

Interplay of Foreign Aid, External Debt and Economic Growth: The Nigeria Experience

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Abstract

This work studied the interplay of foreign aid, external debt and economic growth. Given the likely simultaneity between foreign aid, external debt and economic growth, we used the seemingly unrelated regression estimation (SURE) model to examine the interplay between these variables using Nigerian data. We found that foreign aid has positive impact on growth and that external debt has negative impact on economic growth in Nigeria. A novelty in this study is that there is evidence of complex interplay between the level of external debt and aid inflows. These findings, therefore, have some policy implications as discussed in the work.

Keywords: foreign aid, external debt, economic growth, interplay, Nigeria

1. Introduction

Official Development Assistance (ODA) commonly referred to as foreign aid or resource transfer is a channel in which grants, wealth and loans are transferred from developed to developing or poor countries at concessional financial terms.

The millennium declaration adopted in the year 2000, World Leaders stated, “we will spare no effort to free our fellow men, women and children from the abject and dehumanizing conditions of extreme poverty, to which more than a billion of them are currently subjected”. And they resolve “to grant more generous development assistance, especially to countries that are genuinely making effort to apply their resources to poverty reduction” (Phelan and Yoshino, 1995). As a result, the effort is to mobilize billions of dollars of aid to help countries, especially those with good policies and institutions.

External capital inflows could also be non-debt-creating flows (as in official transfers of grant in aids and direct investment flows), debt creating flows (as in official development finance), commercial bank loans and international bank offerings, or could also be a hybrid.

In the late 1970s and early 1980s, most developing countries of Africa (including Nigeria) experienced unprecedented and severe economic crisis. These crisis manifested in several ways such as persistent macroeconomic imbalances, widening savings – investment gap, high rates of domestic inflation, chronic balance of payment problems and huge budget deficit (Akpokodje, 1998).

When Nigeria gained independence in 1960, the entire world believed that the economy will usher in economic prosperity for her populace. The thinking was not misplaced since oil, the money spinning machine was discovered and exported and huge petro-dollar was earned in return. The agricultural sector was booming, cash crops such as cocoa, groundnut and palm oil and the mining industry such as coal and tin were produced in large quantity and foreign exchange was gained through diversification of resources. The then head of state (1966-1975), Yakubu Gowon said that Nigeria does not have cash problem but how to spend the money. Fiscal policy was introduced in form of ways and means through Udoji award and this led to rural-urban migration and influx in search of white collar jobs. Soon agriculture was abandoned for petro-dollar and the nation’s treasury became empty and recourse was made to foreign inflows.

In Nigeria, for example, Akpokodje (1998), maintained that domestic investment as a ratio of gross domestic product (GDP) declined from an average of 24.4% during 1973-1981 period to 13.5% during 1982-1996 period. The average investment rate during the 1982-1996 period implies that the country barely replaced its dwindling capital. In the same vein, private investment rate depreciated from 8.6% in 1973-1981 periods to 4.3% in

1982-1996. Due to the fact that investment determines the rate of accumulation of physical capital, it then becomes a vital factor in the growth of productive capacity of the nation and contributes to growth generally.

The question of whether aid helps poor countries grow in a sustained way is still mired in controversy. Foreign aid has always been treated as cheap monies and in the past, studies implicitly assumed that the economic impact of foreign loans is negligible (Phelan and Yoshino, 1995). Many studies have tried to access if aid reaches its main objective, that is growth and development in developing countries. But some argue that the question of aid effectiveness is still unsettled.

While aid carries softer terms that reduces the burden of a given debt; it may be obvious that the repayment regime will produce a larger debt out of a given flow of loans and give rise to higher interest charges. Many developing countries have over the years relied very much on the inflow of financial resources from outside in various forms, official and private capital flows as well as direct foreign investment, as a means of speeding up their economic development (Ekpo, 1997; Odozi, 1995; Olanuyi, 1988; Uremadu, 2006). But poor countries with enormous amounts of debt, known as “heavily-indebted countries” are strapped economically, and are less able to meet the basic needs of their people, particularly if the burdensome of repayment keeps money flowing out of the country rather than investing.

It is pertinent to understand the implications of external finance in developing countries and this paper concentrates on foreign aid, debt and its implications on economic growth.

2. Theoretical Issues and Literature Review

The model developed independently by R. Harrod and E. Domar in the 1940s which explained the relationship between growth and employment in the advanced capitalist countries, has been used extensively in developing countries as a simple way of looking at the relationship between growth and capital requirements. The assumption of the model is that the output of any economic unit, whether a firm, an industry or the whole economy, depends upon the amount of capital investment in that unit. Thus if we call output Y and capital stock K , then output can be related to capital stock by $Y = \frac{K}{k}$ where k is a constant, called the capital-output ratio. The basic Harrod-Domar relationship for an economy is $g = \frac{S}{K}$, where g is the view that capital created by investment in plant and equipment is the main determinant of growth and that it is savings by people and co-operation that make the investment possible (Malcolm, 1987).

Investment, as explored in Harrod-Domar model, plays a dual role of creating productive capacity as well as effective demand. When attention has been focused directly on problems of underdevelopment in post-war era, capital shortage has been singled out by economists as a major cause of underdevelopment.

The standard model used extensively to justify aid was the two gap model of Chenery and Strout (1966). This model identified two gaps, first is the gap between the amount of investment necessary to attain a certain rate of growth and the available domestic savings. In other words, a savings gap arises when the domestic savings rate is less than the investment required to achieve the targeted growth. While the second is between import required for a given level of production and foreign exchange earnings. That is, if net export earning fall short of foreign exchange requirement, a foreign exchange gap appears. At any point in time, one is binding and foreign aid fill the gap.

In another study, the traditional neoclassical model postulates that a reasonable level of external borrowing contributes positively to economic growth. It considers external debt as a substitute for domestic savings and investment and therefore domestic savings and investment are crowded out as a result (Krugman, 1988, Alasina, 2000, Maghyreh et al, 2002).

In related studies by Cohen and Sachs (1986) and Cohen (1992), present that endogenous growth models were the driving force for growth and capital accumulation. According to Cohen (1992), debt is positively related to economic growth. Although at higher level the requirements of debt servicing obligation complicate debt accumulation for capital formation and growth. Growth is therefore high at early stages as country borrows, but falls to a lower level. There is no crowding out investment at this level because lenders are more patience and value growth more than debtor countries themselves. These depend on whether the debtor countries are able to implement optimal rescheduling policies to avoid debt overhang. Rescheduling of debt had not solved the problem rather it postpones the doomsday.

Based on the neoclassical principles of marginal returns to capital, developing countries ought to generate higher returns on investment than advanced countries, creating the incentive for more capital inflows and hence for these group of countries to catch up with the advanced countries (Lucas, 1990). Even though the inflow of

capital leads to a build up in eternal debt, the resources generated by higher growth should be sufficient to service the debt. However, the logic of capital scarcity in neoclassical model seems to be different with the experience of poor low-income countries. Debt crisis in poor countries cropped up as a result of corruption, poor institution, uncertainty nature of macroeconomic environment, poor debt management strategies, political, social instability and high level of financial recklessness.

In Nigeria between the 1970s and early 1980s, monetary policies were difficult to achieve. The management of the country's debt was the responsibility of the Central Bank as a result, there were inefficiency which led to borrowing with reckless abandon at high interest rate. External debt as well could not promote growth because loans received were embezzled by corrupt leaders instead of its real purpose (infrastructure).

The theory of debt overhang follows that if debt will exceed the country's ability to pay with some probability, expected debt servicing is most likely to be increasing function of the output of the debtor's country. Accordingly, any returns from investment will act as foreign tax, reducing the incentive to save for future investment and promote capital flight (Serven and Salimano, 1993, Sachs, 1989, Patillo, 2002). The debt overhang theory implies that large debt stocks would lower growth through the channel of reduced investment according to Patillo et al (2002). It maintains that the current debt stock is capable of stimulating growth while past debt accumulation impacts negatively on growth. The indirect effect works through the channel of debt service repayment which reduces the amount of export earnings available for expenditures thereby impacting negatively on growth.

For the Nigerian economy, significant scholarly efforts have gone into the impact of aid and external debt. For instance Akande and Sodipe (2009), explored the relevance and application of the theoretical prescriptions of the two-gap model to the Nigerian economic growth from 1970-2007. A co-integration test confirmed that long run relationship exists between the variables, giving an indication that they have the tendency to reach equilibrium in the long run.

Eregha and Irughe (2009) examined the impact of foreign aid inflow on domestic savings in Nigeria. Necessitated by the fact that most studies examined the issue with either panel data analysis or cross-country analysis framework which do not really show specific country characteristics and more so, there is no time series analysis on the impact of foreign aid on domestic savings in Nigeria. The study revealed that both at the short run and steady state, foreign aid inflow to Nigeria has positive effect on domestic savings and total debt service repayment has negative impact on domestic savings.

3. Method

3.1 Theoretical Framework

That foreign aid is positively correlated with economic growth is situated in growth theory that emphasizes the role of improved technology, efficiency and productivity in promoting growth (Lim, 2001). The potential contribution of foreign aid to growth depends strictly on the circumstances in recipient countries. Certain host country conditions are necessary to facilitate the spillover effects. The effect of foreign aid on economic growth is analyzed in the standard growth accounting framework. To begin with, the capital stock is assumed to consist of two components: domestic and foreign owned capital stock. So,

$$K_t = K_{dt} + K_{ft}$$

We adopt an augmented Solow production function (Solow, 1956) that makes output a function of stocks of capital, labour, human capital and productivity (see Mankiw et al., 1992). However, we specify domestic and foreign owned capital stock separately in a Cobb–Douglas production function (Cobb and Douglas, 1928).

$$Y_t = A_t K_{dt}^\alpha K_{ft}^\lambda L_t^\beta H_t^\gamma \quad (1)$$

where Y is the flow of output, K_{dt} , K_{ft} represent the domestic and foreign owned capital stocks, respectively, L is the labour, H is the human skills capital stock, and A is the total factor productivity, which explains the output growth that is not accounted for by the growth in factors of production specified.

Taking logs and differentiating Equation (1) with respect to time, we obtain the familiar growth equation:

$$\dot{Y}_t = \alpha \dot{K}_{dt} + \lambda \dot{K}_{ft} + \beta \dot{L}_t + \gamma \dot{H}_t + \dot{A}_t \quad (2)$$

where lower case letters represent the growth rates of output, domestic capital stock, foreign capital stock, and labour and human capital, and α , λ , β and γ represent the elasticity of output, domestic capital stock, foreign capital stock, labour and human skill capital, respectively.

Following the established practice in the literature, K_d and K_f are proxied by domestic investment to GDP ratio (I_d) and foreign aid to GDP ratio (I_f), respectively in view of problems associated with measurement of capital stock. The use of rate of investment is hinged on the assumption of a steady state situation or a linearization around a steady state.

The final form of Equation 2 therefore is

$$\Psi_{it} = a_{it} + \alpha I_d + \lambda I_f + \gamma h_{it} + \varepsilon_{it} \quad (3)$$

where ε_{it} is an error term.

Equation 3 therefore is the basis for our empirical model estimation.

3.2 The Model

$$\text{LnODA} = \delta_0 + \delta_1 \text{FDI/GDP} + \delta_2 \text{INST} + \delta_3 \text{EXR} + \delta_4 \text{EDT} + \delta_5 \text{OPN} + \mu_{1t} \quad (4)$$

$$\text{LnEDT} = b_0 + b_1 \text{GDP} + b_2 \text{INF} + b_3 \text{GFCF} + b_4 \text{EXR} + b_5 \text{OPN} + \mu_{2t} \quad (5)$$

$$\text{LnGDP} = C_0 + C_1 \text{EDT} + C_2 \text{INF} + C_3 \text{INST} + C_4 \text{EXR} + C_5 \text{ODA} + \mu_{3t} \quad (6)$$

Where;

ODA = Official development assistant or foreign aid

FDI/GDP = Foreign private investment as a percentage of gross domestic product.

INF = Inflation rate

INST = Institutional quality (Proxy for regime shift in favour of democracy).

GFCF = Gross fixed capital formation (a proxy for investment)

EXR = Exchange rate

EDT = External debt

OPN = Openness to trade

μ = error term

Equation 4, 5 and 6 will be estimated using seemingly unrelated regression estimation model. The choice of the model is because it accounts for disturbance correlation between equations, summary of the goodness of fit and the estimation of coefficients of each equation.

3.3 Data Source

The data for the study will be obtained from the Central Bank of Nigeria (CBN) statistical bulletin (various issues), World Bank, World Development Indicators, and CBN annual reports for various years. All data series are annual and span through the period, 1970 – 2008.

4. Empirical Results and Discussions

Table 3.1 in the appendix presents the results of the seemingly unrelated regression estimation.

In the equation of foreign aid, the R^2 of 0.6716 is relatively high. This shows that about 67 per cent variation in ODA (foreign aid) is explained by the included regressors. The test of joint significance of all the regressors in the equation excluding the constant has a value of 77.73 with a probability value of zero. This shows that the regressors are jointly significant.

However, individually not all variables in the regression equation for the foreign aid have statistically significant impact at 5 per cent. Foreign direct investment as a percentage of gross domestic product variables (LnFDIGDP) has a positive and statistically significant coefficient at 5 per cent level. The result indicates that 1 per cent increase in FDIGDP (FDI as a % of GDP) lead to about 0.79 per cent increase in ODA (foreign aid). As the ratio increase, the larger is the ODA that the country receives. Invaluably, increase in the productivity of FDI in Nigeria leads to more aid allocation by donors.

The independent variable INST enters the regression negatively and highly insignificant at 5 per cent level. This variable was introduced to determine the average ODA inflow into the country in the two different regimes (Civilian and Military Regimes). Thus, INST is a dummy variable representing a political regime or the form of government which we have had in Nigeria over the years. We assigned the value of 0 for period of military rule and 1 for the period of civilian rule. We expected INST to assume a positive sign but it turned out negative. However, since the coefficient of the dummy variable is significantly equal to zero, then foreign aid flow to the country in the civilian regime is not statistically different from the flow in the military regime.

Similarly, the variable for exchange of the naira to a dollar (EXR) enters the regression highly insignificant. Clearly, it reveals that exchange rate has no significant association with foreign aid.

The coefficient of LnEDT is statistically significant at 5 per cent level. It shows that 1 per cent rise in external debt will lead to 0.27 per cent increase in ODA. An explanation could be that indebtedness attracts aid inflows targeted at achieving accelerated economic growth. This is to help countries that are suffering from capital deficiency like Nigeria.

Openness of the economy can be argued to be an important determinant of ODA, for example, a more rapidly growing economy provides greater development opportunities than a slowly growing economy. Similarly, countries with higher international trade are likely to grow faster than other. The coefficient of openness of the economy (LnOPEN) has the opposite sign of what is expected. The sign of the (LnOPEN) is worrisome as it suggests that an increase in the (LnOPEN) leads to a decrease in the ODA, which contrary to economic theory and conventional wisdom that ODA can be increased by the increase in (LnOPEN). However, this can be attributed to error from the data as other variables are well behaved. The coefficient is -0.22, implying that 1 per cent increase in trade would decrease ODA by 0.22% annually.

The equation of external debt has a very high R^2 of 0.9007. This shows that about 90 per cent variation in external debt (EDT) is explained by the included regressors. The test of joint significance of all the regressors in the equation excluding the constant has a value of 351.28 with a probability value of zero. This shows that the regressors are jointly significant.

The result shows that GDPGR is not significant at 5 per cent levels, and the estimate suggests a negative relationship between economic growth rate and external debt. This implies that country like Nigeria with a low GDP growth rate tends to demand less borrowing overseas. This result should not be a surprise because, in the CIA World Fact Book, 2010, the estimated debt-GDP ratio shows that developed countries tends to have higher debt-to-GDP ratios, compared to the less developed countries. This implies that economies with higher growth rate tend to borrow more than the economies with low growth rate. On the other hand, such a result may also be the outcome of a credit ceiling from the part of creditors. This may be, for example, because Nigeria with unsustainable export revenue does have less incentive to pay back its past debt and this may worsen its access to the borrowing market.

We note that our coefficient estimate of the effect of OPN on EDT is positive and significant at 5 per cent level. The estimate suggests that 1 per cent increase in openness of trade to Nigeria economy leads to about 0.78 per cent increase in her external debt. From the result, it implies that opening the Nigeria economy to international trade increases its tendency to borrow overseas.

We find evidence that inflation has a positive impact on external debt, but the degree of impact is minimal. The estimate is not significant at 5 per cent level, showing that it does not impact on the Nigeria external debt growth.

We find that coefficient on gross fixed capital formation (a proxy for investment) has the opposite sign of what is expected. Its negative sign actually implies that GFCF has a negative impact on the external debt of Nigeria. This result should be interpreted with caution because the savings gap reflects the inability of Nigeria to save sufficient amount of resources to finance the desired level of investment necessary for self-sustained growth. Overseas borrowing is meant to fill this gap. Unfortunately, in Nigeria there has been unproductive public investment and it increased foreign debt, which must be serviced. From this standpoint, it is possible to argue that the deficit in Nigeria is simply a development deficit that is inevitable if the country is to achieve long-run positive economic growth.

We also find that the coefficient of EXR (exchange rate of the naira to a dollar) is positive and significantly different from zero. Its significance is confirmed at 5 per cent level. This is a highly plausible result. The implication is that exchange rate has a significant positive impact on external debt. One important justification behind the overseas borrowing of Nigeria is that of the foreign exchange gap. Assuming there were no capital deficiency and no savings gap, the growth rate of Nigeria may still be hindered by foreign exchange gap. This seems to suggest that domestic saving is necessary but not a sufficient condition for raising investment in Nigeria to a desired level. This is again linked to the import structure of Nigeria where imports of capital goods are vital for the further expansion of the tradable sector. Moreover, export earnings (terms of trade are generally unfavorable to LDCs) are usually insufficient to generate enough foreign exchange to finance imports making overseas borrowing the indispensable means of gaining access to the technology that is vital for the expansion of the export sector that ultimately leads to rapid economic growth.

The equation of external debt has a low R^2 of 0.3117. This shows that only 31 per cent variation in EDT is explained by the included regressors. The test of joint significance of all the regressors in the equation excluding the constant has a value of 21.36 with a probability value of 0.0007. This shows that the regressors are jointly significant.

In the results of the estimation for economic growth in Nigeria, the coefficients of EDT is highly significant at 5 percent and depict an inverse relationship between external debt and the GDP growth rate in Nigeria. Estimates predict that an overall rise of 1 percent increase external debt to GDP will lead to 0.98 per cent fall in economic growth. This result is consistent with the debt overhang hypothesis which states that current stock of external debt will slow down the economic growth.

It is expected that foreign aid inflow would play an important role in the economic growth and external debt relationship. The need to borrow will be reduced and economic growth will be accelerated if foreign aid comes at substantial rates. The estimation results show that the coefficient of ODA is correctly signed (positive) but insignificantly different from zero. The result depicts the positive effect of foreign aid on the GDP growth during the period 1970-2008 in Nigeria and showing that the GDP growth rate increases as the foreign aid inflow increase. Foreign aid would be reversed, and the funds are invested in projects that generate higher rate of returns. This result appears to support some views expressed in the aid literature that foreign aid is effective at raising growth rates in low income countries. However, the insignificance of the ODA coefficient shows that the variable should not be included in the model. This may be because its overall impact on growth is so insignificant.

INF gives an indication of the extent of volatility in inflation over the period of our study and is expected to show the general macroeconomic instability in the country. We expect that this variable will be negatively related to growth. According to our regression result, the coefficient of INF is not significantly different from zero but it has the expected a priori sign (negative). The results show that inflation rate does not economic growth in Nigeria.

We find that INST is significant at 5 percent level. To interpret this, we obtain the semi-elasticity for the dummy regressor following Halvorsen and Palmquist. If we take the anti-log of the coefficient of the dummy which is -11.35043, we obtain 0.000011765. Then $100(0.000011765-1) = -99.9$. This implies that the median economic growth is about 100 per cent lower in civilian regime than the military regime.

The impact of real exchange rate on growth was found to be statistically significant at 5 per cent level and depicted a positive coefficient. We expect that the exchange rate is positively related to debt service. This is because the weaker a country's currency is, the less likely it is that foreign capital will be invested in that country. Nigeria with weak currency is associated with an exchange rate risk. This will in turn increase the need for foreign borrowing to finance investment projects. The increase in debt stock will result in increase in debt servicing which in turn affects economic growth.

The correlation matrix for the fitted residuals shows a positive correlation between errors in ODA and EDT, a negative correlation between errors in ODA and GDPR, and a positive correlation between errors in EDT and GDPR.

5. Policy Recommendations

The following recommendations are the implications of our findings and if applied would improve not only growth but economic development in Nigeria.

Government should create conducive environment for foreign investment to come in. Over the years the uncertainty nature of macroeconomic environment like boko haram bombing, hostage taking and arm robbery has been on the increase and if checked could attract foreign investment inflow and their loss will certainly have a severe impact on the ability of the country to meet their financial needs in the short to medium term.

Indiscriminate external borrowing with reckless abandon for investment that do not add to the productive capacity of the economy or for selfish interest should be discouraged. Because higher borrowing cost result in a permanent decline in country's gross domestic product.

Weak institutions, policy inconsistency and corruption are major political economy issues. Improvements in governance encourage investment and could be means to accelerate the process of external inflows and growth.

Diversification should be encouraged in the economy to attract foreign exchange earnings rather than over dependency on only one source of export of raw material (oil) to avoid the repeat of the unholy trinity "The Dutch disease syndrome".

Foreign aid should be used wisely to increase output by devoting the aid resources to real sector such as agriculture and industries for employment generation and poverty reduction.

6. Conclusion

The important conclusion from this study is that there are some evidence of positive impact of aid on growth rate of gross domestic product and negative effect of debt on growth. This is consistent with most of the findings in the literature. Foreign aid are critical to the smooth functioning of the economy, and the level of domestic intermediation depending on the economic, institutional, political, social and technological condition of the recipient country. Also, there is an inverse relationship between external debt and gross domestic product in Nigeria because large debt stocks lowers growth as a result of reduced investments through the channel of debt service repayment.

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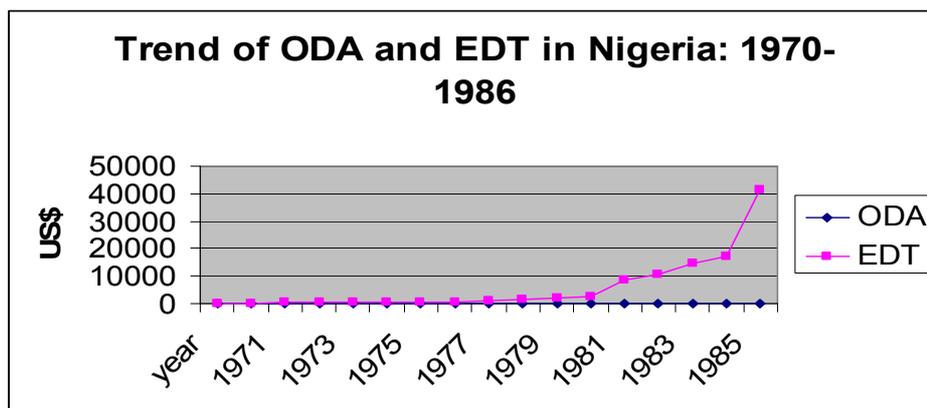
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Appendix 1. Models' Result

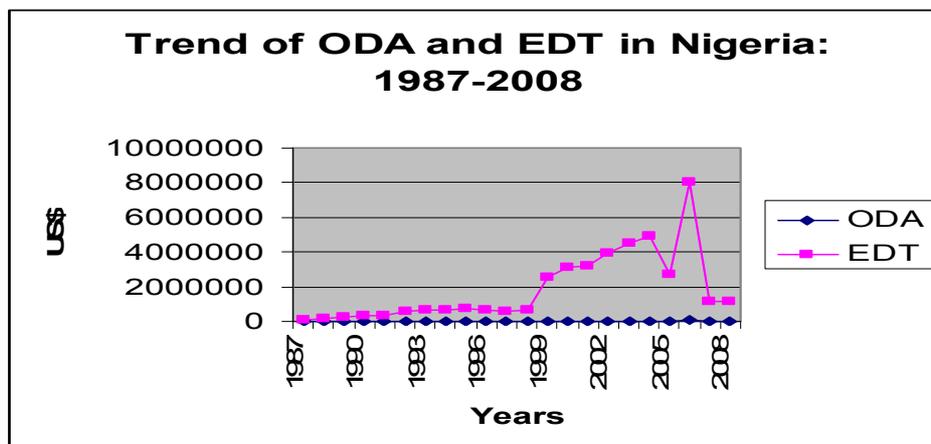
Variables	Foreign Aid		External Debt		Economic Growth	
	Coefficients	z-statistic	Coefficients	z-statistic	Coefficients	z-statistic
Lnfdigd	.7890998	3.87	-.0166503	-0.69	-.9781374	-2.09
Inst	-.1802002	-0.38	.015661	1.28	-.0312057	-0.45
Exr	.0061175	1.00	-2.051246	-3.78	-11.35043	-3.41
Lnedt	.2270901	2.17	.0271509	5.50	.1011836	2.30
Lnopen	-.2188272	-1.86	.7756545	8.47	1.753338	1.81
_cons	2.026634	2.02	5.914999	6.31	6.769645	1.31
	R ² =0.6716		R ² =0.9007		R ² =0.3117	

Appendix 2.



Source: Plotted by the Author.

Appendix 3.



Source: Plotted by the Author.

Appendix 4. Descriptive Statistics: Equation 1

	<i>LnODA</i>	<i>LnFDIGDP</i>	<i>INST</i>	<i>EXR</i>	<i>LnEDT</i>	<i>LnOPEN</i>
Mean	3264.545	3.875128	0.384615	36.43528	1047583.	30.05359
Median	152.0000	2.390000	0.000000	7.391600	240393.7	3.150000
Maximum	114340.0	29.50000	1.000000	145.7500	8073508.	180.7300
Minimum	26.80000	-0.810000	0.000000	0.546400	175.0000	0.020000
Std. Dev.	18282.59	6.003109	0.492864	52.35999	1785926.	54.12416
Skewness	5.973928	3.050525	0.474342	1.119771	2.207175	1.864131
Kurtosis	36.79841	11.85782	1.225000	2.437620	7.795881	4.950484
Jarque-Bera	2088.261	187.9862	6.582266	8.664208	69.04130	28.76952
Probability	0.000000	0.000000	0.037212	0.013140	0.000000	0.000001
Sum	127317.2	151.1300	15.00000	1420.976	40855720	1172.090
Sum Sq. Dev.	1.27E+10	1369.418	9.230769	104179.6	1.21E+14	111318.1

Source: Computed by author using Eview 4.1

Note: *Ln* stands for natural log

Appendix 5. Descriptive Statistics: Equation 2

	<i>EDT</i>	<i>GDPR</i>	<i>INF</i>	<i>GFCF</i>	<i>EXR</i>	<i>OPEN</i>
Mean	1047583.	3.938462	19.82564	0.233538	36.43528	30.05359
Median	240393.7	4.400000	13.80000	0.224000	7.391600	3.150000
Maximum	8073508.	22.10000	72.80000	0.860000	145.7500	180.7300
Minimum	175.0000	-26.80000	3.200000	0.096000	0.546400	0.020000
Std. Dev.	1785926.	7.665666	16.43619	0.116695	52.35999	54.12416
Skewness	2.207175	-1.173244	1.576075	4.048686	1.119771	1.864131
Kurtosis	7.795881	8.899651	4.817190	22.63043	2.437620	4.950484
Jarque-Bera	69.04130	65.50682	21.51213	732.7472	8.664208	28.76952
Probability	0.000000	0.000000	0.000021	0.000000	0.013140	0.000001
Sum	40855720	153.6000	773.2000	9.108000	1420.976	1172.090
Sum Sq. Dev.	1.21E+14	2232.972	10265.63	0.517478	104179.6	111318.1
Observations	39	39	39	39	39	39

Source: Computed by author using Eview 4.1

Note: *Ln* stands for natural log

Appendix 6. Descriptive Statistics: Equation 3

	<i>GDPR</i>	<i>EDT</i>	<i>INF</i>	<i>INST</i>	<i>EXR</i>	<i>ODA</i>
Mean	3.938462	1047583.	19.82564	0.384615	36.43528	3264.545
Median	4.400000	240393.7	13.80000	0.000000	7.391600	152.0000
Maximum	22.10000	8073508.	72.80000	1.000000	145.7500	114340.0
Minimum	-26.80000	175.0000	3.200000	0.000000	0.546400	26.80000
Std. Dev.	7.665666	1785926.	16.43619	0.492864	52.35999	18282.59
Skewness	-1.173244	2.207175	1.576075	0.474342	1.119771	5.973928
Kurtosis	8.899651	7.795881	4.817190	1.225000	2.437620	36.79841
Jarque-Bera	65.50682	69.04130	21.51213	6.582266	8.664208	2088.261
Probability	0.000000	0.000000	0.000021	0.037212	0.013140	0.000000
Sum	153.6000	40855720	773.2000	15.00000	1420.976	127317.2
Sum Sq. Dev.	2232.972	1.21E+14	10265.63	9.230769	104179.6	1.27E+10
Observations	39	39	39	39	39	39

Source: Computed by author using Eview 4.1

Note: *Ln* stands for natural log