

IMPACT OF EXTERNAL DEBT ON CONSTRUCTION INDUSTRY (A STUDY OF SOME CEMENT INDUSTRY IN NIGERIA)

BY

EZEUDU IKENNA JUDE
FELICIA ARIWA
EDEOGA IBEABUCHI ANI OGECHI

Abstract

This research work was aimed at ascertaining the impact of external debt on construction industry in Nigeria with emphasis on cement industry in Nigeria. Ex-post facto research design was adopted for the study. While data used for the analysis were collected from Central Bank of Nigeria Statistical Bulletin, 2013. The period of study was 1999-2015 and Ordinary Least Square was the tool of analysis. From the results of the data analysis, it was discovered that External Debt stock had a positive and significant impact on cement industry activities, while External Debt Service Payment had negative and significant impact on cement industry activities in Nigeria. The study recommended amongst others, that Debt Management Office should set mechanism in motion to ensure that loans were utilized for purposes for which they were acquired as well as set a ceiling for borrowing for states and federal governments based on well-defined criteria.

Key Words: External debt, Debt Management Office, Borrowing, Central bank of Nigeria

INTRODUCTION

Over the years, studies on the impact of external debt on economic growth, foreign direct investment and many other macroeconomic indicators of the well-being of a country have been carried out by scholars and researchers in different countries. However, sectors specific impacts of external debt have not been well researched into especially the impact of external debt on the cement industry. This study thus aims at bridging the knowledge gap in a way. It is imperative to say that the nature and structure of a country's public debt i.e. external debt or domestic debt affects individual citizens, institutions of government and privately owned organisations like manufacturing industries such as the cement industry though the direction of causality and impact needs to be verified.

According to Oyejide(1985) debt is generally defined as the resource or money in use by an organization or nation which is not contributed by the user and does not in any way belong to the country. External debt according to the World Bank refers to all unpaid portion of external financial resources which are needed for development purposes and balance of payment support which could not be repaid as at when due. It is also described as the gross amount at time of disbursed and outstanding contractual obligation to repay principal with or without interest.

Focusing on external debt and the cement industry is germane because expertly there is a causal relationship between the well being of a nation and sector within it specifically the cement industry. The cement industry plays a vital role in the development of any country. In Nigeria, cement is used principally in construction of resident and public building, bridges, roads and drainages. It is also used for the rehabilitation of infrastructure as well as in sculpting by artists. Over the years, the Nigerian cement industry has witnessed rapid growth and changes, which is attributed to improvement in economic activities and population growth. In 2006, the total demand for cement, estimated approximately 10million metric tonnes, represents a 13% growth over previous year.

The two major categories of cement providers in Nigeria are local manufacturers and importers. The local manufacturers include; Ashaka cement Plc. West African Portland Cement Plc., Cement Company of Northern Nigeria Plc., Benue cement company Plc. Obajana Cement Company, while key

importers include flour mills Nigeria Plc., Eastern Bulkcem Company, Dangote group, Bonny Allied Cement and Atlas Cement Company. The local manufacturers are faced with many challenges which have adversely affected production in the country. These challenges include high cost of production (particularly energy cost), poor infrastructural facilities, obsolete technology, high distribution costs and government policy.

The recent pronouncement by the federal government on the ban of importation has led to huge capital investments by existing manufactures importers. In 2007, Dangote group commissioned its Obajana cement plant in Kogi state, while Eastern Bulkcem company and flour mills Nigeria Plc. acquired the old Nigercem and Calabar cement plant respectively.

The key success factors in this industry include leverage over customers, nearness to limestone deposits, regular power supply, efficient management, ability to source funds at competitive rates, access to technical support and modern and efficient manufacturing plants. This study carried out using Nigeria as an example is quite apt and instructive going by the fact that for a long time prior to the debt relief granted Nigeria in year 2005, the country was under intense foreign debt crisis that stifled growth and development and no segment of the society was spared. Nigeria being a developing country, It is expected that the issues highlighted analysed and discussed in this study will enable other countries especially those in sub-Sahara Africa take a second look at their exposure to external debt and what impacts such will have on their economies and especially the cement industry.

Review of Related Literature

The motive behind external debt is to boost economic growth and development of any nation but as a result of future high debt service payments, it poses a serious threat to the economy of that nation. Economic researchers have therefore sought out to investigate the implication of external debt burden on the economies of debtor nations and have come up with diverse views.

Suleiman and Azeez(2012) carried out a study on the effect of external debt on the economic growth of Nigeria. Annual time series data covering the period from 1970-2010 was used. The empirical analysis was carried out using econometric techniques of Ordinary least squares (OLS), Augmented Dickey-Fuller unit root test, Johansen Co-integration test and error correction method. The co-integration test shows long-run relationship amongst the variables and findings from the error correction model revealed that external debt has contribute positively to the growth of the Nigerian economy. In addition the study recommends that the Nigerian should ensure political and economic stability so as to ensure effective debt management. An empirical investigation conducted by Audu(2004) examines the impact of external debt on the economic growth and public investment of Nigeria. The study carried out its analysis using time series data covering the period from 1970-2002. The Johansen Co-integration test and Vector Error correction method econometric techniques of estimation were employed in the study. The study concluded that Nigeria's debt service burden has had a significant adverse effect on the growth process and also negatively affected public investment.

In another study, Ogunmuyiwa (2011) examined whether external debt promotes economic growth in Nigeria using time-series data from 1970-2007. The regression equation was estimated using econometric techniques such as Augmented Dickey-Fullertest, Granger causality test, Johansen co-integration test and Vector Error Correction Method (VECM). The results revealed that causality does not exist between external debt and economic growth in Nigeria. Ayadi and Ayadi (2008) examined the impact of the huge external debt, with its servicing requirements on economic growth of the Nigerian and South African economies. The Neoclassical growth model which incorporates external debt, debt indicators, and some macroeconomic variables was employed and analysed using both Ordinary Least Square (OLS) and Generalized Least Square (GLS) techniques of estimation. Their findings revealed that debt and its servicing requirement has a negative impact on the economic growth of Nigeria and South Africa. Faraji and Makame (2013) investigated the impact of external debt on the

economic growth of Tanzania using time series data on external debt and economic performance covering the period 1990-2010.

It was observed through the Johansen co-integration test that no long-run relationship between external debt and GDP. However the findings show that external debt and debt service both have significant impact on GDP growth with the total external debt stock having a positive effect of about 0.36939 and debt service payment having a negative effect of about 28.517. The study also identified the need for further research on the impact of external debt on foreign direct investments (FDIs) and domestic revenues. Safdari and Mehrizi(2011) analysed external debt and economic growth in Iran by observing the balance and long term relation of five variables (GDP, private investment, public investment, external debt and imports). Time series data covering the period 1974-2007 was used and the vector autoregressive model (VAR) technique of estimation was employed. Their findings revealed that external that has a negative effect on GDP and private investment and public investment has a positive relationship with private investment.

Ejigayehu (2013) also analysed the effect of external debt on the economic growth of eight selected heavily indebted African countries (Benin, Ethiopia, Mali, Madagascar, Mozambique, Senegal, Tanzania and Uganda) through the debt overhang and debt crowding out effect with ratio of external debt to gross national income as a proxy for debt overhang and debt service export ratio as a proxy for debt crowding out. Panel data covering the period 1991-2010 was used. The empirical investigation was carried out on a cross-sectional regression model with tests for stationarity using Augmented Dickey Fuller tests, heteroscedasticity and ordinary regression. The concluding result from estimation showed that external debt affects economic growth through debt crowding out rather than debt overhang. In their study on external debt relief and economic growth in Nigeria. Ekperiware and Oladeji(2012) examined the structural break relationship between external debt and economic growth in Nigeria. The study employed the quarterly time series data of external debt, external debt service and real GDP from 1980-2009. An empirical investigation was conducted using the chow test technique of estimation to determine the structural break effect of external debt on economic growth in Nigeria as a result of the 2005 Paris Club debt relief. The result of their findings revealed that the 2005 external debt relief caused a structural break effect in the relationship between external debt and economic growth. Based on these findings they concluded that the external debt relief made available resources for growth-enhancing projects.

Clement, Bhattachanja, and Nguyen(2003), examined the channels through which external debts affect growth in low-income countries. Their results suggest that the substantial reduction in the stock of external debt project for Highly Indebted Poor Countries (HIPC) would directly increase per capita income growth by about 1 percent point per annum. They noted that reductions in external debt service could also provide an indirect boost to growth through their effects on public investment. They argued that if half of all debt-service relief were channeled for such purposes without increasing the budget deficit, then growth could accelerate in some HIPCs by an additional 0.5 percent point per annum. Borensztein (1990) found that debt overhang had an adverse effect on private investment in Philippines. The effect was strongest when private debt rather than total debt was used as a measure of the debt overhang. Elbadawi, Nudlu, Ndung (1996) also confirmed a debt overhang effect on economic growth using cross-section regression for 99 developing countries spanning SSA, Latin America, Asia and Middle East. They identified three direct channels in which indebtedness in Sub-Sahara Africa works against growth. The current debt inflows as a ratio of GDP (which should stimulate growth), past debt accumulation (capturing debt overhang) and debt service ratio. The fourth indirect channel works through the impacts of the above channels on public sector expenditure. They found that debt accumulation deters growth while debt stock spurs growth. Their result also shows that the debt burden had led to fiscal distress as manifested by severely compressed budgets.

Ajayi and Oke (2012) investigated the effect of debt burden on economic growth and development of Nigeria using regression analysis of OLS, which showed that external debt burden, had an adverse

effect on the nation's income and per capita income of the nation. They observed that the magnitude of the external debt outstanding mounted pressure on the economy since the eruption of the oil crisis in 1981 due to the rapid accumulation of trade arrears from 1982. The debt problem had been traced to the fall in the crude oil prices, collapse in commodity prices and the protracted softening of the world market since 1981, with the resultant decline in foreign exchange and pressure on the balance of payment.

Suleiman and Azeez (2012) examined the effect of external debt on the economic growth of Nigeria using econometrics techniques of Ordinary Least Square (OLS), Augmented Dickey-Fuller (ADF) Unit Root Test, Johansen Co-Integration Test and Error Correction Method (ECM) and found that external debt has contributed positively to the Nigerian economy. Oke and Suleiman (2012) also examined the impact of external debt on the level of economic growth and the volume of investment in Nigeria and found that the current external debt ratio to GDP stimulates growth in the short term, but the private investment which is measure of real and tangible development shows a decline. Based on the assertion that debt, whichever type or form, is a major problem militating against African development stride, Osuji and Ozurumba (2013) investigated the impact of external debt financing on economic growth in Nigeria with data covering 1969 to 2011. The VEC Model estimate shows that London debt financing possessed positive impact on economic growth while Paris debt, multilateral and promissory note were negatively related to economic growth in Nigeria.

Ezeabasili, Isu, and Mojekwu (2011) investigated the relationship between Nigeria's external debt and economic growth between 1975 and 2006 applying econometric analyses. The result of the error correction estimates revealed that external debt has negative relationship with economic growth in Nigeria. They stated that Nigeria must be concerned about absorptive capacity noting that consideration about low debt to GDP, low debt service (GDP capacity ratios should guide failure debt negotiations. Ojo (1996) affirms that it is no exaggeration to claim that Nigeria's huge external debt is one of the hard knots of the Structural Adjustment Programme introduced in 1986 to put the economy back on a sustainable path of recovery. The corollary of this statement is that if only the high level of this debt service payment could be reduced significantly, Nigeria would be in a position to finance larger volume of domestic investment, which would enhance growth and development. But, more often than not, a debtor has only a limited room to manage a debt crisis to advantage.

METHOD OF DATA ANALYSIS

The main aim of this study is to examine the impact of external debt on cement industry in Nigeria. The model is adapted from a simple Macroeconomic debt growth model employed by Boboye and Ojo (2012) the model is specified as:

$$RGDP = f(EDS, DSP, EXR) \text{ ----- (1)}$$

Where:

RGDP = Real Gross Domestic Product

EDS = External Debt Stock

DSP = Debt Service Payment

EXR = Official Exchange Rate

In line with Boboye and Ojo (2012) the model for this study shall be modified as:

$$CAITC = f(DSP, EDS) \text{ ----- (2)}$$

Transforming equation (2) into its linear econometric form, we obtain

$$CAITC_t = \beta_0 + \beta_1 DSP + \beta_2 EDS_t + e_t \text{ ----- (3)}$$

Where:

CAITC = Construction activities in the country

DSP = Debt Services Payment

EDS = External Debt Stock

β_0 = Constant (intercept) term

β_1 and β_2 = coefficient parameters of the explanatory variables

e = Stochastic error term

t = time series notation

Description of Variables

Dependent Variable

A construction activity in the country measures the total price index of construction, raw materials that go into the production process of cement.

In the study, CAITC was described as:

CAITC = Total construction activity in the country

Independent variables

Debt service payment:

Debt service payment are the sum of principal repayment and interest repayment actually made in the year specified (the World Bank 2013)

External debt stock

External debt stock is the portion of a country's debt that was borrowed from foreign lenders including commercial, governments or international financial institutions. These loans including interest must be paid in the currency in which the loan was made.

Techniques of Analysis

The study shall adopt the ordinary least square (OLS) techniques in order to determine the impact of debt service payment and external debt stock (measures of external debt) on construction activities in the country (proxy for cement industry).

The study shall thereafter make use of the inferential statistics such as T-statistic, F-statistic, R-squared statistic and Durbin- Watson in order to establish the effect of the independent variables on the dependent variable (GDP).

T-Statistic

The T-Statistic helps in establishing the impact of each of the independent variable of interest on the dependent variable. Where the probability value of an independent variable is less than the test significant level, we reject the null hypothesis and vice versa.

F-Statistic

The F-Statistic helps in determining whether the model formulated (specified) for a study is significant and reliable or not. Where the probability value of the F-Statistic exceeds the test significant level, we say that the model is not significant.

R-squared

This helps in determining the percentage changes in the dependent variable which is as a result of changes in the independent variable. The higher the R-squared, the higher the goodness of fit and thus the higher the explanatory power of the model.

Durbin –Watson statistic

This measures the degree of autocorrelation in a regression result. The closer the value of the Durbin–Watson is to 2, the more there is an indication of an absence of autocorrelation.

Presentation of Data, Analysis and Discussions

Presentation of Data

The dataset sourced from Central Bank of Nigeria Statistical Bulletin are presented in Table 4.1 below. The Table captures the dependent variable (Cement industry productivity) and the independent variables (Debt Service Payment and External Debt Stock).

Table 4.1: Nigerian Dataset on Cement Productivity, Debt Service Payment and External Debt Stock (1999 – 2015)

YEAR	Cement (CAITC) ₦'Billion	Industry Output	Debt Service Payment (DSP) ₦'Billion	External Debt Stock (EDS) ₦'Billion
1999	24.06		30.84	2,577.37
2000	25.61		131.05	3,097.38
2001	32.13		155.42	3,176.29
2002	35.27		163.81	3,932.88
2003	42.13		363.51	4,478.33
2004	54.47		382.50	4,890.27
2005	84.55		393.96	2,695.07
2006	117.27		249.33	451.46
2007	148.35		213.73	438.89
2008	170.69		381.20	523.25
2009	194.49		251.79	590.44
2010	221.09		415.66	689.84
2011	251.08		527.18	896.85
2012	300.68		679.30	1,026.90
2013	450.75		828.10	1,373.58
2014	604.61		941.70	1,631.52
2015	749.93		1,060.38	2,111.53

Source: Central Bank of Nigeria Statistical Bulletin 2015

Data Analysis and Discussion of Results

The dataset needed for the study were analysed using descriptive statistics and Ordinary Least Squares (OLS) multiple regression analysis. The results obtained from the data analysis are presented as shown in Table 4.2 and 4.3.

Descriptive Analysis

The descriptive analysis captures the basic features of the dataset presented in Table 4.1. Consequently, the results of the descriptive statistics are as shown in Table 4.2 below:

Table 4.2: Summary of Descriptive Statistics

	CAITC	DSP	EDS
Mean	206.3035	421.7329	2034.226
Maximum	749.9300	1060.380	4890.270
Minimum	24.06000	30.84000	438.8900
Std. Dev.	213.3128	296.3127	1479.864
Jarque-Bera	5.897462	2.147401	1.545025
Probability	0.052406	0.341742	0.461851
Observations	17	17	17

Source: Computed using EViews 9.0

Based on the mean values, the average cement industry's output (CAITC) is ₦206.3035 billion, average debt service payment (DSP) is ₦421.7329 billion and an average value of ₦2034.226 billion was recorded for external debt stock (EDS) over the period 1999 – 2015.

The maximum and minimum values indicate that the highest production value of the cement industry (CAITC) is ₦749.93 billion while the lowest output of CAITC is ₦24.06 billion. The maximum amount used for debt service payment (DSP) is ₦1060.38 billion and a minimum of ₦30.84 billion. Also, the

external debt stock (EDS) recorded a maximum value of ₦4890.27 billion and a minimum value of ₦438.89 billion.

The standard deviation which measures the level of dispersion of a series from its mean value reveals that the standard deviations for CAITC, DSP and EDS is 213.3128, 296.3127 and 1479.864 respectively. The Jarque-Bera statistics shows that the series are normal distributed based on the p-values of the Jarque-Bera statistics.

Multiple regression analysis

The regression results are presented in Table 4.3 below:

Table 4.3: Regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(DSP)	-0.974535	0.139121	-7.004926	0.0000
LOG(EDS)	0.528779	0.143434	3.686566	0.0024
C	3.051914	1.436725	2.124215	0.0519
R-squared	0.841832			
Adjusted R-squared	0.819236			
F-statistic	37.25661			
Prob(F-statistic)	0.000002			

Source: Computed by researcher using EViews 9.0

The result in table 4.3 shows that the model has a high coefficient of determination. This can be seen from the R-squared of about 84 per cent and the adjusted R-squared of about 81 per cent. The R-squared measures the percentage of variations in the dependent variable (CAITC) that was accounted for by variations in the explanatory variables (DSP and EDS). Thus, it can be argued that the data is well fitted in the regression model.

The value of the F-statistic is 37.25661 and its associated probability value is 0.000002 which is less than 1 per cent. This implies that our overall regression model is statistically significant at 1 per cent level. Thus, all the explanatory variables jointly explain variations in the dependent variable (CAITC).

The coefficient of the constant parameter (C) shows that *ceteris paribus* Cement Industry productivity will be increasing. With respect to the estimated coefficient of debt service payment (DSP) it was found that 1 per cent increase in DSP accounted for approximately 0.97 per cent decrease in cement industry's productivity. This is in line with the debt overhang theory that the debtor nation benefits little from the returns on additional investments due to huge debt service obligations. Also, in agreement with this finding, huge external debt service payment leads to the erosion of domestic resources (Ajayi and Oke, 2012; Ayadi and Ayadi, 2008).

The estimated coefficient of external debt stock (EDS) reveals that externally borrowed funds spurred growth in the cement industry (CAITC) in Nigeria. Going by the positive coefficient of EDS, a percentage increase in external debt stock caused CAITC to accelerate by about 0.52 per cent. This is in line with the findings of Ejigayehu (2013) that external borrowed funds can augment domestic resources for further production.

Test of hypotheses

To test the hypotheses, the decision was based on accepting the null hypothesis when the probability value of the coefficient is greater than 0.05 and rejecting the null hypothesis if probability value is less than 0.05. The hypotheses are tested as follows:

H₀₁: There is no significance of debt service payment on cement industry in Nigeria.

The p-value associated with the coefficient of debt service payment is 0.0000 which is less than 0.05 suggests that debt service payment has a significant impact on cement industry productivity. Hence, based on the decision rule, the null hypothesis (H_{01}) was rejected in favour of the alternative hypothesis that debt service payment has a significant impact on cement industry in Nigeria.

H_{02} : There is no significance of external debt stock on cement industry in Nigeria.

Following the p-value of $0.0024 < 0.05$ it was concluded that external debt stock has a significant impact on cement industry productivity in Nigeria. Consequently, based on the decision rule, the null hypothesis was rejected and the alternative hypothesis was accepted that the impact of external debt on cement industry is significant.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

SUMMARY OF FINDINGS

The findings of this study based on the Ordinary Least Squares (OLS) are summarized below as follows:

1. Debt service payment has a negative and significant impact on cement industry activities in Nigeria.
2. External debt stock has a positive and significant impact on cement industry activities in Nigeria.

CONCLUSION

External debts are necessary to meet shortfall internal resources, and stimulate the economy. However, it must be properly utilized to avoid serious consequences. Borrowing is not the most important issue but the use to which the fund is deployed. This should be the most important thing agitating the mind of any good accountant and Economist whenever external debt is contemplated. It should be approached with caution, ensuring optimal utilization and higher return than the interest (cost of fund). To sum, external debt stock and debt service payment have positive and negative impacts on the cement industry in Nigeria for the period of study.

RECOMMENDATIONS

The study made the following recommendations, which are aimed at ensuring efficient utilization of external debts in Nigeria.

1. Debt Management Office (DMO) should set mechanisms in motion to ensure that loans are utilized for the purpose for which they were acquired. This could be achieved through proper monitoring of the use to which the funds are put.
2. Government should aggressively pursue the process of diversification of the economy. This will result in buoyant and robust economy which will reduce the need for external debt to the barest minimum.

REFERENCES

- Ajayi, L. B. & Oke, M. O. (2012). *Effects of external debt on economic growth and development of Nigeria*. International journal of business and social sciences. Vol. 3, No. 12 (Special Issue – June), pp. 297 – 304.
- Audu, Isa (2004). *The impact of external debt on economic growth and public investment: The case of Nigeria*. African institute for economic development and planning (IDEP) Dakar Senegal. <http://www.unidep.org>.
- Ayadi, F.S. & Ayadi, F.O. (2008). *The impact of external debt on economic growth: A comparative study of Nigeria and South Africa*. Journal of sustainable development in Africa. 10 (3).
- Borensztein, E. (1990). *Debt overhang, debt reduction and investment: The case of the Philippines*. International monetary fund working Paper No. No. WP/90/77, September.
- Chenery, H.B. & Strout, A. (1966). *Foreign assistance and economic development*. American Economic review. Vol. 56, 679-733.
- Clements, B., Bhattachanaja, R., & Nguyen, T. Q. (2003). *External debt, public investment and growth in low-income countries*. IMF working paper No. WP/03/249. pp. 1-24.

- Ejigayehu, D.A. (2013). *The effect of external debt in economic growth*. Journal of the department of economics Sodertorn university.
- Ekperiwale, M.C. & Oladeji, S.I. (2012). *External debt relief and economic growth in Nigeria*. American journal of economics.2(7). Debt
- Elbadawi, A. J., Nudlu, J. B. & Ndung'u T. Q. (1996). *Overhang and economic growth in sub-Saharan Africa*. A paper presented to the IMF/World bank conference on external financing for low income countries.
- Ezeabasili, V. N., Isu, H. O. & Mojekwu, J. N. (2011). *Nigeria's external debt and economic growth: An error correction approach*. International journal of business and management Vol. 6, No. 5 pp. 156-170.
- FarajiKasidi & Makame Said, A. (2013). *Impact of external debt on economic growth: A case study of Tanzania*. Advances in management and applied economics. 3(4), 59-82.
- Ogunmuyiwa, M.S. (2011). *Does external debt promote economic growth?* Current research journal of economic theory. 3(1), 29-35
- Ojo, M. O. (1996). *The power structure of international debt management* BN economic and financial Review.
- Osuji, C. C. & Ozurumba, B. A. (2013). *Impact of external debt financing on economic development in Nigeria*. Research journal of finance and accounting. Vol. 4, No. 4, pp.92-98.
- Oyejide, T. (1985). *Nigeria and the IMF*. Heineman educational books, Ibadan, Nigeria.
- Safdari, M., & Mehrizi, M.A. (2011). *External debt and economic growth in Iran*. Journal of economic and international finance.3 (5).
- Sulaiman, L.A., & Azeez, B.A. (2012). *Effect of external debt on economic growth of Nigeria*. Journal of economic and sustainable development.3 (8).