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EARLY VIEW

RESPONSIVENESS OF THE CONSTRUCTION SECTOR TO FISCAL POLICY IN NIGERIA

Abstract: The influence of fiscal policy measures on the economy is reflective of sectorial outputs like the Construction industry sector (CS) in Nigeria. However, the extent of the influence is vague making their interaction a concern, etc. This study investigated and examines the casualty and relationship between the Construction sector (CS) and selected fiscal policy measures like government revenue, public capital expenditure, gross fixed capital formation, and deficit finance as study variables. Using time series data of the study variables between 1980-2019, analyzed using the Co-Integration estimation technique (Bound Test approach of Auto Regressive Distributive Lag (ARDL)) and Pairwise casualty technique. The study findings show that a long-run and short-run relationship amongst all the variables was established but not significant except for Government Revenue. Similarly, the Pairwise Granger causality test confirmed that deficit financing and public capital expenditure have no casualty effect on CS. It concluded that CS is not responsive to changes in fiscal policies in Nigeria, and subsequently recommended the need for increased public and private capital investment, improvement in revenue generation, and efficient use of debt revenue on infrastructure development to strengthen domestic growth across economic sectors.

Introduction

The Construction industry (CS) of any country is a central and strategic subsector of the economy. Indeed, the extent of its centrality and influence on economic growth and development as reflected by macroeconomic variables, especially with essential fiscal policy measures, are not in doubt (Oke, 2011; Oladinrin, Ogunsemi, and Aje, 2012; Fasoranti, 2016).

Several reports confirm the economic performance and contributory trajectory of Nigeria's CS which accounted for 3.8% Gross Domestic Product (GDP) (1960), a massive 10% (1980) but declined to 3.47% (GDP) (1990) and further to 1.77% (GDP) (2000) but rose slightly to 2.88% in years 2010 (National Bureau of Statistics (NBS), 2014; Central Bank of Nigeria (CBN), 2015), while it was 3.70% (GDP) in 2016 and proposed to have the potential of over 15% growth contribution to the GDP by 2020 according to (Federal Government of Nigeria(FGN) 2017), and helps in enhancing fixed capital formation with right perspectives. Specifically, a report by the NBS shows that in 2020, the construction subsector recorded a total market size of approximately N11.64 trillion apart from about N53trillion spent by the Nigeria government on interest on loans, payroll and pension, etc., another about N15 trillion was expended on capital expenditure on infrastructures development between 2005 to 2017 (Debt Management Office (DMO,) 2018).

Fiscal policy dwells on the range of public sector finances - government revenue generation, expenditure, and debt control (Agu, Idika, Okwor & Ugwunda, 2014; Etale, 2019), through taxes and budgetary instruments and by the ways of Government Revenue (GRE), Public Capital Expenditure (PCE), Gross capital

formation (annual % growth) (GFCF), Deficit Finance (DFS) and other means for macroeconomic stabilization, income distribution, economic control and attainment of desirable socioeconomic welfare goals (Oke, 2011). The construction sector superintends over the provision of infrastructure development such as transport, energy, water supply, and sanitation, housing, and telecommunication which are characterized as social and economic, long-term and capital-intensive assets (Ojo, 2021). Infrastructures is related to economic growth and development, macroeconomic indicators etc., across many countries (Oladipo, & Oni, 2012; Pereira & Pereira, 2018; Chakrabarti, 2018; Babatunde, 2018;Zhang, 2019).

The contribution and influence of fiscal policy measures to the economy are reflective of sectorial outputs like the CS, since the government is believed to be the major client of the CS in Nigeria (Anjiba & Adu 2017). For example, a Federal Ministry of Finance (2021) report revealed that between the years 2000 and 2020, public capital expenditure amounted to about N18.45 trillion with the highest and lowest capital spending being N2.286 trillion and N239Billion in 2019 and 2000 fiscal years respectively.

Indeed, through public capital spending and investments, public infrastructure development is provided. Theoretical thoughts by the Keynesian neoclassical theorist underscore this position but not without the influence of fiscal measures. For example, Okar &Ogar, (2016) asserted that taxes such as personal income tax, company tax value added tax, and so on, accrue as revenue to the government, and are derived from utility or satisfaction by individuals and firms but the resultant capital investment expenditures such as infrastructures development (via the annual budgets) remain grossly invisible in the economy and evident in weakening value of fixed capital formation, low industrial output, and welfare of citizens, high unemployment rate, etc according to (Ayeni & Afolabi, 2020). Additionally, Nigeria's debt stock subsist in increase to about N41trillion ($104Billion) including the off-budget capital investment through the $6.3Billion foreign loans as of March 2022 according to (Debt Management Office (DMO,) 2018; DMO, 2022) hampering infrastructures investment needed to support production for growth.

 This underscores the nexus of CS and fiscal policy either of impairment or impetus to the economy in Nigeria. From the above, the extent and nature of fiscal policy measures' influence on the Nigeria CS are vague and a concern. Precisely, while some researchers and practitioners decry the impairing relationship in the economy in recent two decades (1999-2019)(Ojo &Oladipo, 2014; Festus & Saibu,2019), others and some policymakers are of different opinions (Agu , Okwo, Ugwunta & Idike, 2015; Ajanlekoko, 2015; Olaoye, 2016; Nigerian Institute of Building, 2018) , hence the contentious economic discourse. Consequently, these convergent and divergent views concomitantly with the noticed gap in practices and studies in the Nigerian economy attracted this study.

 This study, therefore, attempts to query what is the nature of the relationship between fiscal policies and CS in Nigeria and that does fiscal policies influence the performance of CS in Nigeria. Objectively, the study intends to investigate the response and performance of CS to fiscal policies dynamics as a general objective but specifically to examine the relationship and casualty between deficit financing, Government Revenue, and public capital expenditure on CS contribution to GDP in Nigeria covering period of 40years (1980- 2019). This scope is on the heels of the acclaimed increased infrastructure investment and development in the face of

turbulent fiscal policies in Nigeria, thereby helping public policymakers and practitioners make informed decisions in Nigeria.

The rest of this paper is organized as follows: literature review, methodology, analysis, discussion of findings, conclusion, and policy recommendations.

Literature Review

The Construction Sector (CS) as an economic sector is much connected to infrastructure development. Infrastructures are categorized into social and economic types and cover energy, transportation, water supply, housing, and information and communication technology. They are types of social overhead capital and distinctive factor inputs assets like the electric power plant, roads, railways, housing, water plants, telecommunications equipment, etc., that directly benefit the process of production with characterized by long-term, capital-intensive, environmentally impacting, and long life cycle in any economy (Olaseni & Alade, 2012; Iyortyer, 2017; Zhang, 2019). Johnson, et al. (2013) revealed that the CS executes infrastructure projects, and engages in multidisciplinary skilled and non-skilled manpower services forming the second largest economic subsector after agriculture in Nigeria.

CS averaged 2.25% contribution to GDP growth between 2000 and 2015 according to (FGN, 2017) but not reflective of the investment expenditure in Nigeria. Babatunde, (2018) finds that poor capital spending on infrastructure development hinders economic growth in Nigeria but that infrastructure is capable of delivering steady long-term national fixed capital appreciation, industrial development, generating employment opportunities, and overall economic good. This has informed efforts towards public and private partnership in infrastructure investments using the small, medium to large construction firms and expert capacities according to Anjiba & Adu, (2017), to enhance fixed capital formation at about 35% of GDP in Nigeria, far less than 70% GDP international benchmark.

Linguistically, the word fiscal policy is derived from Latin as 'State put' lopsided into revenue by way of taxes only. However, research, studies, and State practices have revealed that fiscal policies encompass basically revenue/income, expenditure/spending of government, and debt finance within the scope of public finance management (Sullivan & Steven, 2003; Adefeso & Mobolaji, 2010; Oseni & Onakoya, 2012). This identifies two approaches to fiscal policy as being compensatory and discretionary, asserting that the former is the mechanism of balancing government finance to reimburse for fluctuations in national income, through the use of syndication of deficit and surplus financing, taxation, and public spending, while the latter are efforts against effects of periodic fluctuations and recurring instability in the economy and on private enterprise coordination.

Again, fiscal policy decisions can be grouped into expansionary (reduction in taxes or increase in public spending to induce increased demand, aggregate consumption, investment, and production levels) and contractionary (encourages deficit budget financing, ambitious spending on social overhead capital, etc). Critical examples of expansionary fiscal policy decisions include Nigeria's economic depression experience of -1.9% GDP in the year 2016, informed N6.05 trillion actual total spending more than the revenue of N2.71 trillion leading to budget deficit of N3.34 trillion (41.77%) in 2017 fiscal year(DMO, 2018; BudgIT,2018; International

Monetary Fund (IMF) (2019). Also, the decision to increase VAT from 5% to 7.5% via the Finance Act, 2020, meant to discourage consumption of certain imported goods and increased revenue to the government amounts to a contractionary fiscal policy. However, contemporary public sector economics discourse resolves around budgetary appropriations, which have become the most important encompassing periodic fiscal policy document of government (Ogujiuba & Ehigiamusoe 2013; Oyedele, 2015; Olaoye, 2016).

On the revenue/income side, different taxes, proceeds from sales of mineral resources especially crude oil sales, and external and internal borrowings have been the mainstay of government income in Nigeria. For example, crude oil mineral revenue is accounting for about 90% gross export and 85% of the Federal Government foreign revenue and main driver of Nigeria's economic growth (Federal Government of Nigeria (FGN), (2017), while external and internal borrowings have become substantial income sources though constitutes a huge debt stock(Debt Management Office (DMO), 2012, 2014, 2019) and non-oil taxation accounted for 6% of national income(Ojo & Oladipo, 2014). Figure 1, shows the national debt profiles in Nigeria.

*Figure 1: Trend of National Debt Stock in Nigeria(1980-2019)*
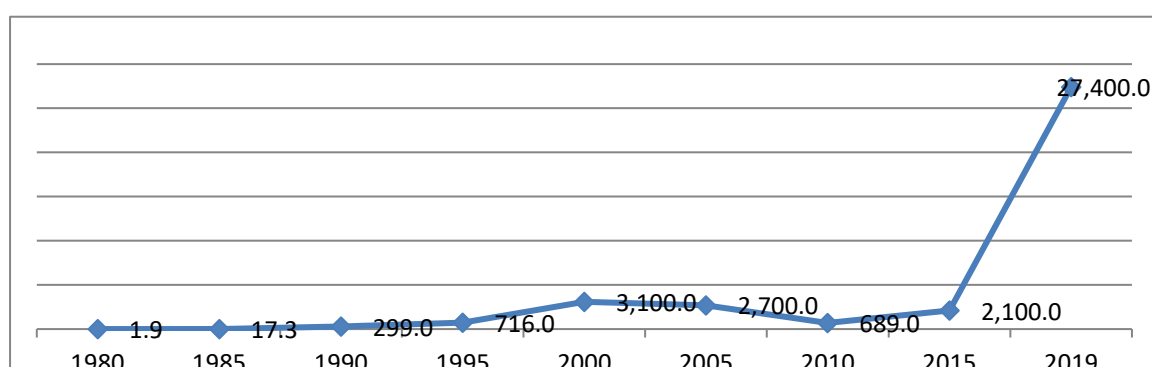
Source: Stylized Debt Management Office Reports (2002-2019)

Nigeria's public sector debt history predated 1960; $23million (1.0%GDP in 1960), N1.89B (16.2% GDP in 1980), reaching N3.10Trillion (83.6%GDP in 2000), stood at $6.54Trillion (17.8% GDP in 2012) and presently at N27.4Trillion (24.5% GDP in 2019). The rise in public debt is a pandemic in the face of increasing population and can be blamed on widening fiscal deficit at the national level with the consequence of debt service to revenue ratio at over 60%, which means for every N100 earned, it spends N60 in servicing debt. For example, in 2017 fiscal year, domestic debt constituted 68.5%, while external debt accounted for 31.5 % of the total debt stock (CBN, 2017). While most of purported obtained foreign and domestic loan facilities were meant for infrastructural development yet, the CS of the economy remain not impacted evidence from the parlous state of infrastructures in Nigeria (Alufohai, 2012).

On the expenditure, windows are recurrent and capital expenditures with lopsided size, structured and grow in favor of huge recurrent expenditure and its attendant consequences on CS growth (Iheanacho, 2016) as illustrated in Figure 2. The trend of

high recurrent expenditure is more than 70% against the paltry 25% capital expenditure of the national budget, cannot, will not, has not made any indelible impact on the infrastructure development but has abysmal attendance on the peoples' welfare and growth (BudgIT, 2015).

Figure 2: Comparison of Capital and Recurrent Expenditures in Nigeria(2005-2016)
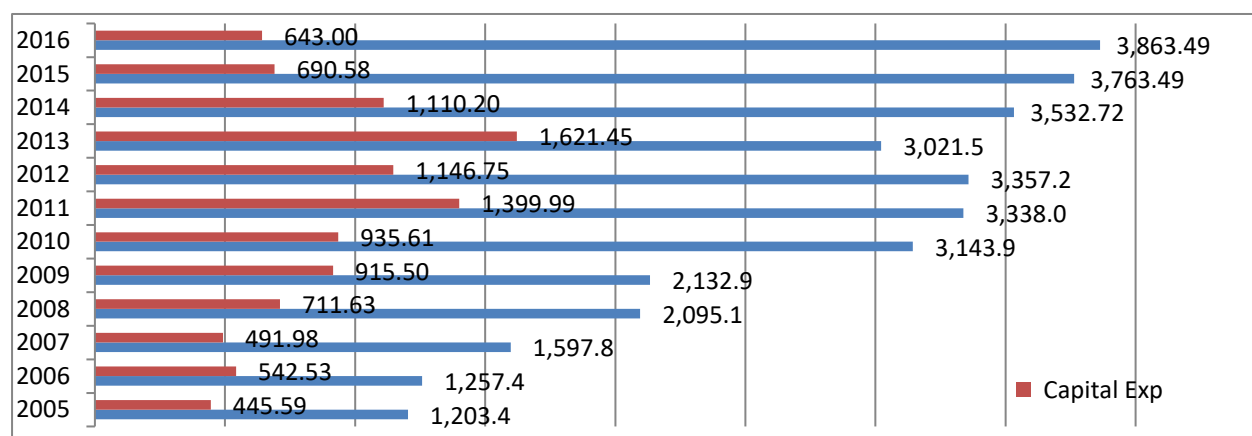
Source: Stylised Author Computation, National Budget Office, 2019

Fiscal policy measures like taxes, capital spending patterns, and government revenue are significant to create effects on aggregate demand, unemployment rate, sectorial output and income, foreign capital flows, prices stability of CS materials and products, savings and investments, capital asset formation, social welfare outcome, production and growth and so on. For example, 2016 fiscal year expansionary fiscal policy decisions of paltry public capital expenditure of N643Billion due to the failure of oil price revenue (Federal Ministry of Finance, 2017), negatively impacted of the CS along the value chain and the aggregate economy leading to loss of employment and increased unemployment rate, abandonment of some road, water and power infrastructure projects and so on (Eroke, 2011; Ojo & Gbadebo, 2014).

Figure 3: Comparison of Public Capital Expenditures and Building and Construction Sector Share of GDP in Nigeria(1980-2017)
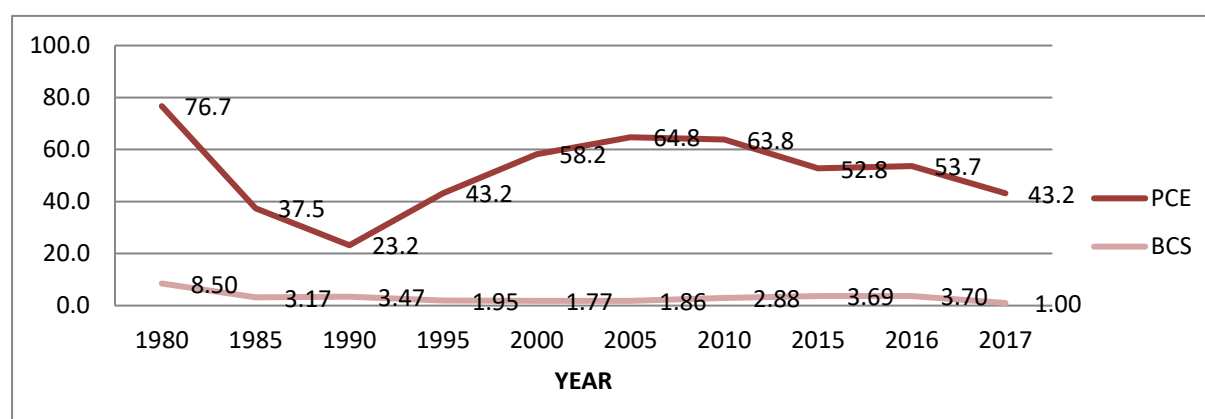
Source: Author Computation, National Bureau of Statistics, 2019

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In contrast, (Deloitte, 2014) submitted that CS high operating costs is created by multiple tax challenges for the companies resulting in low-profit margins, discouraging investment and savings, reduce aggregate demand and consumption of construction product and services due to reducing disposable income. The Nigerian government's Economic Recovering and Growth Plan (ERGP) 2017 report shows that total infrastructure stock (i.e. fixed capital asset formation) is only 35% of GDP. In practice, CS appears not to be favored when government contractionary fiscal policy decisions ensue especially in increased taxes, decrease in revenues and decrease in public capital expenditure, influencing fixed capital formation, poor infrastructure development, industrial production output, discouragement to acquire new plant/equipment, etc. (Ojo, 2017). Further, researchers and practitioners (Sullivan &Steve, 2003; PricewaterhouseCoopers, 2012; PKF International Limited,2013; Ojo & Awodele, 2013; Olaoye, 2016) have discovered that fiscal policy exerts varied time horizon effects - short-run, medium-run, and long-run- across economic sectors, altering potential output, influence economic objectives, for overall economic progress etc.

This study is premised on the duo of benefits theory of taxation Lindahl B. in 1919 that assumes a direct exchange relationship between government tax and citizens' derived benefits and the Keynesian theory of public expenditure. The former stipulated that public finance management should employ taxes on individuals and other economic agents based on derived benefits from social goods and services rendered by the government while the latter stresses proficient government interventions in the economy through influencing growth variables in the long run space which contrasts the classical economic theory.

Government revenue/ income arises partly from fiscal measures like taxes which is deliberately expended to achieve desired economic and social objectives like infrastructure development, employment, etc. This proposes that there is direct proportionality of the government's revenue and consumption expenditure with multiplier effects on aggregate demand. Blinder, (2008) emphasized that an increase in government expenditure, as a derivative of income from sources such as taxes, import and export revenues, borrowings (debt capital) etc., expended on the provision of public goods such as social overhead capital (infrastructures) create effects and impacts on the economy like shifting the aggregate demand, create more employment, escalate money supply, correct market disequilibrium and enhance the stability of price level in the economy and so on. In contrast, (Mitchell, 2005; Aregbeyeni & Kolawole, 2015;Makuyana & Odhiambo , 2016) argued that Keynesian theory failure is due to lower tax rates and tax concessions and increased capital spending enhances sectorial economic growth, inflates the economy and neglects private sector investment contribution and influence on the CS, especially in the developing economies.

From the divergent views, it underscores that the public sector's increase or decrease in investment expenditure via budgetary allocation and or public income finance through borrowings and taxes ultimately reduces or increases the level of a sectorial capital formation such as in the CS, especially in the developing economies, where the government is believed to be the major client of the CS.

A plethora of economic narratives and studies on the CS have been largely polarized to infrastructures development linked with economic growth, development, and macroeconomic variables but all with mixed results. Oke, (2011)

used historical data of the Lagos State Government annual budget between 1980-2006 on taxation, and government capital spending as on fiscal Policies and investigated their effects on Nigerian Construction Sector, adopting Pearson moment correlation coefficient(r) and regression analysis as estimation techniques, found that fiscal policy through government expenditures and tax reductions stimulate private consumption and investment spending, establishing a significant relationship between taxation and government spending on the construction sector in Lagos state and recommended consistent fiscal policy decisions to influence the level of aggregate demand in the economy and improve investment in construction work. Ojo & Awodele, (2013) study on Nigeria's domestic debt and the Construction sector's viability using time series data on the unemployment rate, exchange rate, etc., and BCS share of GDP between 2001-2011, and adopted multiple regression analysis, established long-run relationship and recommended appropriate macroeconomic policy guidance by policymakers to attract investors with a focus on the building and construction subsector of the economy. Edame, Udude & Ugwu, (2014) asserted that public expenditure on infrastructures stimulates economic growth by using time series data from 1970 to 2006, adopting multiple regression analysis and Johansen Maximum Likelihood (JML) and OLS as the estimation procedures, and recommended increased public capital expenditure on key economic infrastructure in other to stimulate the economy for growth. Osinowo, (2015) study found that total fiscal expenditure has positively contributed to all economic sectors output with an exception of agriculture in Nigeria between 1970-2013 by adopting Autoregressive Distributed lag (ARDL) and Error Correction Model (ECM) techniques, hence recommended adoption of sector-wide fiscal policy mechanism framework in the economy. Onodugo, Obi, Anowor, To Nwonye & Ofoegbu, (2017) the Nigerian economy grew by 6% between 1980-2013 with medium to long-run effect on unemployment, as a result of the impact of public capital and recurrent expenditures, and private investment by using multiple regression models as estimating technique, therefore, recommended a systematic increase in capital expenditure in the budget with policy incentives to private sector investment. Festus & Saibu, (2019) adopted ARDL Model estimation technique to the established long-run and the short run relationship between external debt and economic growth in Nigeria, though with negative contribution from external debt to growth between 1981- 2016 thereby recommending efficient acquisition and use of debt for productive motives. The study by Yahaya & Yusuf, (2019) used time series data between 1980-2019 and Auto Regressive Distributive Lag (ARDL) to investigate and found a positive significant relationship between economic growth and company income tax (CIT), Value Added Tax (VAT) and custom and excise duties tax (CED), etc., and therefore recommended that government focus and strengthened regulations on increasing revenue collections efforts and investment on infrastructural developments to boost economic growth in Nigeria.

Research Gap

Studies reviewed relate to the relationship between fiscal policy variables and economic growth and not CS in Nigeria using various estimation techniques. However, Oke's study near relatedness to this study is lopsided in that the scope is limited to Lagos State, the variables analyzed are limited to taxes and government capital spending components while the work adopted Pearson moment correlation and regression analysis and did not employ econometric models as estimation techniques. This study fills these gaps by expanding the study scope to the whole of

Nigeria's economy, fiscal policy variables inclusive of debt stock, government revenue, Gross Fixed Capital Formation etc., and applying econometric models and estimation techniques.

Methodology

Towards achieving this study's objectives, the avalanche of related literature was qualitatively explored with mixed results. The quantitative analysis adopts the theoretical production function (linear relationship) endogenous framework and empirical model from the work (Festus & Saibu, 2019) with modifications. Festus & Saibu, (2019) regression equation captured the relationship between external debt and the Nigerian economy where GDP proxy the Nigeria economy as the dependent variable and external debt decomposed into *external debt stock, real gross domestic product, trade openness, and gross fixed capital formation expressed a percentage of GDP as explanatory variables adopting this function thus;*

$$RGDP = f(EXDG, TOP, INV, EXCH, INF) \qquad \text{……………………...}$$

This model is limited in that *debt stock and others variables are not directly sufficient and only influencing fiscal policies on the construction sector.* Hence the modified endogenous regression model use to capture the relationship between construction sector and fiscal policy in explaining the relationship and effects of the independent variables on dependent variables is stated thus;

Construction Sector $= f$ (**Fiscal Policy**) #1

The construction sector is proxy by Building and construction sector (BCS) share of GDP as the dependent variable while fiscal policy is a proxy by Government Revenue (GRE), Public Capital Expenditure (PCE), Gross capital formation (annual % growth) (GFCF), and Deficit Finance (DFS), mathematically represented in a function thus;

BCS = f **(GRE, PCE, GCF, DFS)** # 2

The set of fiscal variables in this study was used due to their strong influence, significance, contribution, and relevance to BCS in any economy. Time series secondary data for the study were obtained from the Nigeria Bureau of Statistics Annual Bulletin, Nigeria National Budget Office, and Central Bank of Nigeria Annual Reports and African Development Bank (AfDB) Socioeconomic Data Base, spanning years 1980 – 2019 were used in the study.

The function in equation # 2 is further transformed into an econometric model as follows:

BCS = $\beta_0 + \beta_1 PCE + \beta_2$ GRE $+ \beta_3$ GCF $+ \beta_4$ DFS $+ U_t$ #3

Where: **BCS** = (Building and Construction share of GDP), Government Revenue (**GRE**)**,** Public Capital Expenditure **(PCE),** Gross Fixed Capital Formation **(GFCF),** and Deficit Finance **(DFS)**, β_0 = Intercept term, β_1 = Coefficient of **(PCE)**, β_2 = Coefficient of **(GRE),** β_3 = Coefficient of **(GFCF),** β_4 = Coefficient of **(DFS)**, U_t = Stochastic or

disturbance term. On a priori ground the various theoretical expectations explained above are:

$$\frac{\partial y}{\partial \log PCE} = \beta 1 > 0, \frac{\partial y}{\partial \log GRE} = \beta 2 > 0, \frac{\partial y}{\partial GCF} = \beta 3 > 0 \; \frac{\partial y}{\partial \log DFS} = \beta 4 > 0$$

Moreover, based on the fact that all the variables of the model are not in the same unit scale, there is need to take the logarithm transformation of selected variables in #3 as expressed in # 4; this gives the general , static and long run model.

$$BCS_{t-1} = \beta_0 + \beta_1 lnPCE_{t-1} + \beta_2 lnGRE_{t-1} + \beta_3 GCF_{t-1} + \beta_4 lnDFS_{t-1} + U_t \qquad \text{\# 4}$$

Estimation Analysis
The analysis involves three stages - preliminary test, estimation techniques analysis, and Post Estimation Diagnostic Tests. While the preliminary analysis involves a stationarity test (Unit Root Test), in other to determine the stationarity of the variables to avoid the spurious and unpredictable results in time series regression models using Augmented Dickey-Fuller (ADF) test at levels and first differencing to examine their order of integration at 5% significance expressed in thus;

$$\Delta Y_t = \mu + \tau Y_{t-1} + \Sigma_\beta \Delta Y_{t-1} + e_t \qquad \text{\# 5}$$

For example, at first difference, μ is the intercept, Y_t is the vector of the variable of interest, Δ is the first difference operator, t is time trend, Y_{t-1} is lag variable of interest, τ is the coefficient of the vector variable, ΔY_{t-1} is first difference lagged and e_t the error term. A series is stationary where t-stat absolute value > P- value has no unit root and or vice vise.

The estimation analysis adopted Co-integration and Causality Tests. Co-integration Test used the Bound test approach of Autoregressive Distributed Lag (ARDL) model, which is useful and applicable to variables at varied orders of integrations using model **# 6**

$$\Delta BCS = \beta_0 + \Sigma \Delta BCS_{t-1} + \Sigma \Delta_{\beta 1} lnPCE_{t-1} + \Sigma \Delta_{\beta 2} lnGRE_{t-1} + \Sigma \Delta_{\beta 3} GCF_{t-1} + \Sigma \Delta_{\beta 4} lnDFS_{t-1} + \pi ECT_{t-1} + U_t$$
 # 6

This forms the short-run and error correction mechanism estimates for the model conducted at lag length of one (1), where **ECT** is the Error Correction Term residual of the long-run model. These were used to test for the nature of the co-integration relationship among variables, especially whether a long-run/short-run relationship(s) exists between the dependent variable and the independent variables of interest or otherwise as first developed in the work of Pesaran et al. (2001).

Following, the causality test describes the causal and direction of effects between two sets of variables. it is adopted to investigate the direction of the causal relationship between the endogenous and exogenous variables in a model adopting the Pairwise Granger causality test specified as follows:

$$\underline{\mu} \Delta y_t = \Sigma \delta Z_{t-1} + \Sigma \psi \Delta X_{t-1} + e_i \qquad \text{\# 7}$$

In #7, Y, Z an X are the vector of any series variables alternatively and uncorrelated, at the appropriate number of lags that Granger cause one another. While δ, ψ, and μ are their respective coefficients, they are not equal to zero to give bi-directional situations. The null hypothesis of no causality between two variables cannot be rejected if the probability value of the F-statistics is >0.05 (P > 0.05) or rejected if otherwise.

For the post-estimation diagnosis, serial correlation and cumulative sum of squares of Recursive were used to test the series and model degree of correlation and stability at a given lagged version.

Analysis and Discussion of Findings

Table 1 below presents the stationarity test and orders of integration using the absolute value of test statistics for the series.

Table 1. Augmented Dickey-Fuller (A.D.F.) Level 1980–2019.

Variable	Level		First difference		Remark
	t-statistic	P-Value	t-statistic	P-Value	Order of Integration
BCS	-2.939	0.002	-2.939	0.00	1(0)
lnPCE	-2.939	0.049	-2.941	0.00	1(0)
lnGRE	-2.939	0.626	-2.941	0.00	1(1)
GCF	-2.939	0.129	-2.941	0.00	1(1)
lnDFS	-2.939	0.002	-2.941	0.00	1(0)

Source: Author's Computation.2022

The results show mixed orders of integration at I(0) and I(1) by the series hence in this case ARDL bounds test approach of Cointegration is appropriate according to Pesaran et al., (2001). Table 2 below presents the bounds test approach adopting the F-statistic and the critical statistics at 5% significance for decision making.

Table 2. ARDL Bounds Test

F-statistic	Critical Value Bounds		Significance K	
	UPPER I(1)	LOWER I(0)		
4.167	**2.86**	**4.01**	**5%**	**4**

From Table 2 above, the *F*-statistic value of 4.1675 is far above compared with the critical values of the upper bounds (4.01) and the lower bounds (2.86) at 5% significance levels indicating there is a cointegration and sustainable long-run relationship between BCS and GRE, PCE, GFCF and DFS in the model, hence the null hypothesis of no cointegration is rejected. This finding concludes that BCS is very responsive to changes in these exogenous variables and underscores the studies by (Edame, Udude & Ugwu, 2014; Osinowo, 2015) and specifically that Public Capital Expenditure (PCE), and Deficit Finance (DFS) influences economic sectors output like the Building and construction sector (BCS) and stimulates aggregate economic growth in Nigeria.

Arising from the result of the cointegration result, the short run and error correction mechanism estimates for the model were conducted at lag length of one (1) adopting **# 6.** Table 3 below shows the result

Table 3: ARDL Cointegrating And Long Run Form

Short run relationship

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNPCE)	0.942738	1.508747	0.624848	0.5364
D(LNGRE)	-0.168560	0.928225	-0.181593	0.8570
D(LNDFS)	0.428262	1.026133	0.417355	0.6791
D(GCF)	0.011254	0.082646	0.136166	0.8925
CointEq(-1)	-0.642739	0.161009	-3.991943	0.0003

Cointeq = BCS - (1.4668*LNPCE -0.2623*LNGRE + 0.6663*LNDFS +

0.0175*GCF -6.2419)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPCE	1.466750	2.406215	0.609567	0.5463
LNGRE	-0.262252	1.462086	-0.179368	0.8587

LNDFS	0.666307	1.625326	0.409953	0.6845
GCF	0.017509	0.127865	0.136932	0.8919
C	-6.241852	13.483062	-0.462940	0.6464

R^2= 0.1648, Pro(Stat)=0.2865, F- Test =1.3028, Durbin-Watsin Stat= 1.9778

Source: Authors' computations, 2022,

From table 3 above, the overall estimated values of the model is weak where the square of regression R^2 is 0.1648 or 16% variation in Building and construction sector (BCS) (dependent variable) is explained by fiscal policy (Government Revenue (GRE), Public Capital Expenditure (PCE), Gross Fixed Capital Formation (GFCF), and Deficit Finance (DFS) (independent variables) while the remaining 84% would be explained by other variables outside the model, hence the model is unfit. The Durbin-Watson value (1.97) implies that no autocorrelation exists in the model; however, the Pro (Stat) value (0.2865) implies that the overall model is not statistically significant at 5% level. Additionally, all the independent variables except (LNGRE) expressed a positive relationship with BCS though not significant as indicated by their coefficients though they are greater than 0 and consistent with the a-prior expectation for the study.

In the short run model, only D(lnGRE) with the coefficient of (-0.168560) express negativity while other variables express positive correlation with BCS but not with significant influence represented as in model #7 below.

$$BCS_{t-1} = -6.24+1.466lnPCE_{t-1} - 0.2623lnGRE_{t-1}+6.2419GCF_{t-1}+0.6663lnDFS_{t-1} \qquad \#7$$

Generally, the positive signs imply that an increase in fiscal policy measures drive the construction industry at varying degree of impact but is not significant as expected. This is partly in tandem with (Edame, Udude & Ugwu, 2014) and the Keynesian theory of public expenditure that public expenditure on infrastructures stimulates economic growth.   However, a decrease in (Government Revenue (GRE) also negatively affects BCS though not significantly too. This agrees with the positions of (Fasoranti, 2016). The CointEq(-1) value of (-0.6437) which is negative but significant, measures the model's speed of adjustment flow from short-run to long-run equilibrium. The value implies that about 64% of the errors are corrected in each period and in approximately 25years for the construction economic sector to attain equilibrium. This underscores the unstable and unproductive nature of the industry in Nigeria and unlike other developed economies as expressed by (Oke, 2011).

In Table 4 below represents the Pairwise Granger causality test result at the lag structure of one (1), showing no causal effect and direction of the causal relationship between Building and construction sector (BCS) and Public Capital Expenditure (PCE), and Deficit Finance (DFS) in that they all expressed probability value greater 0.05 or (P > 0.05), hence the null hypothesis of no causality cannot be rejected. The result confirmed that LNPCE and DFS have no casualty effect on BCS and vice visa and further buttressed earlier expressed the positive relationship between LNPCE and BCS though not significant.

Table 4: Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
BCS does not Granger Cause LNPCE	39	0.16761	0.6847
LNPCE does not Granger Cause BCS		2.55272	0.1188
BCS does not Granger Cause LNDFS	39	0.24700	0.6222
LNDFS does not Granger Cause BCS		0.41381	0.5241

Source: Authors' computations, 2022,

Post-estimation diagnostic tests

Table 6, represents the Breusch-Godfrey Serial Correlation LM Test model result, showing that pro-Chi-Square value of 0.0663, is not significant at 5% level and indicates that the null hypothesis of no Serial Correlation cannot be rejected; therefore there is no problem of autocorrelation in the model series.

Table 6a, Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.590666	Prob. F(2,33)	0.0901
Obs*R-squared	5.428131	Prob. Chi-Square(2)	0.0663

Source: Author's Computation.2022

Stability Diagnosis used the CUSUM test as in Figure 4 below. The plot for the model test with the blue line falling between and within the five percent critical bound lines, indicates that the model parameters do not suffer from any structural instability throughout study.

Figure 4: CUSUM test
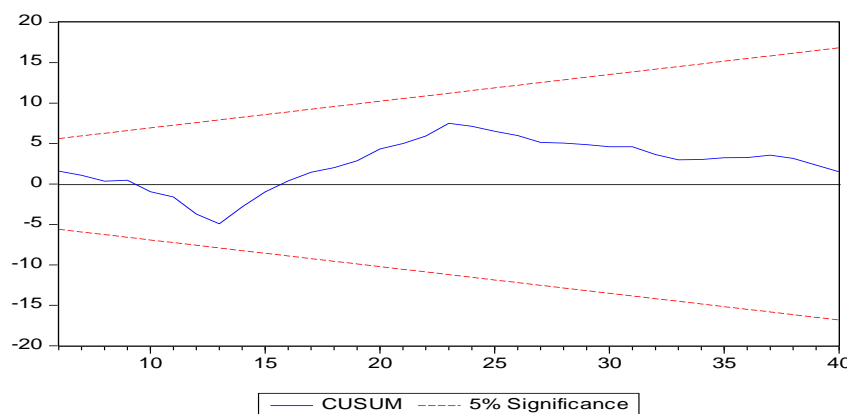
Source: Author's Computation.2022

Conclusion and Policy Recommendations

The study examined the impact of fiscal policy variables Government Revenue, Public Capital Expenditure, Gross Fixed Capital Formation, and Deficit Finance on Nigeria's Building and Construction sector of the economy for the period spanning 1980 to 2019 using appropriate Co-integration Test method and analysis. Specifically, the study investigated the relationship and casualty between budgetary deficit financing and public capital expenditure on BCS contribution to GDP in Nigeria. Based on the findings in this study, a long-run relationship between deficit financing and public capital expenditure on BCS was established but not significant using ARDL Bound test method. In the short run, the ECM showed that all other variables particularly deficit financing and public capital expenditure expressed a positive correlation with BCS but not with significant influence except Government Revenue. Similarly, the Pairwise Granger causality test confirmed that deficit financing and public capital expenditure have no casualty effect on the Building and Construction sector of the economy in Nigeria and vice visa.

The study concluded, therefore, induces appropriate policy recommendations as follows;

1.   There is a need for increased public and private capital investment in infrastructure development in the overall interest of the economy to boost the Building and Construction sector and attract the avalanche of its benefits such as employment generation.
2.   Public debt stock earned through both foreign and local loans to finance the annual budget strategies should be properly channeled to intended infrastructure development to enhance gross fixed capital stock that will strengthen the domestic economy for sector-cross growth.
3.   Government should improve on revenue generation strategies like enhanced taxation and blockage of revenue leakage windows to have sufficient income for infrastructure development and ultimate
ly economic growth and development in Nigeria.

Reference

Adefeso H.A and Mobolaji H.I (2010) "The Fiscal-Monetary Policy and Economic Growth in

      Nigeria", Further Empirical Evidence. *Pakistan Journal of Social Sciences.* 7(2) 137-142.

Agu S.U, Okwo I.M, Ugwunta O.D., and Idike A.(2015). Fiscal Policy and Economic Growth in

      Nigeria: Emphasis on Various Components of Public Expenditure.

 https://journals.sagepub.com/doi/full/10.1177/2158244015610171.Accessed 16/02/2020

Ajanlekoko O. (2015) Construction Industry and the Nigerian Economy. 9th Annual

Distinguished lecture Series. Nigerian Institute of Quantity Surveyors (NIQS) Lagos State Chapter . October.

Alufohai A. (2012). Goodwill Message at the Annual Distinguished Lecture Series,' 'Total

Deregulation of the Downstream Petroleum Subsector: Aftermath and Effects on the Real Sector of the Economy' of the Nigerian Institute of Quantity Surveyors, Lagos Chapter.

 Anaman, K.A. and Osei-Amponsah, C. (2007). Analysis of the causality links between the

growth of the construction industry and the growth of the macroeconomy in Ghana. *Construction Management and Economics*, 25(9),951–961.

Anjiba L. D. and Adu E.T. (2017). The Impact and Contribution Of Construction Industry To

The Economic Development Of The Nation. A Paper Presented at the 27th Biennial Conference of The Nigerian Institute Of Quantity Surveyors held at NAF Conference Center and Studios, Abuja. Pp.1-15

Anyanwu, J.C (2012). "Why Does Foreign Direct Investment Go where it Goes: New Evidence

 from African countries". *Annals of Economics and Finance.* 13(2) 433-470.

Ayeni, O. D., & Afolabi, O. J. (2020). *Tax Revenue , Infrastructural Development and*

Economic Growth in Nigeria . https://mpra.ub.uni-muenchen.de/99464/

MPRA Paper No. 99464,

Babatunde S. A.(2018). Government spending on infrastructure and economic growth   in Nigeria. *Economic Research-Ekonomska ist Raživanja.* 31(1)997–1014

Blinder, A. S. (2008). "Keynesian economics". Concise encyclopaedia of economics. Retrieved

      from   http://www.econlib.org/library/Enc/KeynesianEconomics.html 21/05/2019

BudgIT(2015). A Review Of Proposed 2015 Budget. www.yourbudgit.com/data accessed

      13/8/2018

BudgIT(2018). Reviewing Nigeria's Debt Status. www.yourbudgit.com/data accessed

      3/10/2019

Calderon C. and Serven L., (2010). "Infrastructure in Latin America," World Bank Policy

      Research Working Paper No. 5317. The World Bank.

Central Bank of Nigeria (CBN) (2015). Annual Reports 2015. Pp. 1-272.

Central Bank of Nigeria(CBN)(2017) Annual Report—2017.PP1-324

 Chan C, D Forwood, H Roper and C Sayers (2009). 'Public Infrastructure Financing: An

      International Perspective', Productivity Commission Staff Working Paper, March.

Chinzana, Zivanemoyo, Kedir, Abbi, and Diderot Sandjong.(2015). Growth and development

finance required for achieving Sustainable Development Goals in Africa. Paper presented at the African Economic Conference, Kinshasa, 2–4 November.

Cornelius, M. O., Ogar, A., & Oka, F. A. (2016). The impact of tax revenue on economic

growth: Evidence from Nigeria. *IOSR Journal of Economics and Finance*, 7(1), pp. 32-38

Debt Management Office (DMO,)(2002). Annual Report on National Debt Status.

Debt Management Office (DMO,)(2014). Annual Report on National Debt Status

Debt Management Office (DMO,)(2018). https://www.dmo.gov.ng/debt-profile/total-public-

    debt/2529-nigeria-s-public-debt-stockas-at-june-30-2018/file.

Debt Management Office (DMO,)(2022). https://www.dmo.gov.ng/debt-profile/updated-total-public-

    debt/2829-nigeria-s-public-debt-stock. Retrieved 20/06/2022

Deloitte (2014). Fiscal challenges in the construction sector in Nigeria: Is any relief in sight?

  https://www2.deloitte.com/ng/en/pages/tax/articles/inside-tax-articles/fiscal-challenges-in-the-construction-sector-in-nigeria.html# Accessed 2/03/2020**Industries**

 Federal Government Of Nigeria (2017). Economic Recovering and Growth Plan (ERGP),

    Federal Ministry of Finance, Bugdet and Economic Planning. Pp.1-45

Edame, G.E., Udude C.C. and Ugwu, U. D.(2014). An Analysis of Public Expenditure Growth

on Infrastructure in Nigeria. *International Journal of Humanities Social Sciences and Education (IJHSSE)*.1(12) 18-36

Etale L. M (2019). Reassessing the Link between Fiscal Policy and Economic Growth In

    Nigeria. *International Journal of Developing and Emerging Economies*.7 (3)1-13

Fasoranti, M. (2016). The Effect of Government Expenditure on Infrastructure on the Growth of the Nigerian Economy, 1977-2009, *International Journal of Economics and*

    Financial. 2(4), 513-518

Festus G.E and Saibu M.O. (2019). Effect of External Debt on the Nigerian Economy: Further

Evidences. MPRA Paper No. 92704, https://mpra.ub.uni-muenchen.de/92704 . Accessed 2/3/2020

International Monetary Fund (IMF) (2019).

https://www.imf.org/en/Publications/CR/Issues/2019/04/01/Nigeria-2019-Article-IVConsultation-Press-Release-Staff-Report-and-Statement-by-the-46726. Accessed 20/02/2020

Iyortyer M. (2017). Alternative Infrastructure Financing - Innovative Investment Solutions

.Paper delievered at the A Two-Day Specialized Workshop on "Finance and Development of Capital Projects – Emerging Solutions" organized by the Nigeria Institute of Quantity Surveyor, at Westown Hotel, 1 Ayeni 1010 Close, Sheraton Link Road, Opebu, Ikeja, Lagos, Nigeria between Wed 5th - Thurs 6th of July

Johnson C, Adelekan I, Bosher L, Jabeen H, Kataria S, and Marome A.W. (2013). Private sector

investment decisions in building and construction: Increasing, managing and transferring risks. A background paper produced by development planning unit (DPU). University College London, for the United Nations National Strategy on Disaster Risk Reduction (UNISDR), Global Assessment Report for Disaster Risk Reduction (GAR13).

Kabiru S. A. (2016). Socio-Economic Infrastructure and National Development: An Analytical

Assessment from Nigerian Perspective. IOSR Journal of Humanities And

 Social Science (IOSR-JHSS) . 21(10)36-42

Iheanacho E (2016) The Contribution of Government Expenditure on Economic Growth of

Nigeria Disaggregated Approach. International Journal of Economics & Management Sciences. 5(5)1-8 doi: 10.4172/2162-6359.1000369

National Bureau of Statistics (NBS)(2014). Selected tables from job creation and employment

generation survey, 4th quarter 2014; 2015b. Available: www.nigeranstat.gov.ng (Assessed 19/12/ 2018)

National Bureau of Statistics (NBS)(2021). *Annual Statistical Bulletins*.

Nigerian Institute of Building (NIOB) (2018), Why Construction Industry Performed Poorly in

2018. https://www.vanguardngr.com/2019/01/ accessed 16/02/2020

Ogujiuba, K. K. and Ehigiamusoe, K. (2013). Capital budget Implementation in Nigeria:

 Evidence from the 2012 Capital Budget, *Contemporary Economics,* 8(3) 299-314.

 Ojo,A.E. and Awodele O.A (2013). Relationship between Domestic Debt, Macro-Economic

Indices and Viability of the Construction Sector in Nigeria. *International Journal of Economics, Finance and Management Sciences.* 1(6) 266-272.

Ojo A.E. (2017). The Downstream Oil Subsector: Challenges and Implications for National

Infrastructure and Economic Development in Nigeria being a Paper delivered at the 7th

Building and Construction Round Table, Organized by,Quantity Surveyors'registration

Board Of Nigeria at Reiz Hotel, Abuja, Nigeria, held btween 20th and 21sth July.

Ojo A.E. (2019). Public Infrastructural Spending and Welfare Improvement In Nigeria. A thesis

Submitted to the Department of Economics, College of Social and Management Sciences, Joseph Ayo Babalola University, in Partial fulfilment of the Award of Bachelor of Science in Economics. Pp 1-95

Ojo A.E. and Gbadebo A. M. (2014). Nigeria's Domestic Debt Stock: An Overview and

Implications for the Construction Sector of the Economy. *International Journal of Technology, Engineering and Management.* 3(4)1-11.

Ojo A. E. (2021): Sustainable infrastructure for Nigeria's sustainable economic development: Whither

transportation or electric power supply *Journal of Mega Infrastructure & Sustainable Development*, 1-15

Oladinrin, T. O., Ogunsemi, D. R. and Aje, I. O (2012). Role of Construction Sector in

Economic Growth: Empirical Evidence from Nigeria. *FUTY Journal of the Environment.* July. 7(1) 50-60.

Olaoye, F.O (2016). Empirical Analysis of the Nexus between Budget Implementation and

Economic Development in Nigeria. *Journal of Accounting and Auditing.* 16(2)9-24

Oladipo, F.O. And Oni, O. J.(2012). A Review of Selected Macroeconomic Factors Impacting

Building Material Prices In Developing Countries A Case Of Nigeria. *Ethiopian Journal Of Environmental Studies And Management.* 5(2)21-34

Olaseni, M. and Alade, W (2012). Vision 20:2020 and the challenges of infrastructural

development. *Journal of Sustainable development*. 5, (2), 63-66.

Oke A.(2011). Effect of Fiscal Policy on Nigerian Construction Sector. *Journal of Surveying,   Construction and Property.* 2(1)1-11

Omolade A. and Harold N. (2014) Monetary policy transmission mechanism and growth of the

manufacturing sectors in Nigeria. Paper presented at 3rd International Conference on Economics and Social Sciences. Durban University of Technology, Durban South Africa. June 21 to 22.

Onodugo V.A., Obi K. O., Anowor O. F., Nwonye N. G., Ofoegbu G. N.(2017). Does Public

Spending Affect Unemployment In An Emerging Market? *Journal of Risk governance and control: financial markets and institutions.*7(1)1, 45-59

Onuorah, A. C and Akujuobi, L.E (2012). Empirical Analysis of Public Expenditure and

Economic Growth in Nigeria. *Arabian Journal of Business and Management Review* (OMAN Chapter).1(1) 46-58

Oseni I. O. and Onakoya A. B. (2012). "Fiscal Policy Variables-Growth Effect: Hypothesis

    Testing". *American Journal of Business and Management.* 1(3). 100- 107.

Osinowo O.H. (2015). Effect of Fiscal Policy on Sectoral Output Growth in Nigeria. *Advances*

    in Economics and Business. 3(6) 195-203, DOI: 10.13189/aeb.2015.030601

Oyedele T.(2015).Economic And Fiscal Implications Of Nigeria's Rebased GDP.

    (www.pwc.com/nigeriataxblog). 15/6/2015.

PKF International Limited (PKFI)(2013). PKF Worldwide Tax Guide 2013. www.pkf.com.

    Accessed 23/10/2019

Peter N. M. and Simeon G. N. (2011). "Econometric Analysis of the Impact of Fiscal Policy

Variables on Nigeria's Economic Growth (1970 - 2009)". *International Journal of Economic Development Research and Investment*. 2(1)171-183

PricewaterhouseCoopers (2012). Top 50 Tax Issues. www.pwc.com accessed 15/6/2015.

 Saka N. (2 0 1 9). Assessment of the Impact of Foreign Direct Investment on the Nigeria

Construction Sector. *Journal of the Nigerian Institute of Quantity Surveyors*.65 (1and2) 43-57.

Sanusi O. J. (2003). Management Of Nigeria's Domestic Debt .A Keynote Address Delivered at

the 7th Monetary Policy Forum organized by the Central Bank of Nigeria at the CBN Conference Hall, Abuja, 22 May

Sullivan, A. and Steven, M.S. (2003). Economic Principles in Action; Upper Saddle River. New

     Jersey: Pearson Prentice Hall. pp. 1-345

 Yahaya K.A. and Yusuf K. (2 0 1 9). Impact of Non-Oil Tax Revenue on Economic Growth

     in Nigeria. *J o u r n a l o f A c c o u n t i n g a n d M a n a g e m e n t.* 9 (2)56-69

Zhang, F. (2019). In the Dark: How Much Do Power Sector Distortions Cost South Asia? South

Asia Development Forum. Washington, DC: World Bank. doi:10.1596/978-1-4648-1154-8. License: Creative Commons Attribution CC BY 3.0 IGO