; Ahmed and Miller, 1999; Mamatzakis, 2001; Laopodis 2001; Karagöl, 2004). This has generally been attributed to the fact that efficiency in the private sector is generally higher than that of the public sector. Hence, in recent times, there have been a shift of focus, especially in developing nations, from public sector to private sector led growth strategies that emphasize the dominance of market forces in the economy and a reduction of public sector in production as well as a redefined role of the public sector in the development process under the

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guiding principle that the public sector should devote its resources in areas where it supports rather than replaces private sector investment (Hermes and Lensink, 2001).

The emphasis on private sector led growth started as far back as the early 1980s (Kajimbwa, 2013). Many developing countries were confronted with a profound slowdown in economic growth. Nigeria, for instance, suffered from this due to the 1980s oil glut where her per capita GDP fell from $1100 to $340 and also currently as international crude oil price now sells for about $40 per barrel in first quarter of 2016 as against $120 per barrel in the third quarter of 2014. Oshikoya (1994) revealed that the average growth rate of real per GDP per capita in developing nations fell from 0.4% per annum between 1970s and 1980s to –1.2% per year between 1980 and 1989. The reasons for such acute economic downturn can both be explained by external as well as internal factors (Claessens and Kose, 2013). The significant fall in gross rates of investment may perhaps reflect many factors that have seriously affected many less developed countries during the 1980s. On the average, the proportion of total domestic investment in the gross domestic product fell from approximately 20.8% per year during 1973-80 to 1.1% per year during 1980-89. Though this rate has not been uniform across countries over the period, investment has fallen by about 10% of GDP in some countries (Jalloh, 2002).

Having recognized the need for a change of approach, developing countries shifted focus to growing the private sector. Policies aimed at privatizing and commercializing public enterprises became the order of the day in a bid to encourage the private sector (SAPRIN, 2002). This was seen in the form of the Structural Adjustment Program (SAP) in Nigeria in 1986, National Development Plan of Sierra Leone in 1974, Economic Recovery Program in Ghana, just to mention a few. These policies have played a significant role in defining the economies of developing states up till today. The private sector has a leading role to play in poverty reduction in West Africa. Basically, the thrust of arguments in this area emphasize that private investment is imperative for promoting broad-based and sustained growth that will help drive sustained development and poverty reduction (Handley *et al*, 2009).

On gaining considerable prominence during the late 1930s/early 1940s after the great depression, fiscal policy was the go-to tool for governments to steer the economy in a desired direction. Indeed, Medee and Nenbee (2007) noted that government intervention began to be more popular in the management of

the economy after the great depression and fiscal policy is amongst the policy options readily employed. For most developing nations especially in the sub-Saharan Africa region (SSA) where a lot of them gained independence in the mid-20th century, state-driven policies were predominant to position the economies for development. In Nigeria for example, the first fiscal regime between 1960 and 1970 was characterized by state-driven policies to develop basic necessities in the state. Hence, irrespective of the economic ideology, governments around the world formulate and implement policies on taxation and public spending aimed at accelerating economic growth and development. However, in an economy driven by private sector led growth, these policies must conform with and complement private investment (Hermes and Lensink, 2001). According to Sineviciene and Vasiliauskaite (2012), the conclusion of Hermes and Lensink (2001) justified the importance of fiscal policy on private investment. However, what remains open for contention is the nature of how private investment reacts to changes in fiscal policy. Questions still relatively unanswered range from, *what type of interaction exists between indicators of fiscal policy and private investment*? *What should government decide in a quest to promote private investment to enhance economic growth?*

Most studies in this area either focus on the relationship between public policy and private investment (Blejer & Khan, 1984; Pfefferman and Mandarassy, 1993; Karago and Ozdemir, 2006; Vergara, 2004), private investment and growth (Guimaraes and Unteroberdoerster, 2006; Balls, 2005; Soli *et al*., 2008), as well as the relationship between public investment and private investment (Balassa, 1988; Greene and Villanueva, 1991; Erden and Hocokombe, 2005; Jalloh, 2002; Ouattara, 2004), while those that have beamed searchlight on fiscal policy and private investment (Hermes and Lensink, 2001; Alesina *et al*, 2002; Vergara, 2010; Forni *et al*, 2009; Soli *et al*, 2008) either only focused on public spending or did not capture recent events in the West African sub-region. This study attempts to explore this contentious area of economic research and add to the existing body of knowledge by extending the scope to include more recent data and also employ more than one variable (i.e. public spending and revenue) to proxy for fiscal policy rather than public expenditure alone. This will also enable the disaggregation of fiscal policy variables to better capture the crowding in/crowding out effect. The choice of these West African countries chosen (Ghana, Ivory Coast, Nigeria, Senegal and Sierra Leone) hinges on data availability.

2.0 Literature Review

(i) Public Policy-Private Investment

Blejer and Khan (1984) developed a formal framework for studying private investment in developing countries focusing on the role of public policy. The study derived a functional relationship between the public policy instruments and private capital formation. Chhibber and Wijnbergen (1988) studied public policy and private investment in Turkey and found that, shifts in the composition of public capital expenditure had a positive and significant impact on private investment. Pfefferman and Mandarassy (1993) affirmed that impact of public spending on private investment is ambiguous and hence cannot be pre-determined. Karago and Ozdemir (2006) examined the relationship between government expenditures and private investment for Turkey suggesting that government expenditures crowd out private investment. Vergara (2004) empirically modelled the link between corporate tax reform and private investment performance and found private investment to negatively affect corporate tax in Chile. Crowding-in effect of public investment was established while the lagged private investment was found to enhance private sector in Chile.

(ii) Private Investment-Growth

It has been established that private investment is a critical driver of economic growth, indeed Guimaraes and Unteroberdoerster (2006), investigated similar issues with data from Malaysia and found that there is an evidence for a stable long-run relationship between real output growth and investment. Balls (2005) holds similar views that employment possibilities are created through investment and new technologies, thus increasing the revenues, which finally determine economic growth. Soli *et al*. (2008) examined the relationship between fiscal policy variables in disaggregated form, private capital investment and economic growth in Ghana, as well as the similarities and differences in the impact of these variables on private investment and economic growth. The study showed that changes in government recurrent and capital expenditure, international trade taxes and private investment are significant for growth. Twumasi (2012) observed that government investments and transfer payments have long-run and short-run positive impacts on economic growth whereas taxes and government spending showe negative effect on growth.

(iii) Public Investment-Private Investment

Balassa (1988) studied 30 countries and confirmed that negative relationship exists between public and private investment. In the same vein, Duncan *et al.* (1999) claimed that such a negative relationship may be absent in the case of Pacific islands, which have access to foreign savings. Greene and Villanueva (1991) conducted their study on 23 countries and concluded that public investment in physical infrastructure complements private investment. Gupta *et al* (2005) assessed the effects of fiscal consolidation and expenditure composition on economic growth in a sample of 39 low-income countries during the 1990s. They found strong budgetary positions to be positively correlated with higher economic growth in the short and long terms. Composition of public spending also matters: countries where spending is concentrated on wages recorded lower growth rates, while those which devoted higher shares to capital and non-wage goods and services enjoy greater output expansion. Erden and Hocokombe (2005) reported that public investment crowds in private investment in developing countries. Frimpong & Marbuah (2010) showed a positive but insignificant relationship between public investment and private investment in Ghana. Ouattara (2004) showed that public investment crowds in private investment in Senegal. Jalloh (2002) found that public sector investment has a positive relationship with private investment in the Sierra Leone.

(iv) Fiscal Policy-Private Investment

Empirical studies on the effect of fiscal policy (tax policy) on private investment generally makes it possible to assume that majority of taxes have negative impact on private investment (Hermes and Lensink, 2001; Alesina *et al*, 2002; Vergara, 2010; Forni *et al*, 2009). Soli *et al* (2008) identified that taxes on international trade have negative impact on private investment, whereas taxes on internal products and services, as well as income and property taxes have positive effect on private investment. Alesina *et al* (2002) evaluated the effects of fiscal policy on investment using a panel of OECD countries and found that public spending has a sizable negative effect on business investment which is significantly greater than the effect of various types of taxes on business investment. In the same vein Alesina *et al* (1998), also affirmed that episodes of large swings in fiscal policy suggests that private investment explains a disproportionate share of the response of GDP growth to these large changes in the fiscal stance. Arin (2004) and Balls (2005) also held similar views to Alesina *et al* (2002) that changes in

government expenditure rather than changes in tax have a greater impact on private investment. This was also supported by Soli *et al*. (2008) which claimed that changes in tax on domestic goods and services, international trade taxes and income and property taxes matter for private capital investment.

Marratin and Salotti (2010) conducted a study on the relationship between fiscal policy and private investment of 14 EU countries and found that state expenditure shocks have positive effect on private investment. The study suggested that remuneration-related public expenditure has a relatively higher stimulating effect, whereas government investment has no stimulating effect on private investment. Traum and Yang (2010) found limited relationship among public debt, real interest rate, and private investment. They observed that in the short run, government debt can either crowd in or crowd out private investment depending on the cause of the debt as a percentage of GDP. If reduction in distortionary taxes was responsible, private investment is crowded in, but if it is increase in government consumption spending and transfer payments, private investment will be crowded out. Another study by Kiptui (2005) showed that budget deficits have a highly lagged effect on private investment in Kenya, suggesting that the effects of fiscal discipline may not be immediately realised. Asogwa and Chetachukwu (2013) evaluated the impact of budget deficits on private investment in Nigeria and found that budget deficits crowds out private investments and that private investments granger cause budget deficit with feedback. The findings of Ronge and Kimuyu (1997) revealed that volatility of credit and foreign exchange reserves together with public investment, exert significant positive effects on private investment while public debt has a negative effect on private investment.

Sineviciene and Vasiliauskaite (2012) analysed the relationship between fiscal policy and private investment in the Baltic States of Estonia, Latvia and Lithuania. The study showed that from the tax revenue side, the strongest relationship exists between the current taxes on income, wealth and private investment. Analysis of fiscal policy indicators interaction with private investment from the government expenditure side showed the existence of strongest relationship between public and private investment thereby leading to suggestions that fiscal policy indicators explain fluctuations in private investment in the Baltic States. Isah (2012) showed that government fiscal policy in terms of expenditure, and budget deficits crowd out private investment in Nigeria. Naa-Idar et al. (2012) also found evidence that supports the assertion that fiscal policy affects negatively and significantly private

investment in the context of Ghana. Atoyebi et al (2012) in evaluating the determinants of private investment in Nigeria found evidence of crowding out. Ezeabasili and Nwakoby (2013), Ifeachukwu *et al* (2013) and Kibet (2013) showed that fiscal deficit and public debt had a repressive effect on private investment in the country.

2.1 Theoretical Framework

The accelerator theory and the neoclassical theory of investment are the theories upon which this study is based. Owing to the fact that they present investment as a positive function of growth in real output (accelerator theory) and the user cost of capital as well as level of output (neoclassical theory). We also introduce the Keynesian-classical crowding in/crowding out argument as a third theoretical underpinning to justify the introduction of fiscal policy variables in the model.

Accelerator Theory

In the accelerator theory, the level of investment depends on changes in the level of output (Harrod 1936, 1948). This implies that the rate of investment depends on the growth rate of output. Hicks (1949) opined that when output approaches full employment level, output growth will decline and hence, induced investment in inventories and fixed plant and equipment will fall. According to Uneze (2012) the accelerator is popular not only because of its simplicity but also because of its realism. The model assumes that the demand for machinery and factories is derived from the demand for goods. Thus, if the demand for the goods that capital equipment produces is to increase and the existing capacity cannot meet this expected increase in demand, a new investment in plant and machinery will be required to increase production. Hence, changes in output level have direct implications on the level of business investment.

Neoclassical Theory

Jorgenson (1967) as well as Hall and Jorgenson (1971) formulated the *neoclassical model* to address the restrictive assumptions of the accelerator theory. The assumptions of this model are: perfect competition and exogenously determined output; static expectations about future prices, output and interest rates. At this juncture, the desired capital stock depends on the user cost of capital and the level of output. The user cost of capital is in turn dependent on the price of capital goods, the real interest rate, and the depreciation rate. The difference between the current and desired capital stock is thought to be a result of lags in decision making and delivery, which then gives rise to an investment equation. Therefore, increases in user cost of

capital will lead to a lower rate of investment. However, some of these assumptions may be too restrictive, especially, the assumption of static expectations regarding economic agents (Sineviciene & Vasiliauskaite, 2012).

Keynesian Crowding In/Classical Crowding Out Theory

The Keynesian crowding in theory and classical crowding out theory are the major arguments that link fiscal policy to private investment in the economy. The former assumes the short run, underemployment output level and disequilibrium in the economy (aggregate demand falls short of aggregate supply i.e. excess capacity). It also assumes that due to this excess capacity, savings and investment are interest inelastic (Sineviciene & Vasiliauskaite, 2012). Keynes postulated that a fiscal expansion (a cut-back on taxes) will create income for people and spur investment in the economy which will further lead to the creation of more income in the economy. He opined that fiscal expansion had the tendency to expand the market for private sector products through the fiscal multiplier. This is the crowding-in argument (Gerrard, 1996; Sineviciene & Vasiliauskaite, 2012). The classical crowding out argument assumes an economy in the long run, operating at full employment equilibrium level with no excess capacity; hence, investment and savings are highly interest rate elastic (Sineviciene & Vasiliauskaite, 2012). The classicals opined that if government participated actively in the economy; say through expansionary fiscal policy, this would lead to higher interest rates, reduced after-tax income and increased wages all of which dampen firms' profitability and by implication business investment. The implication of this is that businesses do not expand and there is no increase in potential output (Gerrard, 1996; Sineviciene & Vasiliauskaite, 2012). It is of the opinion of the classicals that despite the fact that government intervention has an impact on output, such impact is only temporary and in the long-run, its negative side effect of crowding out private investment does more harm than good to the economy, therefore, rendering fiscal policy ineffective and self-defeating (Gerrard, 1996).

2.2 Stylized Facts

Figure 1 depicts private investment share of GDP between 1993 and 2014 for the 5 selected countries. We can observe that Private investment was most unstable in Sierra Leone falling to as low as -4% of GDP in 2000 and rising to as high as 29% of GDP in 2011.

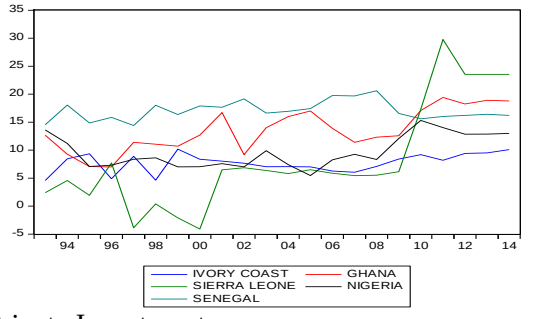

Figure 1: Trend of Private Investment

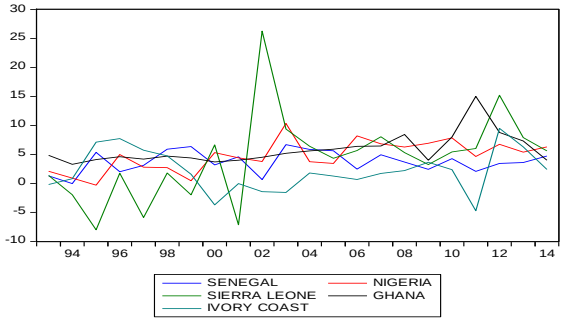

Figure 2: Trend of GDP Growth

The other 4 countries generally had stable PI shares ranging from about 5% to 20% on average. Senegal accounted for the largest PI/GDP ratio while that of Ghana, Nigeria and Ivory Coast were also relatively unstable. Between 2000 and 2014 however, the five countries maintained a fairly stable trend with the exception of Senegal which declined slightly.

The GDP growth trend depicted in the figure above shows the high level of instability in the growth of countries like Sierra Leone and Nigeria, whose real growth rates peaked at about 30% in 2002 and 2004 respectively. The sharp decline in Nigeria's growth in 2005 is due to the debt repayment done in that period. Sierra Leone and Ivory Coast for most periods experienced negative growth rates. The growth rate of Ghana was largely stable at around 5% for the most part of the time period under review. Between 2012 up to 2014 however, Nigeria and Senegal shows a rising trend while there is a little decline to the other three countries.

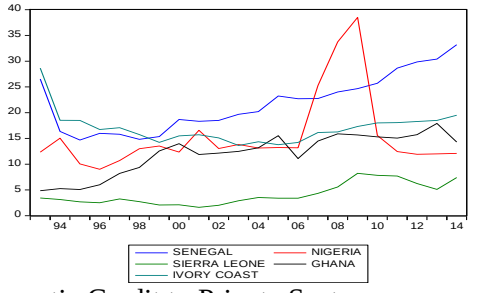

Figure 3: Trend of Domestic Credit to Private Sector

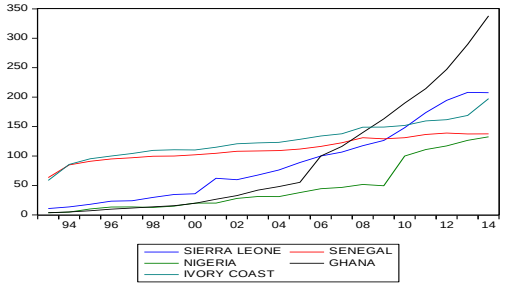

Figure 4: Trend of GDP Deflator

The trend of DCPS ratio to GDP was mostly positive in the 5 countries during the periods under review with little fluctuations except for between 2006 and 2010 in Nigeria. This temporary variation is largely attributable to the events that led to the banking crisis in the country, a crisis that rocked the banking sector and significantly reduced domestic confidence in the banking sector. Between 2012 and 2014, only Ghana shows a falling trend while the other countries' credit to private sector remains on the rise.

The deflator trend is a strong positive one showing persistent increases in price level over the period of the study for the 5 countries.

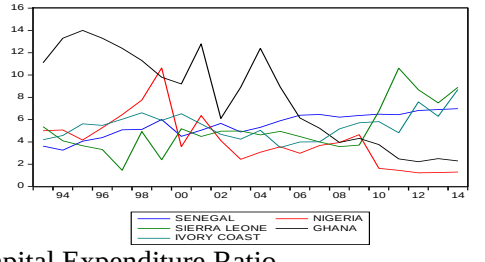

Figure 5: Trend of Capital Expenditure Ratio

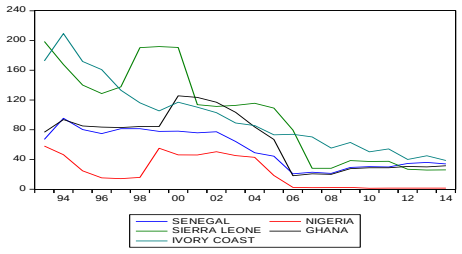

Figure 6: Trend of External Debt Ratio

The declining CAPEX trend of most of the countries analysed is proof of the need for a revisit of the budgeting process in most developing countries. Only Senegal showed an upward trend among the 5 countries observed. It is only lately (i.e. between 2012 and 2014) that Sierra Leone and Ivory Coast are beginning to improve slightly.

The values of EXTDEBT were declining for all the countries during the time period. Countries like Ivory Coast and Sierra Leone which had EXTDEBT ratios of 200% and 170% at 1993 experienced significant drops to about 50% on average during the late 2000s. Similarly, the debt forgiveness received by Nigeria in 2005 accounted for the sharp decline in its EXTDEBT during that period from about 42% to 2% of GDP by 2006. Up till 2014, Nigeria's external debt level continued to rank the lowest among the selected five African countries.

3.0 Research Methodology

In this empirical work, we specify two models to enable us achieve our research objectives. The first model draws from the theoretical framework while adapting the approach employed by Uneze (2012) with a few modifications to suit the requirements of the current study. This model shows the relationship between private investment and its traditional determinants as well as fiscal policy variables. The panel cointegration technique is employed for this as it corrects the standard pooled OLS for serial correlation and endogeneity of regressors that are normally found in a long-run relationship (Pedroni, 2000). When applying cointegration tests to long-run hypotheses in aggregate panel data, a primary concern is to construct the estimators in a way that does not constrain the transitional dynamics to be similar among different countries of the panel.

3.1 Model Specification

Here, we shall derive a basic investment model that reflects the behaviour of

investment in a developing country context. This enables us to build on the accelerator and neoclassical theories and also include fiscal policy variables in line with the Classical-Keynesian argument about crowding out/crowding in. Now, let us consider the relation proposed by Jorgensen (1967) as to the maximization function of a firm:

$$V(0) = \max E_{\phi}\int_0^{\infty} \pi(t)e^{-rt}dt = E_{\phi}\int_0^{\infty}[p(t)Y(t) - s(t)I(t) - w(t)L(t)]e^{-rt}dt \quad (1)$$

Subject to: $\frac{dK}{dt} = I(t) - \delta K(t)$ where $K(0)$ is given (2)

Where π(t) denotes profit, p(t) denotes output price, s(t) denotes capital price, w(t) denotes is the wage, Y(t) denotes output, I(t) denotes investment, L(t) denotes labour, δ denotes depreciation and E is the expectations operator conditional on the information set, ϕ, available for the firm in each period. By optimizing this relation, we are able to determine Jorgenson's optimal capital stock of the firm as follows:

$$K^* = \frac{P\alpha Y}{C} \quad (3)$$

Transforming this relation to account for panel data characteristics, we have a relation between desired optimal capital stock (K^*), price of output (P), output (Y) and user cost of capital (C).

$$K_{it}^* = \varphi P_{it} Y_{it} C_{it}^{-\sigma} \quad (4)$$

Where φ and σ represent the distribution parameter and the constant elasticity of substitution between capital stock and labour respectively. An investment function generally entails gross investment being split up into net investment and the replacement components of worn out capital. In this analysis, we are concerned with the net investment component and as thus, we ignore the replacement component. The net investment component (I_{it}^n) is equal to the change in desired capital stock:

$$I^2_{it} = \Delta K_t^* \quad (5)$$

Substituting (4) into (5), we are able to derive our investment model as follows:

$$I_{it} = \Delta(\varphi P_{it} Y_{it} C_{it}^{-\sigma}) \quad (6)$$

Assuming a unitary elasticity of substitution between capital and labour and

[2] The superscript n is ignored because we assume ($I_{it}=I_{it}^n$) since replacement investment is ignored.

adding the error term, we get our basic model of investment.

$$I_{it} = \varphi_1 \Delta Y_{it} + \varphi_2 \Delta P_{it} - \varphi_3 \Delta C_{it} + \mu_{it} \quad (7)$$

We now augment equation (7) with fiscal policy variables. Following the work of Malik (2013), we disaggregate fiscal policy into its revenue and expenditure components. This disaggregation is informed by the need to evaluate the effect of different fiscal policy components on private investment and determine whether there is a crowding in or crowding out. We also further disaggregate expenditure into productive and non-productive expenditure; and revenue into distortionary and non-distortionary revenue.

Productive expenditure is government expenditure that is expected to enter the production function of private firms, increasing returns to investment and fostering economic growth. According to Soli *et al* (2008), productive expenditure enters the production function of private firms while non-productive expenditure only ends up in the utility function. For the purpose of the study, we define productive expenditure as capital expenditure while non-productive expenditure entails all forms of recurrent expenditure (e.g. wage and salary bill of the public services and purchases of goods and services by the government). On the revenue side, distortionary revenue is one which serves as a disincentive to invest (save), hence, exerts a negative influence on economic growth. Revenues which encourage savings and exert positive influence on growth are non-distortionary. Although they may affect the labour/leisure choice, they do not reduce returns to investment. We shall assume that direct taxes (property and income taxes) are distortionary in nature while indirect taxes (consumption based taxes) and non-tax revenue are non-distortionary.

The model to be estimated is

$$I_{it} = \varphi_1 \Delta Y_{it} + \varphi_2 \Delta P_{it} + \varphi_3 \Delta C_{it} + \sum_k \delta_k FP_{itk} + \mu_{it} \quad (8)$$

FP_{itk} is the set of K fiscal policy variables including government capital expenditure, government recurrent expenditure, direct taxes, indirect taxes, non-tax revenue and external debt. The econometric model to be used for estimation is specified thus:

$$PI_{it} = \alpha + \sum_j \beta_j X_{itj} + \sum_k \delta_k FP_{itk} + \mu_{it} \quad (9)$$

PI_{it} is private investment (proxied with gross fixed capital formation) scaled by GDP, X_{itj} is a set of J conditioning variables (i.e. GDP growth rate(X_1),

inflation(X_2), and domestic credit to private sector(X_3)), FP_{itk} is a set of K fiscal policy variables (including capital expenditure(FP_1), recurrent expenditure(FP_2), direct taxes(FP_3), indirect taxes(FP_4), non-tax revenue(FP_5), and external debt(FP_6)), and μ_{it} is the error term. The a priori expectations of the signs of the parameters of the model are given as follows:

$$\beta_1 > 0, \beta_2 > 0, \beta_3 > 0, \delta_1 > 0, \delta_2 < 0, \delta_3 < 0, \delta_4 > 0, \delta_5 > 0, \delta_6 < 0.^{3}$$

The a priori expectation about the conditioning variables is informed from the neoclassical and accelerator theories of investment. Based on the accelerator theory, we expect that growth rate of output is positively related to investment (i.e. $\beta_1 > 0$). The neoclassical theory informs the a priori expectations for changes in price level which is positively related to investment (i.e. $\beta_2>0$). The relationship between domestic credit to private sector and private sector investment is also expected to be positive (i.e. $\beta_3 > 0$). With regards to the fiscal policy variables, the a priori expectation is that productive expenditures (which enter the production functions of firms) and non-distortionary revenue (which do not reduce returns to investment) are positively related to private investment. In other words, the coefficients of capital expenditure, indirect taxes, non-tax revenue are expected to be positive (i.e. δ_1, δ_4, $\delta_5 > 0$). On the other hand, unproductive expenditures and distortionary revenue are hypothesized to be negatively related to private investment (i.e. δ_2, $\delta_3 < 0$). Furthermore, excessive government debt crowds out private investment, based on the classical argument hence; we expect that $\delta_6 < 0$.

3.2 Data Description, Sources and Measurement

Data employed in this study include Private Sector Gross fixed capital formation, GDP growth rate, inflation, domestic credit to private sector, government capital expenditure, recurrent expenditure, direct taxes, indirect taxes, non-tax revenue and external debt. Apart from the GDP growth rate and inflation, all other variables were scaled by GDP. The study focused on Nigeria, Ghana, Sierra Leone, Ivory Coast, and Senegal spanning a period of 1993 to 2012[4]. Gross Fixed Capital Formation was used as a proxy for Private Investment as employed in Jalloh (2002), Sineviciene *et al* (2012), and

[3] Note that real lending rate is excluded from the empirical model due to gross unavailability of data for most of the countries in the panel.

[4] Time span was chosen due to limitations in data availability which prevents the data from being gathered over a longer span of time. However, because the data set is a panel data set, loss in degrees of freedom will be minimized. For data unavailable for specific countries at specific periods, the method of interpolation was used to derive the figures.

Atoyebi *et al* (2012). GDP growth rate is measured as annual changes in the value of the GDP from period to period. Domestic credit to private sector (measured as the total credit to private sector from deposit taking institutions except the central bank) is an important determinant of private investment (Laopodis, 2001; Mbanga, 2002; Kolawole and Omobitan, 2014). It is also scaled by GDP. Inflation is proxied by the GDP deflator. The aforementioned conditioning variables were chosen because of their strong theoretical and empirically proven relationship with private investment. The fiscal variables are used in disaggregated form so as to better depict the crowding in/crowding out effect of these variables on private investment. The fiscal policy variables remain as described above and all the fiscal policy variables are scaled by GDP. Data on these variables were obtained from secondary sources including the statistical bulletin of the various countries in the panel, World Development Indicators (WDI, 2015) as well as other publications such as IMF publications and Global Development Network Database.

4.0 Empirical Analysis

Table 1a and 1b present a summary of descriptive statistics for each of the individual variables in the model. The statistics presented include the mean, median, standard deviation, skewness, Jarque-Bera statistic, among others. The data was pooled for the 5 countries over the period of 1993 to 2014.

Table 1a: Summary Descriptive Statistics of the Variables

	PI	GDPG	DCPS	DEFLATOR
Mean	10.73005	4.335507	13.80983	83.41147
Median	9.266492	4.299366	14.22063	96.11999
Maximum	29.76229	33.73578	38.48581	247.0389
Minimum	-4.07972	-7.999753	1.620262	3.592925
Std. Dev.	5.788729	5.303845	7.39054	55.25695
Skewness	0.210621	2.181163	0.514362	0.301323
Kurtosis	3.461902	13.93821	3.636652	2.484467
Jarque-Bera	1.628329	577.8095	6.098322	2.620655
Probability	0.443009	0.0000***	0.047399**	0.269732
Sum	1073.005	433.5507	1380.983	8341.147
Sum Sq. Dev.	3317.429	2784.947	5407.388	302279.7
Observations	100	100	100	100

***, **, * indicates rejection of null hypothesis of normal distribution at 1%, 5% and 10% significance levels

Table 1b: Descriptive Statistics of Variables

	RECUREX	CAPEX	DIRECT TAX	INDIRECT TAX	NONTAX REV	EXT DEBT
Mean	15.50232	5.681455	4.28543	9.2644	4.337927	72.51332
Median	15.95412	5.059261	4.181214	10.15533	1.459857	68.67266
Maximum	28.74103	14	10.03116	20.88156	26.04703	209.2385
Minimum	3.087352	1.22894	1.246624	0.942639	0.107633	1.27265
Std. Dev.	5.284639	2.731634	1.662508	4.789022	6.158736	50.67059
Skewness	-0.45317	1.2847	0.858823	-0.074164	2.040318	0.761331
Kurtosis	2.762191	4.434122	4.381737	2.130977	6.36552	3.026451
Jarque-Bera	3.658361	36.07716	20.24794	3.238344	116.5763	9.663336
Probability	0.160545	0.0000***	0.000040***	0.198063	0.00000***	0.007973***
Sum	1550.232	568.1455	428.543	926.44	433.7927	7251.332
Sum Sq. Dev.	2764.813	738.7206	273.6293	2270.539	3755.073	254183.4
Observations	100	100	100	100	100	100

***, **, * indicates rejection of null hypothesis of normal distribution at 1%, 5% and 10% significance levels

The average value of PI from the table above was about 10.73% of GDP. Sierra Leone experienced the highest PI ratio to GDP of about 0.29 in 2011. Ironically, they also experienced the lowest PI ratio of -0.04 in year 2000. With skewness and kurtosis coefficients of about 0.3 and 3.46 respectively, PI is normally distributed as indicated by the P-value of the Jarque-Bera test. The average GDPG was about 0.04 with Sierra Leone experiencing the highest growth of about 0.64 in 2004 while also experiencing the lowest value of about -0.07 in 1995. A coefficient of skewness and Kurtosis of 2.18 and 13.9 indicate a positive skew in GDP growth among the countries as indicated by the Jarque-Bera test which showed a significant p-value at 1%, 5% and 10% respectively. Domestic Credit to Private Sector ratio to GDP (DCPS) showed an average value of 0.13 across the 5 countries over the 22-year period with the highest ratio experienced by Nigeria in 2009 and the lowest by Sierra Leone in 2001 (0.39 and 0.02 respectively). The variable has a standard deviation of 7.39 and it is positively skewed.

The mean DEFLATOR value was about 83.4115 with the highest and lowest values attributable to Ghana and Nigeria in 1993 and 2014. The high occurrence of extreme high and low values for DEFLATOR and the general upward trend depicted by the variables across the 5 countries gives rise to a normal distribution as shown by an insignificant Jarque-Bera statistic of 2.62. With regards to the fiscal policy variables, RECUREX had a mean value of 15.5% of GDP and is normally distributed. Sierra Leone had the highest

RECUREX value in year 2000 (0.29 of GDP) while Nigeria had the lowest in 1996 with a ratio of about 0.03. Capital Expenditure ratio averaged about 0.06 of GDP. The highest ratio of 0.14 was experienced by Ghana in 1995 while the lowest ratio of 0.01 was experienced by Nigeria in 2014. The relatively low ratio on average for the 5 countries indicates the low government participation in capital projects. Furthermore, CAPEX is positively skewed and leptokurtic in nature. The Jarque-Bera statistic was also significant which confirms the existence of positive skewness and kurtosis in the variable.

Direct Tax had an average ratio to GDP of 0.04 and it is also positively skewed and leptokurtic. The highest and lowest ratios of 0.1 and 0.01 were experienced by Nigeria in 2008 and Sierra Leone in 1996 respectively. Indirect tax had an average ratio to GDP of 0.09. Despite having a negative skew and a positive kurtosis coefficient, the Jarque-Bera test revealed that these values were insignificant, hence, indirect tax ratio can be said to have a normal distribution. The highest and lowest values were recorded in Senegal and Nigeria during the period between 1993 and 2014 respectively and non-tax revenue averaged 4% of GDP. This low ratio is largely due to the low proportion of federal revenue from non-tax sources among the 5 countries except Nigeria. As expected, Nigeria had the highest non-tax revenue to GDP ratio of about 0.26 in 2005 while Senegal had the lowest of 0.01 also in 2005. External debt ratio averaged 0.72 of GDP with the highest of 2.09 occurring in Ivory Coast in 1994 and the lowest of 0.012 in Nigeria in 2010. The distribution is also significant, positively skewed and leptokurtic in nature.

Table 2: Correlation Matrix

	PI	GDPG	DCPS	DEFLATOR	RECUREX	CAPEX	DIRECT TAX	INDIRECT TAX	NONTAX REV	EXT DEBT
PI	1									
GDPG	0.2224	1								
DCPS	0.4724	0.0046	1							
DEFLATOR	0.453	0.1237	0.3208	1						
RECUREX	0.2068	0.0504	0.0304	0.3936	1					
CAPEX	0.218	-0.0077	-0.1062	-0.2779	0.2913	1				
DIRECT TAX	0.3383	0.3016	0.4984	-0.0324	-0.1613	0.0545	1			
INDIRECT TAX	0.2728	-0.1859	0.3182	0.3364	0.619	0.2508	-0.048	1		
NONTAX REV	-0.0771	0.2781	0.1776	-0.3517	-0.6273	-0.2167	0.6281	-0.5775	1	
EXT DEBT	-0.4855	-0.2766	-0.3834	-0.3042	0.3561	0.0913	-0.4249	0.3817	-0.4225	1

The table 2 depicts weak to fair positive correlations between PI and the

independent variables except for NONTAXREV and EXTDEBT which show weak and moderate negative correlations respectively. Among the independent variables, the strongest degree of association exists between NONTAXREV and DIRECTTAX (0.6281) and NONTAXREV and RECUREX (-0.6281). The strongest associations among the variables are moderate indicating that the problems of high multicollinearity that may stem from the estimated results have been avoided to a large extent. Furthermore, some degree of correlation is expected among fiscal policy variables since they are most times synchronized to achieve a given government objective. Nevertheless, the moderate to low degree of association among the variables make them suitable for the analysis.

Table 3: Unit Root Test Results at Level

VARIABLES	Levin, Lin and Chu t* statistic	PP-Fisher Chi-Square test Statistic	Comment	Result
PI	2.02264 (0.9784)	27.8391 (0.0019)***	Individual Intercepts	Stationary
GDPG	-2.73840 (0.0031)***	37.7701 (0.0000)***	Individual Intercepts	Stationary
DEFLATOR	-1.75049 (0.0400)**	27.4566 (0.0022)***	Individual Intercepts and Trends	Stationary
DCPS	-3.18070 (0.0007)***	24.1132 (0.0073)***	Individual Intercepts	Stationary
RECUREX	-3.17401 (0.0008)***	23.5303 (0.0089)***	Individual Intercepts	Stationary
CAPEX	-3.00585 (0.0013)***	22.7140 (0.0119)**	Individual Intercepts and Trends	Stationary
DIRECT TAX	-2.89948 (0.0019)***	21.4290 (0.0183)**	Individual Intercepts	Stationary
INDIRECT TAX	-1.85949 (0.0315)**	24.6998 (0.0059)***	Individual Intercepts	Stationary
NONTAX REV	-1.52330 (0.0638)*	17.0285 (0.0737)*	None	Stationary
EXTDEBT	-3.24421 (0.0006)***	24.5032 (0.0064)***	None	Stationary

Probabilities are in parentheses. *, **, * imply rejection of null hypothesis of unit root at 1%, 5% and 10% significance levels respectively.**

The results of the Unit root tests are shown in Table 3. The Levin, Lin and Chu t* test for common unit root as well as the Phillips-Perron test for individual unit root were carried out at 1%, 5% and 10% critical levels. The results indicate that all the variables are stationary at levels at 1%, 5% or 10% significance level. That is, none of the variables possess unit root either individually or as a group. This implies that the seasonal variation of the variables has been corrected for, thus making them fit for regression analysis.

Table 4: Estimated Long-Run Relationship

DEPENDENT VARIABLE: PI		**Observations: 100**		
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	4.613619	2.589125	1.781922	0.0781*****
GDPG	0.117245	0.08887	1.319287	0.1904
DCPS	0.051448	0.082665	0.62236	0.5353
DEFLATOR	0.019772	0.013078	1.511784	0.1341
CAPEX	0.443567	0.206308	2.15002	0.0342******
RECUREX	-0.007265	0.128305	-0.056627	0.955
DIRECT TAX	0.712872	0.421944	1.689493	0.0946*****
INDIRECT TAX	0.281382	0.158987	1.769839	0.0801*****
NONTAX REV	-0.195392	0.14423	-1.354724	0.1789
EXT DEBT	-0.054793	0.014464	-3.788141	0.0003*******
F-statistic: 12.90135		**Prob. (F-statistic)**: 0.0000*******		
R^2: 0.5633		**Adj. R^2**: 0.5197		

Table 4 is the panel cointegration result which depicts the long-run equation showing the relationship between PI and the independent variables. The test was carried out using pooled effect i.e. all fixed or random period or cross-sectional effects were ignored. The R^2 was estimated at 0.56 implying that all the explanatory variables jointly explained about 56% of changes in private investment in the region. The F-statistic of 12.90135 showed the model truly captures the relationship between the variables. The generated residual series was tested for normality using the Jarque-Bera test as well as for Unit root using the Levin, Lin and Chu t* test for common unit root and the PP-Fisher Chi-square test for individual unit root. The tests revealed that the error term was normally distributed and the hypothesis of unit root was rejected at 5% significance level for both unit root tests. Hence, we can conclude that the variables are co-integrated and have a long-run relationship.

Table 5: Residual Test Statistics

Jarque-Bera Test	**Levin, Lin and Chu t* test**	**PP-Fisher Chi-square test**	**Comment**	**Result**
2.998335 (0.22316)	-2.01518 (0.0219)**	34.6212 (0.0001)***	No intercept or trend	Stationary

Insignificant Jarque-Bera statistic indicates normality of the residual series. Significant t* and PP-Fisher statistic indicates that the error term is stationary

(absence of common and individual unit root) at 5% and 10% significance level. Hence, we conclude that the variables are co-integrated and there exists a long-run relationship between PI and the independent variables.

Table 6: Hausman Test Results

DEPENDENT VARIABLE: PI			***Reported Values represent variation between FEM and REM model results. Probabilities of such variations are in parenthesis.***	
Variable	EQUATION1	EQUATION2	EQUATION3	EQUATION4
GDPG	0.001059 (0.0000)	0.001065 (0.0000)	0.000471 (0.0000)	0.000524 (0.0207)
DCPS	0.004108 (0.0000)	0.004081 (0.0005)	0.003406 (0.0000)	0.003658 (0.0132)
DEFLATOR	0.000024 (0.0000)	0.000031 (0.0000)	0.000009 (0.0000)	0.000096 (0.0692)
TEXP	0.005236 (0.0684)	-	-	-
TOTALTAX	-	0.018038 (0.3782)	-	-
NONTAXREV	-	-	0.007164 (0.0623)	-
EXTDEBT	-	-	-	0.000112 (0.0269)
Chi-Square Statistic	100.108886(0.0000)***	90.018628(0.0000)***	96.933666(0.0000)***	72.965819(0.0000)***

The Hausman test in table 6 was carried out to determine whether fixed effect model or random effect model would be appropriate for the panel of the 5 West African countries. The null hypothesis of the Hausman test is that the fixed effect model (FEM) and random effect model (REM) do not differ substantially and its rejection implies fixed effect model would be appropriate. The test was carried out using the control independent variables and aggregated forms of the fiscal policy variables. Recurrent and Capital Expenditure were aggregated to Total Expenditure (TEXP); direct and indirect taxes were aggregated to total tax (TOTALTAX); while non-tax revenue and external debt were left as they were. The relevant chi-square statistic shows that the variation between FEM and REM is actually significant at 1% level and as such, FEM is preferable to REM in capturing the effects of the independent variables on the dependent variable (PI).

Table 7: Wald Test Results

	WALD COEFFICIENT TEST	
Nigeria	-2.328332 [1.183438]	Significant
Ghana	1.895348 [1.224624]	Insignificant
Sierra Leone	-4.250291 [1.582015]	Significant
Ivory Coast	-6.019037 [1.387059]	Significant
Senegal	3.970508 [1.302958]	Significant
F-statistic	22.27968 [0.0000]***	Significant

Next, we employed the Wald test (see table 7) of co-efficient restrictions to determine whether the Pooled Effect Model (PEM) is preferable or not to FEM. A panel regression was run using the control variables and dummies which were assigned as follows: D1=1 if country is Nigeria, 0 if otherwise; D2=1 if country is Ghana, 0 if otherwise; D3=1 if country is Sierra Leone, 0 if otherwise; D4=1 if country is Ivory Coast, 0 if otherwise and D5=1 if country is Senegal, 0 if otherwise. The differential intercept coefficients represent the cross-sectional fixed effects. The Wald test tests the joint significance of the country specific effects by testing that D1=D2=D3=D4=D5=0. Rejection of the above null hypothesis implies that there exist country specific fixed effects. The table shows that 4 of the 5 country specific effects differ significantly from zero. Hence, we have rejection of the null hypothesis of no country-specific effects at 1% significance level based on the F-test for ANOVA. The implication of the Wald test results is that country-specific effects exist and as such, the pooled effect model would be inappropriate in estimating the model on private investment. Hence, we conclude from the Wald test that the Fixed Effect Model is the most appropriate for the study which further confirms the results of the Hausman test.

Table 8: Aggregated Fiscal Policy Variables and Private Investment

Dependent Variable: PI				
Variables	**Equation 1**	**Equation 2**	**Equation 3**	**Equation 4**
C	-1.207 (2.69)	-0.025 (1.976)	1.082 (2.132)	6.747(2.054)***
GDPG	0.028 (0.071)	0.007 (0.071)	0.073 (0.072)	0.066 (0.074)
DCPS	-0.115 (0.080)	-0.052 (0.080)	-0.052 (0.080)	0.029 (0.081)
DEFLATOR	0.055(0.011)***	0.060(0.009)***	0.060(0.008)***	0.047(0.012)***
TEXP	0.242(0.086)***	0.306(0.089)***	-	-
TOTAL TAX	0.457(0.157)***	-	0.487(0.156)***	-
NONTAX REV	-0.31(0.106)***	-	-0.359(0.109)***	-
EXT DEBT	-0.016 (0.012)	-	-	-0.009 (0.013)
R^2	0.737	0.697	0.708	0.659
Adj. R^2	0.704	0.67	0.679	0.629
F-statistic	22.457(0.000)***	26.157(0.000)***	24.3(0.000)***	22.005(0.000)***
Observations	100	100	100	100

Table 8 shows the fiscal policy variables in aggregated form. From the first equation, the coefficients of both total expenditure and total tax revenue are positive and significant, implying that total expenditure and total tax revenue

which are fiscal policy instruments spur private investment in the sub-region. The coefficient of non-tax revenue is also significant but negative while that of external debt is negative but insignificant. The positive and significant coefficient of total government expenditure implies the existence of a crowding in effect of total expenditure (TEXP) on private investment in the 5 countries. This implies that an increase in TEXP would lead to an increase in private investment. However, we cannot ascertain yet what component of TEXP contributes to the crowding-in effect (this will be discussed in subsequent paragraphs).

The positive and significant coefficient of total tax revenue shows that tax income in the panel is non-distortionary. That is, taxation does not negatively impact the decision of private sector agents to invest. This fact can be attributed to the fact that the tax system is not as effective in collecting tax revenue from the citizens. Nigeria, for example, is largely regarded as being similar to a tax heaven for investors due to favourable nature of the tax system towards investors. Non-tax revenue has a negative and significant effect on private investment. This violates a priori expectation of the sign of its co-efficient. Non-tax revenue consists of social contributions, fines, fees, rent, and income from property or sales. An economic justification for this negative sign is that social contributions collected reduce the disposable income of people, hence, reducing their ability to save. Low savings, in turn, leads to low level of private investment. Furthermore, fees and rents collected by the government in the process of setting up and running businesses may serve as disincentives to invest due to the bureaucratic nature of such processes in developing countries including the ones included in the panel. Hence, there is a crowding-out effect.

The coefficient of external debt has the correct negative sign but its effect on private investment is insignificant. Hence, the external debt operations of the government have no significant effect on private investment in the countries. This can be attributed to the fact that apart from Nigeria, domestic private investment accounts for a major proportion of total private investment in the countries, thus, making them less susceptible to negative effects of external debt operations. Hence, although there is a negative effect, it is insignificant. The R^2 of all the 4 equations ranged from 66% to 74% showing that a large proportion of variation in PI was explained by the model. The F-statistic was also significant at 1%, 5% and 10% level. This implies that the model is a good model.

Table 9: Disaggregated Expenditure Variables and Private Investment

Dependent Variable: PI			
Variables	**Equation 1**	**Equation 2**	**Equation 3**
C	-0.479 (1.815)	4.612 (1.817)**	-0.565 (1.475)
GDPG	0.035 (0.066)	0.049 (0.076)	0.034 (0.064)
DCPS	0.033 (0.076)	0.006 (0.088)	0.030 (0.070)
DEFLATOR	0.071 (0.008)***	0.053 (0.008)***	0.071 (0.008)***
RECUREX	-0.009 (0.110)	0.091 (0.125)	-
CAPEX	0.846 (0.151)***	-	0.844 (0.148)***
R^2	0.748	0.66	0.748
Adj. R^2	0.723	0.63	0.726
F-statistic	29.670 (0.0000)***	22.037 (0.0000)***	33.746 (0.0000)***
Observations	100	100	100

Table 9 shows the result of the estimated model when total expenditure is disaggregated into its recurrent expenditure and capital expenditure components. The results confirm the a priori expectation that recurrent expenditure is non-productive while capital expenditure is productive. That is, CAPEX displays a crowding-in effect on PI while RECUREX displays a crowding out effect, although the coefficient of RECUREX is insignificant. This shows that the positive and significant effect of total expenditure on private investment is due to the crowding-in effect of capital expenditure. Capital expenditure of the government on infrastructure (such as roads, power, etc.) fosters a favourable environment for private entrepreneurs to set up businesses and generally reduces the cost of operations of the private sector firm. This encourages more private investment hence, the crowding-in effect of capital expenditure. Despite having a crowding-out effect on private investment, this effect of recurrent expenditure is insignificant. In other words, the recurrent expenditure of the government has a negative but insignificant effect on private investment.

Table 10: Disaggregated Revenue Variables and Private Investment

Dependent Variable: PI			
Variables	**Equation 1**	**Equation 2**	**Equation 3**
C	1.349 (2.165)	4.907 (1.399)***	2.287 (2.152)
GDPG	0.070 (0.072)	0.084 (0.073)	0.086 (0.073)
DCPS	-0.065 (0.082)	-0.038 (0.083)	-0.009 (0.079)
DEFLATOR	0.058 (0.009)***	0.051 (0.009)***	0.060 (0.009)***
DIRECT TAX	0.737 (0.363)*	0.857 (0.365)*	-
INDIRECT TAX	0.405 (0.190)**	-	0.465 (0.191)**
NONTAX REV	-0.413 (0.130)***	-0.439(0.132)***	-0.254(0.106)**
R^2	0.71	0.696	0.697
Adj. R^2	0.678	0.665	0.667
F-statistic	21.828(0.0000)***	22.859(0.0000)***	22.994(0.0000)***
Observations	100	100	100

The effects of disaggregated government revenues on private investment are shown in Table 10. The results confirmed Table 8 result. Non-tax revenue has a significant negative impact on private investment contrary to a priori expectation. The economic intuitions of this have been explained in the previous paragraphs. In the same vein, direct tax has a positive and significant impact on private investment. That is, it is non-distortionary with respect to private investment. Indirect tax satisfies a priori expectation by having a positive and significant impact on private investment. The rationale for the non-distortionary nature of direct tax is the same as that for total tax revenue. i.e. the tax system is not efficient enough in capturing tax revenues from all tax payers as well as the tax heaven nature these developing countries used in the analysis. The R^2 were the lowest of all and it ranged from 66% to 68%.

Table 11: Combined Effect of Fiscal Policy on Private Investment

Dependent Variable: PI			
Variables	**Equation 1**	**Equation 2**	**Equation 3**
C	-4.773	-3.801	-2.402
GDPG	0.044	0.043	0.026
DCPS	-0.019	-0.028	-0.117
DEFLATOR	0.083	0.077	0.063
CAPEX	0.827	0.779	-
RECUREX	-0.091	-0.064	-
TEXP	-	-	0.243
DIRECTTAX	0.504	-	0.647
INDIRECTTAX	0.389	-	0.332
TOTALTAX	-	0.445	-
NONTAXREV	-0.273	-0.258	-0.361
EXTDEBT	0.01	-	-
R^2	0.782	0.781	0.734
Adj. R^2	0.75	0.753	0.701
F-statistic	23.790(0.0000)***	28.481(0.0000)***	22.087(0.0000)***
Observations	100	100	100

Table 11 shows the combined effects of both disaggregated expenditure and revenue variables. The first equation shows all variables in disaggregated form while the second and third show equations show only expenditure disaggregated and revenue disaggregated respectively. The results show that recurrent expenditure and external debt have negative and insignificant impacts on private investment. Capital expenditure has a positive and

significant effect on private investment and so does total expenditure, total tax and indirect tax. However, in the first equation, positive effect of direct tax becomes insignificant. The R^2 are relatively higher compared to those on other tables showing that the disaggregated model is better in explaining variations in private investment. The R^2 ranged from 73% to 78% for the fully disaggregated models and the equations were also statistically significant. The control variables provided fairly surprising results. Despite the coefficient of GDP growth being positive, it was insignificant showing that the accelerator effect was not statistically significant among the 5 countries. This can be attributable to the fact that growth in the 5 countries was not stable throughout the period. Hence, the mean effect on private investment, though positive, was insignificant. Furthermore, a major assumption of the accelerator theory is that investment is pro-cyclical i.e. investment responds instantaneously to changes in output level. However, this is mostly common with inventory investment which is not included as a part of Private Sector Gross Fixed Capital Formation ratio (GFCF/GDP), the proxy for private investment. Gross Fixed Capital Formation is mostly not pro-cyclical, hence, the insignificant accelerator coefficient. The coefficient of Domestic credit to Private Sector (DCPS) also violated its a priori expectation as it showed a negative sign although this value was insignificant. However, the GDP deflator met its a priori expectation by having a positive and significant coefficient which confirms the neoclassical view on investment that changes in price level have positive impact on the level of investment.

5.1 Comparison with Previous Findings

The findings of the study show that there exists a crowding in effect of capital expenditure on private investment. This is consistent with the results of Jalloh (2002) in Sierra Leone, Outtara (2004) in Senegal, Vergara (2004) in Chile and Kandil (2009) for a panel of developing countries. The finding on government total expenditure which is shown to be positively related with private investment is consistent with the works of Marattin and Salotti (2010) for EU countries. It is also consistent with the Keynesian argument that government fiscal operations stimulate aggregate demand and this in turn, leads to a boost in private investment. The positive impact of Tax revenue on private investment differs significantly from past works including Hermes & Lensink (2001), Alesina et al (2002) and Vergara (2010). However, it is consistent with the works of Soli *et al* (2008) who identified that taxes on internal products and services as well as direct taxes on income and wealth have positive effects on private investment. The result on external debt is also

consistent with most empirical works including Pfefferman and Mandarassy (1993) for developing countries whose finding indicates a negative relationship between government debt operations and private investment.

6.0 Conclusion

The study examined the nexus between fiscal policy (revenue and expenditure operations) and private investment in 5 selected West African countries over a 22-year time frame as well as examine if there is any causal relationship between fiscal policy variables and private investment. It was based on the Classical-Keynesian argument of whether government fiscal operations crowd-out or crowd-in private investment. Using the Fixed Effects Model for Panel data analysis and employing the Neoclassical and Accelerator models for investment as well as disaggregating fiscal policy variables into individual revenue, expenditure and debt components. Major findings include:

a) ***Crowding-In effect exists between Capital Expenditure and Private Investment*: -** It was discovered that a crowding-in relationship exists between capital expenditure and private investment giving credence to the Keynesian argument which is theoretically suited to the characteristics of developing economies (including those in the panel) such as excess capacity, unemployment, etc. The effect of recurrent expenditure is negative but insignificant. Hence, the results generally show a crowding-in effect of total expenditure.

b) ***Tax Revenue is non-distortionary with regards to Private Investment: -*** Another major finding from the study is that tax revenue (both direct and indirect tax) has positive relationship with private investment, i.e. they are non-distortionary. This was attributed to the low effectiveness of the tax system of most developing countries in West Africa which limits the distortionary effect of direct taxes on the economy at macro level.

c) ***The Accelerator Effect is Insignificant among the Countries: -*** The study also shows that despite being positive, the accelerator co-efficient is insignificant. This was attributed to the unstable nature of the growth of these countries. Furthermore, private sector gross fixed capital formation ratio (the proxy for private investment) is not pro-cyclical in nature (an assumption made by the accelerator theory), thus, the accelerator coefficient is insignificant.

d) ***External Debt Operations has no Significant Impact on Private***

Investment: **-** This was attributable to the fact that a significant proportion of private investment among most of the selected countries is domestic while foreign investments are mostly portfolio investments. Therefore, external debt operations would have a negligible effect on the level of private investment in these countries.

The economic ideology of most developing countries in West Africa is geared towards fostering private sector led growth. However, because of their low level of development, the public sector still holds a lofty place in the operations of the economy. The need to encourage private sector investment requires the need to understand the interaction between the fiscal operations of the government and private investment. The study attempted to contribute to this topical issue in contemporary economics by disaggregating fiscal policy variables into various revenue, expenditure and debt components. The study employed the Fixed Effect Model for panel data analysis which revealed the existence of crowding in effects of some fiscal variables (e.g. capital expenditure) and crowding out effect of others (e.g. non-tax revenue and external debt). Interestingly, the study also showed that no causal relations run from the significant fiscal policy variables to private investment or vice versa.

Based on the findings from the empirical analysis, the study advocates for more public investment in capital project. This is believed would stimulate private sector investment and in turn, spurs economic growth. Efforts should also be geared towards debt management operations (both internal and external) in an attempt to ensure that the acceptable debt threshold for developing countries of 30% of GDP is not exceeded. Moreover, the tax system should be restructured to ensure that more revenue comes from indirect tax sources. This is because as indirect tax is found to be non-distortionary, increases in revenue from this source would not disrupt investment decisions of the private sector. Also, the tax system should generally be made favourable towards private sector investments e.g. through tax incentives. In the same vein, private sector investment should be encouraged owing to its causal effect on growth which has been theoretically and empirically proven to be positive. Fiscal policy variables with significant crowding in effect should be more efficiently utilized to stimulate private investment so as to impact growth positively over time.

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