

## EXTERNAL CAPITAL FLOW AND PERFORMANCE OF THE EDUCATION AND HEALTH SECTOR IN NIGERIA, (1999 – 2015).

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### **Abstract**

*This study investigates the empirical relationship between External capital flow and performance of public education and health sector in Nigeria. The work covered a period of 1999-2015 using secondary data sourced from various publications of Central Bank of Nigeria Statistical Bulletin, and the Debt management office. A growth model via the Ordinary Least Square method was used to ascertain the relationship between External debt, foreign aid, and foreign direct investment and education and health sector expenditure in Nigeria. The study added total budgetary expenditure with a view to capture the effect of external capital flow on the growth of the public sector expenditure for the period under review. Granger causality test was also employed to determine the direction of causality between External capital inflow and public sector expenditure in Nigeria. The result of the OLS techniques indicates that only FDI has a positive and insignificant impact on the growth of public sector expenditure for the period under study. External debt has a negative and insignificant relationship while Foreign Aid also has negative and insignificant relationship on public sector expenditure performance. The study recommended that government should entrench accountability and create a community-government partnership in connection to receipt, utilization and expenditure of external capital flow so that benefits from such funds can accrued directly to the people who therefore protect projects finance by such funds..*

**Keywords:** External capital, performance, Health sector

### **1. Introduction**

Nigeria has depended solely on oil and gas resources as about 90 per cent of her foreign exchange earnings come from the sale of crude oil. Fluctuations in crude oil prices in the international market arising from the OPEC quota system for members' countries affect revenue accruing to the government's coffer. This created shortfall in revenue targets and a need for deficit budgeting. A country that formulate deficit budget must look elsewhere to raise additional revenue for budget implementation, hence, the need for external capital flow. Like many less developed countries, Nigeria has relied on external capital flows in the form of external debt, foreign aid and foreign direct investment. External debt acquisition for instance, has dire effect on the economy, when the country has inability to meet the payment of both principal and interest service. Bakare (2011) opined " the inability of the Nigerian economy to effectively meet its debt servicing requirements exposed the nation to a high debt service burden". The resultant effect of this debt crisis is that there are others additional problems for the country which can hinder implementation of vital policies needed to achieve economic development. Such huge debt servicing payment can affect the chunk of the

nation's hard earned revenue, and could deplete the foreign reserve. In the year 2005 when the Paris Club of creditors forgave 60% (US\$18 billion) of US\$30.85 billion debt owed by the country, the foreign reserve which stood at US\$ 47.7 billion in December 2009, declined significantly to US\$ 38.2 billion by November 2014 following increased again in the nation debt stock, Winifred (2014).

From a development viewpoint, external debt, foreign aid and foreign direct investment were originally conceived to aid the poor countries caught in a low-income equilibrium trap, and unable to generate adequate savings to promote capital formation necessary for economic development. It is in this context that the two-gap model of Chenery and Strout (1966), pointed that, "The external capital flow from the developed countries in the form of aid would provide the needed capital required for growth and the economic take-off for the less developed countries". The critical role of foreign capital to Sub-Saharan Africa (SSA) was put succinctly by United Nations Conference on Trade and Development (UNCTAD), in their article as "an increase in official flows of \$20 billion could trigger a virtuous circle of rising national savings and investment and faster growth in SSA". This position resulted in a commitment by donors and users of aids and other external inflow at the World Summit for Social Development (WSSD) in Copenhagen to agree to reduce the World population living in extreme poverty by the year 2015 by providing more opportunities for such. It must be noted that the World Bank indicated that African economy must grow at an annual rate of 7% if the needed economic growth was to be achieved. Given the regions low savings rates and limited immediate prospects of attracting domestic capital, the World Bank recommended that Developed countries must make efforts to raise their level of aid and other external flows to 0.7% of their GNP, (World Bank, 2000).

This ultimately implies that for Nigeria, more external funds are needed to implement the capital and recurrent components of the annual budget. However, at the advent of democratic government in 1999, the governments seek for external debt cancellation to improve on public sector performance and increase the stock of foreign revenue. This development shows that the argument that aid and other external inflows to Nigeria and indeed other developing countries considered to be on the decline, Lensink et al. (2001), is not but more complicated issues, of debt burden, interest service payment and public sector inefficiency could hinder the need for flow of more external capital.

Hence, after half a century of channelling resources to the Third World countries, there is still little development and the effect of a high degree of indebtedness, high unemployment and extreme poverty. There is the problem of Poor institutional development, corruption, inefficiencies and bureaucratic failures which is capable of hindering economic development in the developing (Furuoka, 2008). This resulted in inadequate budgetary provisions to key economic sectors like education and health. Low budgetary provisions creating instability in the education and health sectors with its attendant problems like decaying facilities, poor qualities in outputs of educational institutions, poor quality of healthcare, dearth of health professionals among others, (Hall & Jones 2005) as quoted in (Ayuba, 2014), this negatively affect the gross domestic products as well as standards of living. Presently, as the call for more aids and government acquisition of external debt intensify, the question then becomes why would government consider external borrowings as a major source of capital formation necessary for budgetary provision?, Does previous external capital inflow impacted positively on such sectors like education and health in the economy? And what structural issues can be considered as impeding development in the economy?

There are various empirical studies that have been carried out on external capital flow and economic development. The studies have linked external funds to economic growth and came

out with different assessments. Yaqub, Adam and Ayodele (2013) examined the influence of FDI on foster national output in Nigeria and uses ‘ ‘ the vector auto-regression (VAR) modelling to capture the structure of inter-associations among relevant variables. Their empirical result shows that FDI does not granger cause ‘ ‘ the fostered national output’’. Also, Izuchukwu and Huiping (2011) did a work on the influence of foreign investment on the Nigeria economy. The result of their findings indicated that ‘ ‘there is an optimistic association between GDP and public authority expenditure, foreign investment and the labour force between 1980 to 2009’ ’.

However, recent studies by Riddell (2012) on the effectiveness of external aid on the education sector in Nigeria. ‘ ‘ the findings indicated that aid have positive influence on such variable like school enrolments, but raised questions on other variables like the quality of education and facilities that produced such educational qualities. Most of the studies in this area have treated the impact of external capital flow on economic growth in Nigeria, without linking such inflow appropriately to sect oral allocation to determine productivity. This study is situated in public sector accounting and finance and therefore, is focused on the relationship between the external capital inflow and public sector expenditure from 1999-2015 in the twice sectors of education and health for objective analysis.

Therefore, some of the gaps that have driven this study include; Firstly, many researchers conducted previously in Nigeria on external capital flow and economic development uses only GDP and national outputs to measure economic growth. Yaqub, Adam and Ayodele (2013) examined the influence of FDI on foster national output in Nigeria and concluded that ‘ ‘FDI does not granger cause ‘ ‘ the fostered national output’ ’, and, Izuchukwu and Huiping (2011) did a work on the influence of foreign investment on the Nigeria economy. Their findings indicated that ‘ ‘there is an optimistic association between GDP and public authority expenditure’ ’. These studies uses different variable of external flow such as external debt, foreign aid and foreign direct investment only in relation to GDP, or national output, without examining their relationship to input and productivity which is seen from the public sector like in education and the health sector. The study bridge the gap in previous works by linking external fund to sector that generates the output, hence to determine efficiency in fiscal appropriation and utilization of public funds. Again, the dominance of the historical time series data used differs from previous studies as this study covers the period 1999 to 2015, a period of sixteen years during which Nigerian experienced democratic governance. In this, the researcher use time series relevant to democratic government in Nigeria, a period that accountability and prudence uses of public fund is emphasised. This study therefore, may likely be one of the most current on the subject in terms of time.

### **Aim and Objectives of Study**

The aim of the study is to investigate the relationship between external capital flows as sources of capital needed for economic development in Nigeria. Specifically, the study intends to:

- (1) Examine the relationship between external debt and performance of the education sector in Nigeria.
- (2) Evaluate the relationship between increase in foreign aids and the performance of education sector in Nigeria.
- (3) Determine the nature of the relationship between foreign direct investment and the performance of the education sector in Nigeria.
- (4) Examine the relationship between external debt and performance of the health sector in Nigeria.

- (5) Evaluate the relationship between increase in foreign aids and the performance of health sector in Nigeria.
- (6) Determine the nature of relationship between foreign direct investment and performance of the health sector in Nigeria.

## 2. Literature Review and Hypotheses Development

### External debt and public sector expenditure in Nigeria

According to Muhtar (2007), the external debt of Nigeria, are the debt that is acquired from foreign sources, such as foreign corporation, government or financial institutions. Agu (2009), said that securing external debt is inevitable for a government when the economy faces financial crisis. Nigeria like many developing countries have no doubt contracted different external debt. In the process, this has created debt crisis to the nation.

Four types of foreign debts have been identified. These include debt from trade arrears. A trade debt arises when a country trades with other countries and is unable to pay, either partly or wholly, for the goods and services supplied. For example, in the early 1980s Nigeria's inability to settle her import bills resulted in accumulation of trade arrears amounting to US\$9.8 billion between 1983 and 1988, Agu (2009). To (Muhtar, 2007), the second type of external debt is the Balance of Payments Support Loans which arise when the country trade with the rest of the world is in deficit. A country's overall trade with the outside world usually classified into current, financial and capital accounts, indicate an unfavorable or deficit position if what is exported is less than what is imported. A persistent unfavorable balance of payments may inform government's decision to seek for balance of payments support loans. The other types of external debt are the Project-tied Loans and the loans for Socio-Economic Needs.

While Nigeria have contracted external debt from many sources including the Paris Club of Creditors, London Club of Creditors, Multilateral Creditors such as World Bank and its affiliates – International Finance Corporation (IFC), and International Development Association (IDA), Bilateral and Private Sector Creditors such as Japan and others, the country persistent financial crisis have led to a debt crisis. Mimiko (1997) defined debt crisis as a situation whereby a nation is severely indebted to external sources and is unable to repay the principal of the debt. Such debt crises have prevented the country from achieving most economic objectives in the area of infrastructure development.

According to (Ayuba, 2014), Nigeria, facing huge debt burden and the absence of necessary finances which halted implementation of vital national programme of economic development and political modernization seek external loan from the International monetary fund IMF. The body recommended the implementation of the structural adjustment programme (SAP), as an economic measure to improve performance. Under the Babangida administration, this attempt created a lot of uncertainties and resistant between the populace and government. Hence, the loan was rejected and the country continued with the issue of poor infrastructural development and failure of many public utilities.

### Foreign aids and public sector expenditure in Nigeria

Foreign aid is used to describe all form of financial transactions made by or guaranteed by one public authority to another, Olagboyega (2015). The industrialized nation uses aid policy to strengthen their relationship globally. Three approaches to foreign aid have been identified, according to (Tresch, 1981). This includes conditional or unconditional, matching or non-matching and open or closed ended.

In Nigeria, significant proportions of the foreign aid are conditional and closed-ended. The conditional and closed- ended aid outlines specific services on which such funds can be



expended, although, other conditions could be included as well. The fully unconditional aid could even permit recipients to reduce taxes, especially if there was no plan to increase spending by the total amount of the aid. (Okpanachi, 2011).

According to the IMF which rated the Nigerian economy as the largest in Africa, and the twenty first in the World in the year 2016, have obtained different aids to facilitate economic development (Saidu, 2014). The country has obtained Foreign aids from foreign governments, agencies, multilateral and bi-lateral organizations, private consultants and academic institutions in specific areas. The nature and extent of the aids obtainable from these institutions vary depending on their social and international objectives (Edward, 1988). The aid could be financial, technical or both. For instance, from the UK Foreign Aid to Nigeria, the country obtained directly from DFID the sum £250million annual grant and in 2015 £140 million in aid to support Nigerian energy privatization and in 2013 £275million to support health, education and poverty reduction programs (Saidu, 2014). Also from the Chinese government between 2000 to 2015, there are more than 40 Chinese official development finance projects in Nigeria (Concessional Loan) of \$1 billion for Lagos-Kano rail (project almost completed) and \$984 million for the Zungeru hydroelectric power (project at 50% completion), was received (Saidu, 2014).

As Ebele and Omotayo (2015), opined the most troubling shortcoming of developing aid is it limited contribution to reduction of extreme poverty. Hence, for the education sector and health sector, how the flow of external funds have aided their development is the subject of this study, development aid when reviews on sectoral basic have pointed divided opinions. Some previous reviews shows that external flow in the form of aid have positive outcome in relation to performance in the health, education and agricultural credit, but Riddell (2012), noted that a deeper assessment of foreign aid in relation to quality of education raises some questions.

#### **Foreign Direct Investment and public sector expenditure in Nigeria**

The World Bank (1996) described foreign direct investment (FDI) as an investment made to acquire a lasting management interest (normally 10% of voting stock) in a firm or an enterprise operating in a country other than that of the investor. More so, Foreign Direct Investment (FDI) is often seen as an important catalyst for economic growth in the developing countries because it affects the economic growth by stimulating domestic investment, increase in capital formation and also, facilitating the technology transfer in recipient countries. (Falki, 2009). Foreign direct investment could come to the host country as a subsidiary of a foreign firm. It could also results from formation of a company in which a firm in the investing company has equity holding or the creation of fixed assets in the other country by the nationals of the investing country. According to Olopoenia (1985), the aim of an investor in FDI is to acquire a lasting interest and have an effective control in the management of the enterprise. Although the investor may not necessarily have a major shareholding, he will have an effective voice in the management of the enterprise. This gives the investor the ability to influence or participate in the affairs of the enterprise which is the subject of the Nigerian SAS 14.

It is this element of influence and control that differentiate FDI from other portfolio investment. Also, Obadan (2004) opined that foreign direct investment poses a lesser risk than external debt, as where an FDI investment proves unprofitable, the recipient country only shares in the same loss as the investor, and if the investment is successful, the country will share some of the good fortune with the foreign investor. That is why Olopoenia (1985), considered, FDI as ‘‘an additional factor of production’’ as it supplement the national savings

effort of the capital importing country. This has the ability to relax both the foreign exchange and savings constraint on the rate of growth of output in the recipient country.

Following the advantages of foreign direct investment, Umah (2007), observed that the Nigerian government in the mid-1990s introduced some radical and pragmatic reforms which were aimed to make the economy investment friendly and designed to increase the attractiveness of the economy's to foreign direct investment opportunities. Also, new legislations and controlling institutions for example, the Nigeria Investment Promotion Commission (NIPC) was established through Decree No 16 of 1995, to provides for a foreign investor to set up a business and have 100% ownership and also such business must be registered with the Corporate Affairs Commission (CAC) in accordance with the provisions of the Companies and Allied Matters Decree of 1990.

### Previous Studies

The empirical evidence on the relationship between external capital flow and public sector performance provides mixed findings across different countries as well as direction of causality. According to a study by Nkoro and Uko (2013) where they examined the nature of causality between foreign capital inflows and real economic growth in Nigeria and also, the effect of foreign capital inflows on GDP. The study shows that the result of the variance decomposition was in consonance with that of cointegration analysis of causality, which revealed that causality runs from foreign direct investment (FDI) and foreign aid to real GDP (growth). Also, the result of the error correction model indicated that there is a significant positive effect of FDI on real GDP. For Kolawole (2013) that investigate the impact of official development assistance (ODA) and foreign direct investment (FDI) on real GDP in Nigeria between 1980 and 2011. The author employed the Two-Gap model and other econometric techniques like Augmented Dickey Fuller (ADF) test, Pairwise Granger causality test, Johansen cointegration test and Error Correction Method (ECM). His findings indicated that there is no-causality between any pair of the variables. He further revealed a negative relationship between FDI and real growth as ODA has negative impact on real GDP in the Nigeria.

Fasanya and Onakoya (2012) studied the relationships existing between economic growth and the foreign capital factors of foreign direct investment (FDI), external debt and short term capital inflows. The results from their empirical analysis indicated that the categorization of foreign capital inflows into direct and foreign portfolio investment has significant relevance with regards to their effect on economic growth in Nigeria. They also revealed that external debt has the strongest impact on economic growth in Nigeria compared to the other foreign capital factors.

Similarly, Mutascu (2011) evaluated the relationship between economic growth and FDI for Asian countries using the Panel data approach. The study analysed data of 23 countries, covering the period 1986 - 2008. The study finding observed that foreign direct investment and exports stimulate the growth process.

Umoh, Jacod and Chuku, (2012) carried out an investigation into the relationship between foreign direct investment and economic growth in Nigeria between the period 1970 and 2008. Single and simultaneous equation systems were used to evaluate if any kind of feed-back relationship exist between FDI and economic growth. The study revealed that FDI and economic growth are jointly determined in Nigeria and there is positive feedback from FDI to growth and from growth to FDI, hence a bi-directional causality exists between the variables.

Furthermore, some studies have been conducted to determine the significant of external capital flow on economic growth. Roy and Berg (2006) in their study use the time-series approach to ascertain whether FDI promoted growth of the U.S. economy. The study using

evidence from the simultaneous-equation model indicated that there is bidirectional relationship between FDI and economic growth in U.S. The findings revealed that FDI have a positive and significant impact on U.S. economic growth. The simultaneous-equation model estimates pointed that FDI growth is income inelastic. Hence, the results indicates that a developed country such as the U.S. benefits from FDI and recommended that other countries economic policies should focus on key factors that would attract foreign direct investors.

Ebele and Omotayo (2014) carry out a study on the impact of external capital flow on economic growth in Nigeria. In their study, they examined the relationship between component of external capital flow such as foreign aid, private capital banking and foreign direct investment and gross domestic product and the direction of causality between them. They used data for the period (1986 – 2014) and employed co-integration, ordinary least square and variance decomposition to analyzed data. The study found a positive and significant relationship between Gross domestic product and all variables of external capital flow. The study recommended that monetary authorities should formulate policies that attract foreign capital inflow into Nigeria.

Okodua, (2009) in a related study examined the FDI-growth relationship in Nigeria using the Johansen co-integration framework and a multivariate VAR within a VEC model. The study revealed that a long-run equilibrium relationship exists between economic growth and FDI inflows, and that a unidirectional causality runs from FDI to economic growth.

Tajudeen and Ismail (2013) in their work on the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 using annual time series data. The study made use of the bounds testing (ARDL) approach to determine the long run and short run relationships between public expenditure and economic growth in Nigeria. The bounds test indicated that in the long run the variables of interest put in the framework are bound together. The associated equilibrium correction was also significant confirming the existence of long-run relationships. The findings of the study revealed that there is a negative impact of total public spending on growth which is consistent with other past studies. Recurrent expenditure was found to have little significant but positive impact on growth. The author concluded that government should increase its spending on infrastructure, social and economic activities.

In the work of Okoro (2013) on public sector expenditure and economic growth in Nigeria. Ordinary least square method of multiple regression analysis was used to estimate the model specified. The Real Gross Domestic Product (RGDP) was adopted for dependent variable while government capital expenditure (GCEXP) and government recurrent expenditure (GREXP) were chosen as independent variables. Through the application of Granger Causality test, Johansen Cointegration Test and Error Correction Mechanism, the study indicated that a long-run equilibrium relationship exists between government spending and economic growth in Nigeria. The study found that the short-run dynamics adjusts to the long-run equilibrium at the rate of 60% per annum.

Robinson et al (2014) studied the empirical relationship between government expenditure and economic growth. In their study, Government expenditure was measured by total expenditure, public debt expenditure, expenditure on health and expenditure on Education. The ordinary least square (OLS) was utilized to assess the short-run relationship between the variables, and the Augmented Dickey Fuller (ADF) test, was employed to determine the long-run relationship between variables in the equation. The result finding indicated that there is an inverse relationship between government expenditures on health and economic growth; while government expenditure on education sector was considered to be inadequate considering the demands of the sector.

Audu (2010) in a study to examine the macroeconomic effect of external remittances on the Nigerian economy. The study using basically secondary that spans through forty-one years (1970–2010) to assess the relative importance of both socio-political and economic determinants of external remittance into Nigeria using an Error Correction Mechanism. The results finding showed that altruism is important for remitting, as per capita income differentials, gross capital formation, official Nigerian migrant remittances and economic/political freedom are significant and positive, which implied that remittances are countercyclical in nature. The study evidenced that the relationship between per capita income and worker's remittances is not linear and positive at low income level but negative at higher income. The author shows that the development of the financial sector would encourage external remittance although this is not robust to the differential specification.

### **Hypotheses Development**

**Ho1:** There is no significant relationship between external debt and the performance of the education sector in Nigeria.

**Ho2:** There is no significant relationship between foreign aids and performance of the education sector in Nigeria.

**Ho3:** The nature of relationship between foreign direct investment and performance of the education sector in Nigeria is not significant.

**Ho4:** There is no significant relationship between external debt and the performance of the health sector in Nigeria.

**Ho5:** There is no significant relationship between foreign aids and performance of the health sector in Nigeria.

**Ho6:** The nature of relationship between foreign direct investment and performance of the health sector in Nigeria is not significant.

### **3. Research Design**

In this study, the survey research design is employed. For this purpose, both data for the dependent variable and the independent variable were observed over the period 1999 to 2015. The population of this study is the public sector of the federal government in Nigeria. Each ministry have different agency to which budget is allocated. However, emphasize is on the education and health ministries to which budget allocated are expended to have macro-economic effect on the economy.

Secondary data are used for this study. To achieve the objective of this study, secondary data were obtained from various sources, which include; annual reviews from various statistical websites and Central Bank of Nigeria statistical bulletin (various issues) and [indexmundi.com](http://indexmundi.com), and the Debt management office website. Also, Previous studies, (for instance, Adetula, 2010; Bakare and Olubokun, 2011) were adopted in getting past budgetary allocation in the aforesaid sectors. The period covered spans “ 1999 to 2015” a period of sixteen years and are presented in table 1 below:



**TABLE 3.1: Education Sector Budget Expenditures (EBE), Health Sector Budgetary Expenditures (HBE), External Debt Stock (EDS), Foreign Aids (FA), Foreign Direct Investment (FDR). 1999 - 2015.**

Year	External Debt \$'000.000	Foreign aids \$'000.000	Foreign Direct Invest N'Billion	Education Sector Exp N'Billion	Health Sector Exp N'Billion
1999	28,039	152	92,800	15,724	10,482
2000	28,274	174	116,00	20,325	13,550
2001	28,347	176	132,400	31,298	22,350
2002	30,992	298	225,200	53,229	52,440
2003	32,917	308	258,400	57,542	43,381
2004	35,945	577	248,200	41,620	35,674
2005	20,478	6,409	654,200	90,030	55,524
2006	3,545	11,428	624,500	166,006	96,321
2007	3,398	1,956	759,400	186,000	102,795
2008	3,720	1,290	971,500	210,045	121,276
2009	3,864	1,657	1,273,800	183,063	121,481
2010	4,534	2,062	905,700	249,086	161,840
2011	5,634	1,769	1,360,300	365,088	266,730
2012	6,527	1,916	1,113,500	400,150	282,770
2013	8,822	2,529	875,100	426,530	279,230
2014	9,711	3,143	738,200	369,600	261,700
2015	10,718	4,245	1,431,500	492,034	280,559

Source, Central bank statistical bulletin (various issues) the debt management office, previous work, and the National Bureau of Statistics (various issues) and Index Mundi (Online).

### Model Specification

Based on the literature and particularly following the works of Omodero and Okafor (2014), the model specification is

$$ESE = f(ED, FA, FDI) \quad \text{----- (1)}$$

$$HSE = f(ED, FA, FDI) \quad \text{----- (2)}$$

Where;

ESE = Education Sector Expenditure

HSE = Health Sector Expenditure

ED = External debt stock

FA = Foreign aid

FDI = Foreign Direct investment

### Mathematical Specification

This study used Public Education sector expenditure (ESE) and Public Health sector expenditure (PHE)) as the dependent variable while external debt stock (EDS). Foreign Aids (FA) and Foreign direct investment (FDI) (proxies of external capital flow) as explanatory variables.

The model is therefore modified and estimated in econometric form:

$$\text{LnESE} = \alpha + \text{LnED} \beta_1 + \text{LnFA} \beta_2 + \text{LnFDI} \beta_3 + \epsilon_t \text{-----} (3)$$

$$\text{LnHSE} = \alpha + \text{LnED} \beta_1 + \text{LnFA} \beta_2 + \text{LnFDI} \beta_3 + \epsilon_t \text{-----} (4)$$

Where;

LogESE = Log of Education Sector Expenditure

LogHSE= Log of Health Sector Expenditure

LogED = Log of External debt stock

LogFA= Log of Foreign aid

LogFDI= Log of Foreign Direct investment

$\alpha$  = The parameter which represents the intercept

$\beta_1, \beta_2, \beta_3$  = The regression parameters are to be used in determining the significance of the effect of each of the independent variables  $t_1, t_2$ , on the dependent variable  $Y$ ,  $\epsilon$  = Random disturbance term. These include the variables which (although not specified) in this model may also affect efficiency of external capital flow on public sector expenditure. They include transparency, government policies, corruption, fraud, etc. The implications of efficiency of external capital flow on public expenditure are to be measured in billions Naira.

### Operational Measures of Variables

**Education Budget Expenditure:** is the yearly budgetary allocation to the education sector in Nigeria. Usually, all amounts in the annual budget have been approved and can be expended under the capital and recurrent revenue head. The higher the budget, the more expenditure can be made in providing necessary infrastructure and facilities in the economy. Measured in Billions of Naira.

**Health Budget Expenditure:** This is the yearly budgetary allocation to the health sector in Nigeria. It include all allocation to the three level of health, tertiary, secondary and primary, utilized for the capital and recurrent expenditure head. The higher the budget, the more expenditure can be made in providing necessary infrastructure and facilities in the economy. Measured in Billions of Naira.

**External Debt:** These are all “ financial commitments, lent or borrowed from all international institutions and governments”. Debt is characterized by repayment of principal and interest. Measured in Billions of Naira.

**Foreign Aid:** is the “ financial measurement of money, food, and other resources given or lent by one country to another and attract no interest”. Measured in Billions of Naira.

**Foreign Direct Investment:** This is ‘ a controlling ownership in a business enterprise in one country like Nigeria by an entity based in another country’ Also measured in Billions of Naira.

### Data Technique and Analysis

Data analysis helps the researcher in getting useful information that will help to infer valid conclusions and make recommendations at the end of the study. To effectively analyze the data in this research work, various techniques will be used to capture the behavior of data and the relative statistics.

### Descriptive Statistics

Through the use of the statistical package for social sciences SPSS and the econometric view (Eview 8), the study will be able to analyze the mean median and standard deviation to determine the behavior of the data.

**Correlation Matrix:** The study will adopt multiple regression because the independent variables in this work is more than one, while the correlation coefficient (R) and correlation of determination (R<sup>2</sup>) will be used to estimate the parameter in the study. Also, the following correlation methods will be used:

### Durbin-Watson Statistic:

The D.W. test is used to test for the presence of positive or negative autocorrelation in a model, in line with a rule of thumb, if the Durbin Watson is less than 2, there is an evidence of positive auto or serial correlation. It is a simple guide used to specify the right combination of the explanatory variables.

**F-statistic:** It is meant to test the overall significance of the entire model as regards the dependent variable. It checks the coefficients slope inherent a regression to determine if it equates to zero. If the F-statistic is greater or higher than the critical level, this signifies the probability of the coefficients to be

**Decision rule 1:** If p-value (s) <  $\epsilon$  reject H<sub>0</sub>, If p-value (s) >  $\alpha$  ,

Do not reject H<sub>0</sub>.

**Decision rule 2:** Peruse ‘ a critical value (F\*) and link it to your test statistic. Critical value (F\*) are the F scores tabulated in correlated with the level of significance’ ( $\alpha$ ).

### Unit Root Test:

This is the pre Co-integration test. It is used to determine the order of integration of a variable that is how many times it has to be differenced or not to become stationary. It is to check for the presence of a unit root in the variable i.e whether the variable is stationary or not. The null hypothesis is that there is no unit root. This test is carried out using the Dickey Fuller (DF) technique of estimation. Based on the following regression equation

$$\Delta Y_t = \alpha + \beta t + \delta Y_{t-1} + \gamma_i \Delta Y_{t-i} + \varepsilon_t$$

### Hypothesis:

‘Ho:  $\rho = 0$  (there is unit root in the series).

‘H1:  $\rho < 0$  (the series are stationary).

**Decision rule:** Reject Ho if the test statistic is less than critical values, otherwise do not reject. (Haris and Scollis, 2004).

**Relative Statistics:** The following will be used to analyze the relationship between the data;

### Ordinary Least Square Method

#### Co-integration

This test is used to check if long run relationship exists among the variables in the model (Ogundipe and Alege, 2013). This will be carried out using the Johansen co-integration rank test.

#### Granger Causality

This is ‘a statistical and empirical hypotheses evaluation test for examination and forecasting the ability of one variable against another i.e how they support or promote each other’.

**Decision rule 1:** If p-value (s)  $< \alpha$  reject  $H_0$ , If p-value (s)  $> \alpha$ ,

Do not reject  $H_0$ .

## 4. Results and Discussions

### Descriptive Statistics

The descriptive information of the variables utilized within the scope of this statistical analysis is conveyed in table 4.1. Regarding the period of this dissertation stretching from 1999 to 2015, the table presents the minimum, maximum, mean and the standard deviation of variables employed in our statistical models.



### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
External debt	17	3398.00	35945.00	15615.5882	12333.84376
Foreign aids	17	152.00	11428.00	2358.1765	2864.88157
Foreign direct investment	17	11600.00	1431500.00	686841.1765	462139.6326
Education Sector Expenditure	17	15724.00	492034.00	197492.3529	160162.9183
Health Sector- Expenditure	17	10482.00	282770.00	129888.4118	104507.4921
Valid N (listwise)	17				

External debt has an average of \$15615.5882 billion with a maximum of \$35945.billion and a minimum of \$3398. Billion, in the other hands, Foreign aids has an aggregate average of \$2358.1765 billion with a maximum of \$11428 billion and a minimum of \$152.billion. The average Foreign direct investment was N686841.1765 billion with a maximum of N1431500.billion and a minimum of N11600.Billion.Education Sector Expenditure has an average of N197492.3529 billion with a maximum of N492034 and a minimum of N15724 billion. Finally, Health Sector- Expenditure has an average of N129888.4118 billion with a maximum of N282770 and a minimum of N10482.billion.

### UNIT ROOT TEST

**Table 4.2**

Null Hypothesis: D(ED) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.346806	0.1714
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Null Hypothesis: D(FD) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.853490	0.0122
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Null Hypothesis: D(FDI) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-4.775609	0.0022
Test critical values: 1% level	-3.959148	
5% level	-3.081002	
10% level	-2.681330	

Null Hypothesis: D(ESE) has a unit root

Exogenous: Constant

Lag Length: 2 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.518523	0.0254
Test critical values: 1% level	-4.057910	
5% level	-3.119910	
10% level	-2.701103	

Null Hypothesis: D(HSE) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=3)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.229596	0.0398
Test critical values: 1% level	-4.004425	
5% level	-3.098896	
10% level	-2.690439	

Table 4.2 indicates the result of Stationarity using Augmented Dickey Fuller (ADF) unit root test. The results describes that External Debt which is the criterion variable became stationary at the third difference with ADF t-statistic value of -2.346806 at a test critical value of -2.681330 at 10% level. Similarly, Foreign Debt and Foreign Direct Investment became stationary at the first difference with ADF t-statistic values of -4.775609, -4.775609 with test critical values of -3.959148, -3.959148 at 1% level respectively. However, the predictors- educational sector and health sector both became stationary at first difference with ADF t-statistic values of -3.518523; -3.229596 with test critical values of -4.057910; -4.004425 at 1% level respectively. The result provides empirical evidence of non-stationarity as all the variables in the study gained stationarity at first differencing, except external debt at third difference. That is, after first differencing, the means and variances of all the variables in the ADF test became constant over time (stationary).

## PAIRWISE GRANGER CAUSALITY TESTS

Pairwise Granger Causality Tests

Date: 02/25/18 Time: 14:11

Sample: 1999 2015

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
ESE does not Granger Cause ED	15	0.15691	0.8568
ED does not Granger Cause ESE		0.47950	0.6326
FD does not Granger Cause ED	15	0.07857	0.9250
ED does not Granger Cause FD		0.45751	0.6455
FDI does not Granger Cause ED	15	1.39853	0.2914
ED does not Granger Cause FDI		0.71564	0.5123
HSE does not Granger Cause ED	15	0.10626	0.9002
ED does not Granger Cause HSE		0.63328	0.5509
FD does not Granger Cause ESE	15	0.33684	0.7218
ESE does not Granger Cause FD		0.23232	0.7969
FDI does not Granger Cause ESE	15	0.64316	0.5461
ESE does not Granger Cause FDI		0.24692	0.7858
HSE does not Granger Cause ESE	15	0.86172	0.4516
ESE does not Granger Cause HSE		0.28491	0.7580
FDI does not Granger Cause FD	15	0.36110	0.7056
FD does not Granger Cause FDI		0.36396	0.7038
HSE does not Granger Cause FD	15	0.32388	0.7307
FD does not Granger Cause HSE		0.00838	0.9917
HSE does not Granger Cause FDI	15	0.02307	0.9772
FDI does not Granger Cause HSE		2.48072	0.1334

The results of Granger causality tests reveal that there was no case of bi-directional causality between any pair of the study variables. No uni-directional tendency which could have indicates short run relationship between the study variables in Nigeria. The result shows that each of the study variable does Granger cause each other

### Multiple Regressions

The study further moves to find the influence of the predictors on the criterion by carrying out a regression exercise as displayed below in table 4.3 which is a summary of the model estimate extracted from the SPSS statistic 20.0 outputs (see appendix 1-11).

**Table 4.3: Extract of the Model Estimates**

$$\text{LnESE} = \alpha + \text{LnED} \beta_1 + \text{LnFA} \beta_2 + \text{LnFDI} \beta_3 + \epsilon_t$$

Variables	R	R <sup>2</sup>	B	t	Sig. Durbin-Watson	
<b>ED</b>	.842 <sup>a</sup>	.709	-.058	-.202	.843	.656
<b>FA</b>				-.003	-.016	.988
<b>FDI</b>				.794	2.955	.011

$$\text{LnHSE} = \alpha + \text{LnED} \beta_1 + \text{LnFA} \beta_2 + \text{LnFAD} \beta_3 + \epsilon_t \text{----- (4)}$$

ED	.816 <sup>a</sup>	.667	-.053	-.171	.867	.648
FA			-.051	-.281	.783	
FDI			.786	2.734	.017	

### Test of Hypotheses

**Hypothesis one:** There is no significant relationship between external debt and the performance of the education sector in Nigeria

Table 4.3 shows the **Extract of the Model Estimates** with a correlation coefficient 'R' = .842<sup>a</sup> and R<sup>2</sup> = .709 coefficient of determination. Therefore, the predictors variables used in regression model have described 70.9% of the variations taking place in education and health sector in Nigeria, also, the Durbin Watson value of .656 indicates that there is no problem of autocorrelation among the predictor variables. The analysis indicates that external debt (beta = -.058 t = -.202 sig. = .843) negatively and insignificantly relate to the performance of the education sector. The null hypothesis was accepted, the study concluded that there is no significant relationship between external debt and the performance of the education sector in Nigeria

**Hypothesis two:** There is no significant relationship between foreign aids and performance of the education sector in Nigeria.

Table 4.3 shows the **Extract of the Model Estimates** with a correlation coefficient 'R' = .842<sup>a</sup> and R<sup>2</sup> = .709 coefficient of determination. Therefore, the predictors variables used in regression model have described 70.9% of the variations taking place in education and health sector in Nigeria, also, the Durbin Watson value of .656 indicates that there is no problem of autocorrelation among the predictor variables. The result revealed a negative (beta = -.003 t = -.016 sig. = .988) but insignificant foreign aids and performance of the education sector. This because the significant level of .988 is greater than 0.05%. the null hypothesis was accepted. The study concluded that there is no significant relationship between foreign aids and performance of the education sector in Nigeria.

**Hypothesis three:** The nature of relationship between foreign direct investment and performance of the education sector in Nigeria is not significant.

Table 4.3 shows the **Extract of the Model Estimates** with a correlation coefficient 'R' = .842<sup>a</sup> and R<sup>2</sup> = .709 coefficient of determination. Therefore, the predictors variables used in regression model have described 70.9% of the variations taking place in education and health sector in Nigeria, also, the Durbin Watson value of .656 indicates that there is no problem of autocorrelation among the predictor variables. Judging from the regression result foreign direct investment reveal a positive (beta = .794 t = 2.955 sig. = .011) and significant relationship with performance of the education sector. The null hypothesis was rejected; hence, the study concluded that the nature of relationship between foreign direct investment and performance of the education sector in Nigeria is significant.



**Hypothesis four:** There is no significant relationship between external debt and the performance of the health sector in Nigeria.

Table 4.3 shows the **Extract of the Model Estimates** with a correlation coefficient 'R' = .816<sup>a</sup> and  $R^2 = .667$  coefficient of determination. Therefore, the predictors variables used in regression model have described 66.7% of the variations taking place in education and health sector in Nigeria, also, the Durbin Watson valve of .648 indicates that there is no problem of autocorrelation among the predictor variables. The results shows that external debt (beta = -.053 t = -.171 sig. = .867) has negative and insignificant relationship with the performance of the health sector. The null hypothesis was rejected; the study concluded that there is no significant relationship between external debt and the performance of the health sector in Nigeria.

**Hypothesis five:** There is no significant relationship between foreign aids and performance of the health sector in Nigeria.

Table 4.3 shows the **Extract of the Model Estimates** with a correlation coefficient 'R' = .816<sup>a</sup> and  $R^2 = .667$  coefficient of determination. Therefore, the predictors variables used in regression model have described 66.7% of the variations taking place in education and health sector in Nigeria, also, the Durbin Watson valve of .648 indicates that there is no problem of autocorrelation among the predictor variables. The analysis result indicates an (beta = .051 t = -.281 sig. = .783) inverse and insignificant relationship between foreign aids and performance of the health sector. The null hypothesis was accepted. Hence, the study concluded that there is no significant relationship between foreign aids and performance of the health sector in Nigeria.

**Hypothesis Six:** The nature of relationship between foreign direct investment and performance of the health sector in Nigeria is not significant.

Table 4.3 shows the **Extract of the Model Estimates** with a correlation coefficient 'R' = .816<sup>a</sup> and  $R^2 = .667$  coefficient of determination. Therefore, the predictors variables used in regression model have described 66.7% of the variations taking place in education and health sector in Nigeria, also, the Durbin Watson valve of .648 indicates that there is no problem of autocorrelation among the predictor variables. The result gives a positive (beta = .786 t = 2.734 sig. = .017) and significant relationship between foreign direct investment and performance of the health sector. The null hypothesis was rejected, the study therefore, concluded that the nature of relationship between foreign direct investment and performance of the health sector in Nigeria is significant.

### Discussion of Findings

To show the relationship between the variables, the ordinary least square regression results reveal that External debt, foreign aid are negatively related to the dependent variable public education sector expenditure except foreign direct investment which is positive. This implies that as Public education sector expenditure increase, only foreign direct investment increase by 2.75 units. This increase though positive was not significant. Also, for expenditure in the health sector, the coefficients of parameter estimates reveal that external debt and foreign aid are negatively related to public health sector expenditure. However, only foreign direct investment exerted a positive contribution to the prediction of the dependent variable – public health sector expenditure

## Conclusion and Recommendation

The study concludes that there is no significant relationship between external debt and performance of the education sector, foreign aid and performance of the education sector, external debt and performance of the health sector, foreign aid and performance of the health sector, while there exist a significant relationship between foreign direct investment and performance of the education sector and foreign direct investment and performance of the health sector in Nigeria.

Following the findings that foreign direct investment is the only variable that impacted on expenditure in the education and health sector, this agrees with Roy and Berg (2006) and Umoh et al (2012). This may be due to the good management of fund under foreign direct investment as most of the establishment financed by foreign national in Nigeria are privately owned, hence not subject to poor public sector management of fund as the case is for external debt and foreign aids.

### Recommendations

Based on the findings of this study and the conclusion that follow, the following is recommended:

- Government should create a supervisory unit under such control agencies like EFCC, or ICPC responsible for monitoring the use of funds obtained from external debt and foreign aid in Nigeria.
- The legislature should formulate laws that bar all level of government in the country from obtaining external loan and foreign aid for recurrent expenditure. External loan and foreign aid should be project based.
- Performance measurement assessments should be carried out for all external loan and foreign aid, including the new ones to assess their contribution to the Nigeria economy. External funds whose terms are inimical to the country economic growth should be rejected or discontinued forthwith.

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**APPENDIX 1**

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.842 <sup>a</sup>	.709	.642	95881.87785	.656

a. Predictors: (Constant), Foreign direct investment, Foreign aids, External debt

b. Dependent Variable: Education Sector Expenditure

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2909212183 53.202	3	96973739451 .067	10.548	.001 <sup>b</sup>
	Residual	1195133484 88.680	13	9193334499. 129		
	Total	4104345668 41.882	16			

a. Dependent Variable: Education Sector Expenditure

b. Predictors: (Constant), Foreign direct investment, Foreign aids, External debt

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	20624.418	126971.426		.162	.873
	External debt	-.755	3.738	-.058	-.202	.843
	Foreign aids	-.151	9.481	-.003	-.016	.988
	Foreign direct investment	.275	.093	.794	2.955	.011

a. Dependent Variable: Education Sector Expenditure



➤ Appendix 11



**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.816 <sup>a</sup>	.667	.590	66949.49610	.648

a. Predictors: (Constant), Foreign direct investment, Foreign aids, External debt

b. Dependent Variable: Health Sector- Expenditure

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1164799992 75.008	3	38826666425 .003	8.662	.002 <sup>b</sup>
	Residual	5826905536 3.110	13	4482235027. 932		
	Total	1747490546 38.118	16			

a. Dependent Variable: Health Sector- Expenditure

b. Predictors: (Constant), Foreign direct investment, Foreign aids, External debt



**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19120.479	88657.765		.216	.833
	External debt	-.445	2.610	-.053	-.171	.867
	Foreign aids	-1.862	6.620	-.051	-.281	.783
	Foreign direct investment	.178	.065	.786	2.734	.017

a. Dependent Variable: Health Sector- Expenditure