International Journal of Economics, Commerce and Management
United Kingdom ISSN 2348 0386 Vol. VII, Issue 8, August 2019

http://ijecm.co.uk/

THE IMPACT OF DETERMINANTS OF PRIVATE INVESTMENT ON MANUFACTURING OUTPUT IN NIGERIA

P. A. Adeyemi
Department of Economics, Ekiti State University, Ado-Ekiti, Nigeria
adeyemi169@gmail.com

A. O. Oloruntuyi
Department of Economics, Federal University of Technology, Akure, Nigeria
aoloruntuyi@yahoo.com

Abstract

There is inability of government to meet up in accomplishing the adopted policy measures to address the issue of private investment-manufacturing challenges. Therefore, this study examined the determinants of private investment and manufacturing output in Nigeria. The study set out specifically to explore the determinants of private investment in Nigeria. The data utilized for this study is secondary in nature and it spans from 1981 to 2016. The study employed ARDL cointegration analysis and Error Correction Model as the estimation techniques to capture the stated objectives. The results of the study revealed that public investment has negative and significant impact on manufacturing output in Nigeria while credit to private sector has significant positive relationship with manufacturing output in Nigeria. Other variables in the study in the long run have no significant impact on manufacturing output in Nigeria. Therefore, the study concludes that only public investment and credit to private sector are the main determinants of private investment and that credit to private sector is capable of promoting manufacturing sector of Nigerian economy. Based on these findings, the study recommends that government should effectively channel her resources on productive sector and while spending on capital projects, it should be properly monitored.

Keywords: Private Investment, Manufacturing Output, Public Investment, Cointegration analysis

INTRODUCTION

There has been wide spread and growing interest among economist and policy makers on the determinants of private investment in the manufacturing sub sector because of the forwarding-backwarding linkage in promoting a global economic growth. Manufacturing connotes the turning of raw materials into furnished goods for consumption or intermediate goods for further production. Manufacturing is a sub set of the industrial sector. Manufacturing industry is an important tool to create avenues for employment, to diversify the economy, to boost foreign exchange earnings. Manufacturing firms are considered crucial to economic growth and are increasingly important sector for the alleviation of poverty in a country. Finding by some economist over the years have shown that manufacturing sector plays a dominant role among other sector of the economy and its contribution is more germane in economic growth and development (Tyboat 2000). Manufacturing sector has many dynamic advantages that are vital for economic transformation and it is a pointer to modernization in terms of production and distribution. This sector also creates investment capital and a faster rate than any other sectors of the economy. According to Ogwuma (1995), manufacturing sector has a wider and more effective linkage among different sectors.

Investment as one of the component of aggregate demand serves as an important determinant of the general level of economic activity. A small change in the rate of investment can create much larger fluctuation in national income, employment and other aggregate economics statistics. Investment and manufacturing growth have a strong relationship with each other. Investment and manufacturing productivity has a feedback mechanism with each other. Without investment manufacturing progress are not possible (Hem, 2008). The growth of manufacturing productivity and capacity can produce more output for domestic need and also promote the export of goods (Jhingem, 2003). Investment is generally classified into four major component s: private domestic investment, public domestic investment, foreign domestic investment and portfolio investment. Private investment refers to the gross fixed capital formation plus net charges in the level of inventories. Private investment is a strong tool for innovation, economic growth and poverty reduction. Countries with the wider and deeper private sector investment demonstrate accelerated growth, creates more job opportunities, generate more revenue and increases income of the poor. The overall performance of private investment in Nigeria is very low. The pattern of investment in Nigeria has not been accompanied by significant improvement in growth rates.

The key challenge facing this country is how to turn the vision of economic transformation into reality. Consequently this requires an understanding of the drivers of structural transformation in development process (World Bank 2013). UNCTAD(2012) identified

investment and manufacturing process as two veritable drivers of economic transformation. Therefore, boosting investment in Nigeria is an impetus force in achieving high manufacturing productivity and the attainment of millennium developmental goals in Nigeria. Low investment rate are especially prevalent in a wide spectrum in Nigeria between 2000 and 2012. The average investment ratio was below 7 percent which also metamorphosed to moribund of many manufacturing industries as well as relocation of some firms to the neighboring countries. In conclusion, for the fact that manufacturing sector is very germane to the development of any nation most especially the underdeveloped and the developing countries, there is need to identify the main determinants of private investment which can aid the growth of manufacturing sector in Nigeria but despite the efforts of government to improve on the macroeconomic measures/variables such as interest rate, inflation rate, exchange rate etc. through emphasis placed on macro-economic policies like fiscal policy, monetary policies and others, Nigerian economy is yet far to the trajectory of economic growth and development because of low-output in the manufacturing sector to the country.

Statement of the Problem

Economic growth rates in Nigeria are still not high enough to make a positive impact on poverty alleviation, increased level of industrialization and capacity to meet up with other developing countries of note like China, Taiwan and some other Asian countries. Nigeria as a country are facing with myriad of economic woes ranging from low level of saving and investment, high rate of inflation, high interest rate, inadequate infrastructures, high level of unemployment, poverty and inequality, insecurity etc. Government at all levels in Nigeria has adopted various measures and policies with a view to addressing these economic challenges so as to put the economy on the path of recovery and sustainable growth. Instead for the economy to adjust into recovery, it continues to degenerate to the background. More so the anticipated role of the private investment in transforming manufacturing sector to enhance growth never materialized (UNCTAD 2013). Despite the emphasis on private investment and various reforms to boost manufacturing output in Nigeria, the desired result has not been achieved. Therefore, it is imperative to identify the perceived determinants of private investment in order to increase manufacturing output in Nigeria.

The broad objective of this study is to examine the relationship between the determinants of private investment and the manufacturing output in Nigeria. Specifically the study is to examine the factors that determine the performance of private investment in Nigeria. The rest of the paper is organized as follows: section two is on literature review. This is followed

by the research methods and discussion of results in section three and four respectively. Section five concludes the paper.

LITERATURE REVIEW

Conceptual Issues

Concepts of investment

Investment is one of the most important variables in economics. Investment in economic sense is the purchase of goods that are not consumed today but are used in future to create wealth, that is, investment is production of goods that will be used to produce other goods. Investment is also referred to expenditure incurred on acquisition of capital goods that result in capital formation. Gross capital formation is a measure of the total expenditure on investment by production units within the economic (domestic) territories of a country. It is defined on the sum of gross fixed capital formation (GFCF), changes in stocks of a year (CS) and the net acquisition of valuables by enterprise and household (NAV). Gross fixed capital formation can be classified into gross private domestic investment and gross public domestic investment. The gross public investment includes investment by the government and/or public enterprise. It consists of additions to the asset of producers of tangible reproducible goods which have an expected life time of use of one year or more. GFCF refers to the net increase in physical assets (investment minus disposal) within the measurement period. It does not account for the consumption of fixed capital (depreciate) and also does not include land purchases. Private investment is one of the most important macroeconomic variables. Private investment, from a macroeconomic standpoint, is the purchase of a capital asset that is expected to produce income and also appreciate in value. Private sector investment, including domestic and foreign direct private investment, when operated in a responsible manner, can be a key driver of economic development, job creation and inclusive growth. The importance of private investment stems from the fact that it has both short term and long term implications for any economy. In the short term, private investment drives the direction of business cycle whereas in long term it defines the path of the economy by setting steady state growth rate. Private investment is important in the short-run because it is the most sensitive and volatile component of aggregate demand which is chiefly responsible for business fluctuations. Long term significance of private investment comes from its role in physical and human capital formation which is the ultimate source of growth and productivity. Therefore, countries with high and stable investment paths are in general more prosperous than those countries that have low and volatile investment paths (Nawaz 2015).

Theoretical Literature

Tobin's Q theory of Investment

James Tobin has proposed the q theory of investment which links a firm's investment decisions to changes in the stock market. When a firm finances its capital for investment by issuing shares in the stock market, its share prices reflect the investment decisions of the firm.

$$q = \frac{\text{market value of capital stock}}{\text{replacement cost of capital}}$$

The market value of a firm's capital stock in the numerator is the value of its capital as determined by the stock market. The replacement cost of firm's capital in the denominator is the actual cost of existing capital stock if it is purchased at today's price. Thus Tobin's q theory explains net investment by relating the market value of firm's financial assets to the replacement cost of its real capital.

According to Tobin, net investment would depend on whether q is greater than 1 (q > 1) or less than 1 (1 < 1). If q > 1, the market value of the firm's shares in the stock market is more than the replacement cost of its real capital, machinery etc. The firm can buy more capital and issue additional shares in the stock. Therefore, by selling new shares, the firm can make more profit and finance new investment. In other way, if q < 1, the market value of its shares is less than its replacement cost and the firm will not replace capital (machinery) as it wears out.

The theory has important implications. Firstly, it provides an incentive to invest for firms on the basis of the stock market. It not only reflects the current profitability of capital but also reflected the future profitability of the firm. The rate of investments is expected to be higher in the future when the value of q is less than 1. Secondly, it encourages firms to undertake net investment even when q is less than 1.

The Accelerator Theory

The theory states that an increase in the rate of output of a firm will require a proportionate increase in its capital stock. That is, an increase in output puts pressure on existing production capacity which calls for an expansion of the capital stock and in turn necessitates a high rate of investment expenditure. Accelerator is the ratio of capital to output, that is

$$B = \frac{K}{Y} \quad \text{----------1}$$

K_t as stated below is optimal capital stock in period t, β (accelerator) is a positive constant and Y_t is output in period t.

$$K_t = \beta Y_t \quad \text{----------2}$$

Any change in output will lead to a change in the capital stock as in equation (3)

$\Delta K_t = \beta \Delta Y_t$ ----------3

In equation (4), a change in capital stock leads to change in output

$K_t - K_{t-1} = \beta(Y_t - Y_{t-1})$ ----------4

In equation (5), the level of net investment is proportional to change in output

$I_t = \beta(Y_t - Y_{t-1})$ ----------5

More so, the flexible accelerator which suggests that the net investment is the fraction of the difference between planned capital stock and actual capital stock in the previous period is also a function of change in demand for output overtime. This indicates that increase in output will stimulate productive capacity which brings optimal capital stock. Optimal capital stock will promote growth of investment. This theory is fully discussed in chapter three.

Brief Empirical Literature

Mgbemena et al (2015) examined determinants of private investment in Nigerian's manufacturing sub-sector. The study employed cointegration analysis, error correction model as estimation techniques to capture the stated objectives. The results of the study reveal that the main determinant of private investment in the manufacturing sub-sector of the Nigerian economy is interest rate, exchange rate and public sector investment. The study concludes that the empirically identified factors influencing private sector investment should be well –managed by the government to boost private investment in the manufacturing sub-sector

Asante (2000) analysed the determinants of private investment in Ghana using a time series analysis and complementing it with a cross-sectional one. The results reveal that policies that address only some components of macroeconomic instability may not be enough to revive private investment. The study also shows that the real credit to the private sector has a positive and significant effect on private investment. The paper exhibited that Private investment and public investment are found to be complementary and thus there is the need for the government to continue to develop the infrastructural base of the economy to boost the private sector.

Adamu (2016) explored the main determinants of private investment in the West African Economic and Monetary Union (WAEMU). The study conducted unit root and co-integration and Error Correction Model to assess the long run relationship of the variables and three estimators: Dynamic Fixed-Effects, Mean Group, and Pooled Mean Group to examine the relationship among the determinants. Hausman tests show that the Dynamic Fixed-Effects Estimator is more efficient and consistent than others. Results suggest that, in the short-run, private investment in the WAEMU zone is determined by the aggregate demand conditions: gross domestic product and output gap, while, in the long-run, it is determined by gross domestic

product, and political stability. The short-run elasticity of gross domestic product and output gap are statistically significant and average to 5.7 and 0.06, respectively. The long-run elasticity of gross domestic product and the semi-elasticity of political stability are statistically significant and average to 2.4 and -0.25, respectively. These findings imply that, to promote private investment in the WAEMU zone, there is a need among others for more proper design and implementation of aggregate demand management policies, and political framework stability.

Molapo (2015) used ARDL cointegration to empirically examine the determinants of private investment in Lesotho over the period 1982 – 2013. The results show that private investment is positively influenced by the level of economic growth and public investment while it is negatively affected by increase in the price level. The highly significant and positive coefficient of economic growth confirms the accelerator principle in Lesotho while that of public investment outlines the significant role of government in laying down infrastructure to crowd in private investment. The negative coefficient of the general price level symbolizes the importance of price stability in stimulating private investment. In addition, the study confirms that macroeconomic instability negatively affects private investment in Lesotho. The study also employed Granger-Causality test to examine the direction of causality and the result reveals that there is unidirectional causality running from private investment to per capita GDP, and bidirectional causality between public and private investment.

Ekpo (2016) examined issues on and determinants of private investment in Nigeria. The study has identified determinants of private investment in Nigeria to include domestic inflation rate, size and growth rate of market, availability and access to bank credit, interest rate, fiscal deficits, public investment rate, poor provision of infrastructure, political and economic stability, investment climate and institutional factors. The findings show that, among other things, from the colonial government era up to the Nigeria's First Development Plan of 1964, there was commitment to the promotion of private investment. The relative non-performance of the private sector in general and the disappointing inflow of expected foreign capital during the First National Development Plan in particular, spurred the need for greater public sector involvement in the economic activities. This work establishes that the expected sustained improvement in the level of private investment has been greatly constrained by the adverse impacts exerted by most of the determinants of private investment.

Sakr (1993) empirically investigates the determinants of private investment in Pakistan with emphasis on the impact of government investment. The study makes use of an investment function and annualized data for the period 1973/74 to 1991/92. The findings reveal that private investment is positively correlated to GDP growth, to credit extended to the private sector, and to government investment in infrastructural projects.

Fimpong and Marbuah (2010) also looks into factors that have either stimulated or damped private investment in Ghana. With the use of unit root tests, cointegration and error correction techniques within an Autoregressive Distributed Lag (ARDL) framework the results of the study indicate that private investment in the short-run is positively related to public investment, inflation, real interest rate, openness, real exchange rate and a regime of constitutional rule. Private investment in the long run is positively related to real output, inflation, real interest rate, openness and real exchange rate; while negatively affected by external debt.

RESEARCH METHODS

Model Specification

This study adopts the work of Mgbemena et al (2015) which based its theoretical foundation on endogenous growth model with modifications. This study, therefore, specifies the model as follows;

$MAP = f(GCF, REXR, RIR, PUV, CPS)$

The study explicitly expresses the model as below:

$MAP = \beta_0 + \beta_1 GCF + \beta_2 REXR + \beta_3 RIR + \beta_4 PUV + \beta_5 CPS + U_t$

MAP = Index of manufacturing output

GCF = Gross Capital Formation

REXR= Real Exchange Rate

RIR= Real interest Rate

PUV = Public Investment

CPS = Credit to Private Sector

Estimation Techniques

The study employed cointegration analysis and Error Correction Model to examine the long run relationship between the determinants of private investment and manufacturing output. Diagnostics Tests were also conducted to test for autocorrelation, heteroscedasity and the stability of the model.

Sources of Data

The data for this study is secondary in nature which spans from 1981 to 2016.This period covers pre-SAP and post-SAP regime. Data like Index of manufacturing output and gross capital formation were sourced from the national bureau of statistics while data such as interest rate, exchange rate and credit to private investment were sourced from various Central Bank of

Nigeria (CBN) statistical bulletins. Public investment was sourced from World Bank Development Indicator.

RESULTS AND DISCUSSION

Time Series Properties of Variables

To ascertain that the study is free from problem of spurious regression, the study examines the time series properties of the variables. In economic literature, most time series variables are non-stationary and including non-stationary variables in the model can lead to spurious regression co-efficient estimate (Granger & Newbold, 1997). This is otherwise referred to as the unit root test and the test was carried out at 5% level of significance using the Augmented Dickey Fuller (ADF) unit root test.

Unit root test

Table 1: ADF unit root test result

	ADF @ level					
	$\ln maf_t$	int_t	$\ln pub_t$	$\ln gcf_t$	$\ln exr_t$	$\ln cps_t$
t-Statistic	-2.2680	-2.2720	-0.5252	-1.9016	-1.3150	-1.4018
Prob.	0.4394	0.4377	0.9772	0.0311	0.8680	0.8434
	ADF @ first difference					
t-Statistic	-5.7133	-5.4402	-4.9637	-3.2576	-5.4127	-3.9884
Prob.	0.0002***	0.0005***	0.0017***	0.0911*	0.0005***	0.0184**
Remark	I(1)	I(1)	I(1)	I(0)	I(1)	I(1)

Note * (**) (***) denotes significance at 10%, 5% and 1% respectively

The result of the ADF unit-root test is presented above. From the result, it was shown that all the variables were stationary at first difference except the log of gross capital formation (lngcf) which is stationary at level. Since there are mixtures of I(0) and I(1) variables, Johansen cointegration methodology cannot be utilized. The method of Autoregressive Distributed Lag model (ADRL) was adopted and bound test was used to capture the presence of cointegration.

Bound Test

It is necessary to select the optimal lag for the ARDL model to be estimated because; the subsequent tests and the dynamic information needed will be based on the model selected for estimation. Estimation of too much parameter will lead to useful information losses and also,

selection of too much lag will reduce the available data for estimation, and less degree of freedom will be available thereby making the result shaky. We used the Akaike information criterion to select the optimal lag for the estimated ARDL model. ARDL (2, 1, 2, 0, 0, 0) is selected.

Table 2: ARDL Bound test result

Test statistics	Value	Signif.	I(0)	I(1)
F-statistics	5.69	10%	2.83	3.88
K (dof)	5	5%	3.35	4.50
Sample size	35	1%	4.85	6.51

Table 2 above shows the ARDL bound test for our specified ARDL model. The calculated bound test F-statistics are significant at 5% and 10% conventional levels; hence, we may conclude that the long run relationship exists between manufacturing output, interest rates, public expenditures, gross capital formation, exchange rates, and credit to private sectors. Hence, we proceed to the long-run and short-run-error correction models (ECM).

Long-Run Estimates

Table 3: Estimated long-run parameters

Variable	Coefficient	Std. Error	t-Statistic	Prob.
int_t	0.022602	0.008762	2.579685	0.0168**
$\ln pub_t$	-0.632141	0.135497	-4.665351	0.0001***
$\ln gcf_t$	0.019373	0.109890	0.176298	0.8616
$\ln exr_t$	0.069629	0.094273	0.738595	0.4676
$\ln cps_t$	0.252289	0.135697	1.859214	0.0758*
$trend$	0.124839	0.022377	5.578836	0.0000***

Note: * (**) (***) denotes significance at 10%, 5% and 1%

The result in Table 3 shows the estimated long run relationship between manufacturing output, interest rates, public expenditures, gross capital formation, exchange rates, and credit to private sectors respectively. The findings in the table 3 reveal that only interest rates, public investment, and credit to private sectors significantly influence manufacturing output in the long-run. Public investment is negatively significant while credit to private sectors is positive significant.

Short-Run Estimates and Error Correction model

Table 4 below shows the short run relationship between manufacturing output, interest rates, public expenditure, gross capital formation, exchange rates, and credit to private sectors respectively. The sign of the error correction term is correct and it shows that about 74.4% of disequilibrium in manufacturing output due to one-time temporary shock is corrected within a year. The correctness and significance of the error correction term proves the convergence of the estimated ARDL model.

Table 4: Estimated short-run parameter

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$const$	8.412857	1.187415	7.085021	0.0000***
$\nabla \ln maf_{t-1}$	0.308676	0.112949	2.732869	0.0119**
∇int_t	0.003465	0.005258	0.659047	0.5164
$\nabla \ln pub_t$	-0.111542	0.073908	-1.509206	0.1449
$\nabla \ln pub_{t-1}$	0.126964	0.058040	2.187517	0.0391**
$\nabla \ln gcf_t$	0.014422	0.082866	0.174039	0.8634
$\nabla \ln exr_t$	0.051834	0.072611	0.713854	0.4825
$\nabla \ln cps_t$	0.187810	0.095649	1.963530	0.0618*
ecm_{t-1}	-0.744422	0.105086	-7.083931	0.0000***
Regression diagnostics tests				
R2=0.66				
S.E=0.08				
F-stat= 11.3 [0.0000]				
LM(1)-test = 2.25 [0.7469]				
LM(2)-test = 2.45 [0.2927]				

Note: * (**) (***) denotes significance at 10%, 5% and 1%

The results of table 4 that show the relationship among manufacturing output, interest rates, public investment, gross capital formation, and exchange rates in the short-run is almost the same with the long run. The difference there is that both public investment and credit to private sector are not significant in the short run but still coefficients maintain their signs. In the short run, the variables are not significant.

The second segment of table 4 shows regression diagnostics tests statistics to verify the viability of the estimated model. The coefficient of determination shows that about 66% of the variation in manufacturing output is explained by the regressors jointly. The standard error of regression is very low, and this signifies a better performing model. The probability value of F-

stat is practically zero, and this means that the estimated coefficients are jointly different from zero. The insignificance of the LM test, RESET test, and HETE test in table 4 mean that we may accept the null hypothesis of no autocorrelation, model stability, and homoscedasticity in the estimated model.

CONCLUSION AND POLICY RECOMMENDATIONS

This study examined the determinants of private investment and manufacturing output in Nigeria. The findings of the study reveal that public investment has negative and significant impact on manufacturing output in Nigeria while credit to private sector has significant positive relationship with manufacturing output in Nigeria. Other variables in the study in the long run have no significant impact on manufacturing output in Nigeria. Therefore, the study concludes that only public investment and credit to private sector are the main determinants of private investment and that credit to private sector is capable of promoting manufacturing sector of Nigerian economy. Public investment which is expected to enhance manufacturing output in Nigeria failed to perform such. This may be attributed to inefficiency of the sector, corruption and poor institutional factors in Nigeria. On the basis of these findings, this study recommends that government should effectively channel her resources on productive sector and while spending on capital projects, it should be properly monitored. Government should endeavour to improve power sector in the country to boost manufacturing production. This study also suggests for further researchers to delve into the impact of determinants of private investment on manufacturing output in sub-Saharan Africa.

REFERENCES

Asante (2000). Determinants of private investment behaviour: AERC Research Paper 100 African Economic Research Consortium, Nairobi March 2000•

Adamu(2016). The Main Determinants of Private Investment in The WAEMU Zone: The Dynamic Approach: MPRA Paper No. 75428

Mgbemena, O.O., Nwogwugwu, U. C and Kalu, C .U.(2015). Determinants of private investment in Nigeria's manufacturing sub-sector: International Journal of Academic Research in Business and Social Sciences, 5(5), 24-39

Ekpo, U.N.(2016). Determinants of private investment in Nigeria: An empirical exploration: Journal of Economics and Sustainable Development, 7(11), 80-96.

Molapo, S and Damane M.(2015). Determinants of private investment in Lesotho: European Scientific Journal, 11(34), 57-72.

Frimpong, J. M., & Marbuah, G. (2010). The determinants of private sector investment in Ghana: An ARDL approach. European Journal of Social Sciences, 15(2), 250-261

Tybout, J. (2000). Manufacturing firms in developing countries: How well do they do, and why? Journal of Economic Literature, 11(14), 1-11.

Sakr, M. K. (1993). Determinants of private investment in Pakistan. International Monetary Fund.