has no significant effect on the level of poverty. This was due to the fact that, most rural households are farmers who engaged themselves more in agricultural practices than other trades that required rigorous training.

The result on household access to education appears negative and significant all through the regression result which implies that, as individual households have more access to education, the incidence of poverty reduces. In other words, the rural households that have access to education have odds of the incidence of poverty 1.4993 times (or 149.93%) lower than household without access to education. By implication, as individuals have more access to education, there is tendency for the society to suffer less from the incidence of poverty. Thus, having up to primary level of education reduces the probability of being poor in the rural households by as much as 21.0 percent.

The coefficient of household access to health care was negative and significant. This implies that, as individual household have access to health care, the incidence of poverty reduces. The implication of this is that, the rural households that have access to health care have odds of incidence of poverty 0.8202 times (or 8.02%) lower than household that have no access. Hence, as individual household have access to health care services; the level of poverty reduces by b about 31.0 percent.

On nutrition, the result appears negative and significant. This signifies that, as individual households have access to nutritional in-takes, the level of poverty decreases. Thus, the rural households with access to nutrition have odds of the incidence of poverty 0.5482 times (54.82%) lower than household without access to nutrition. The implication is that when the level of nutrition in-takes increases, there is tendency for the level of poverty to decrease by about 16.0 percent. This result was in line with the findings of Braun, et al (1992), who concluded that, food insecurity or inadequate nutritional in-takes lead to substantial productivity losses and misallocation of scarce resources due to diminished work performance.

Table 6: Regression Results on the Incidence of Poverty and the State of Human Capital Development in Edu Local Government Area of Kwara State.

Variable	LPM	Logit	Logit Marginal Effect	Probit	Probit Marginal Effect	Odd Ratio
$apptra_i$	-0.4110*** (0.0510)	-2.0794*** (0.2971)	-0.4757*** (0.0572)	-1.2390*** (0.1701)	-0.4631*** (0.0559)	0.1250*** (0.0371)
Edu_i	-0.1015* (0.0576)	-0.5220* (0.3076)	-0.1292* (0.0753)	-0.2962* (0.1822)	-0.1174* (0.0717)	0.5933* (0.1825)
age_i	-0.0062 (0.0116)	-0.0355 (0.0622)	0.0088 (0.0155)	0.0198 (0.0370)	-0.0079 (0.0147)	1.0361 (0.0644)
$age2_i$	0.0001 (0.0001)	-0.0004 (0.0006)	0.0001 (0.0002)	-0.0002 (0.0004)	0.0001 (0.0001)	0.9996 (0.0006)
$gender_i$	-0.1626* (0.0858)	-0.8606* (0.4618)	-0.2042** (0.1011)	-0.5313* (0.2727)	-0.2038** (0.0983)	0.4229* (0.1953)
$maristatus_i$	-0.0615 (0.0734)	0.3308 (0.3810)	0.0825 (0.0947)	0.1901 (0.2266)	0.0757 (0.0901)	1.3921 (0.5304)
$hsize_i$	0.0059 (0.0050)	0.0360 (0.0406)	0.0090 (0.0101)	0.0199 (0.0219)	0.0079 (0.0087)	1.0366 (0.0421)
$location_i$	0.0286 (0.0311)	0.1909 (0.1700)	0.0475 (0.0423)	0.0899 (0.0992)	0.0358 (0.0395)	1.2103 (0.2057)
healthi	-0.0800 (0.0750)	-0.3802 (0.3935)	-0.0936 (0.0952)	-0.2372 (0.2327)	-0.0936 (0.0906)	0.6838 (0.2690)
$nutrition_i$	-0.2063*** (0.0360)	-1.1099*** (0.2095)	-0.2763*** (0.0521)	-0.6480*** (0.1196)	-0.2578*** (0.0478)	0.3296*** (0.0690)
Constant	1.2338*** (0.3031)	3.7513** (1.6250)		2.2478** (0.9605)		42.5784 ** (69.1914)
R^2	0.2585					
Pseudo R^2		0.1502		0.2099		0.2114
F	11.40***					
Chi^2		139.27***		98.21***		98.94***
No. of Observation	338	338		338		338

Source: Author's Computation, 2014. *** Significant at 1%, ** Significant at 5%, * Significant at 10%, Robust Standard Error in parenthesis

The result in Table 6 indicates the coefficient explanatory variables for apprenticeship training to be negative and significant all through the regression results in the rural households of Edu. The apprenticeship training have all the expected signs, and significant with value -0.411 and a p-value of 0.051. Thus, there is an inverse relationship between incidence of poverty and the level of apprenticeship training in the rural area. In terms of odd ratio, rural households with apprenticeship training have odds of the incidence of poverty 0.875 times (or 87.5%) lower than households without apprenticeship training. A household with access to apprenticeship training has the probability of being poor reduces by 47.0 percent. The result collaborates with the study of Oni, et al (2003), which found the level of academic attainment, skill acquisition and development as major determinants of income generation in the society. The coefficient of household education also has a significant negative effect on the incidence of poverty, holding the vector of household characteristics constant. Using the odd ratio analysis, the households with access to education have odds of incidence of poverty 0.4067 times (or 40.67%) lower than households without access to education. The implication is that as individual households acquire more and more education, there is the probability that the level of poverty reduces by 10.0 percent. Health care is not significant, but negatively related to the incidence of poverty. Rural households with access to health care have odds of incidence of poverty 0.3162 times (or 31.62%) lower than households without access to health care. This was as a result of the patronage provided by the traditional healers and patent medicine stores when they are sick due to high cost of drugs provided at the confessionary hospital or clinic, which was in line with the position of Sagbamah, (1997); Adeyemi, Ijaiya & Ijaiya, (2007).

On household nutrition, the coefficient of household nutrition is negative and significant. This is an indication that the more household have access to nutrition, the more their chance of being poor reduces. The rural dwellers that have access to nutrition have odds of incidence of poverty 0.6704 times (or 67.04%) lower than households that have no access to nutrition. The log it marginal effect of household nutrition shows that the more individual have access to nutritional in-takes, the lesser their chance of being poor reduces by 28.0 percent. In other words, nutrition has a significant effect on household health and productivity, hence less prone to poverty.

Conclusion and Recommendations

The *P*-alpha class of poverty measurement result shows that the incidence of poverty in the rural areas of Baruten and Edu were 56.0 percent and 52.0 percent respectively. It was also revealed that the rural households in these areas are poor in terms of basic facilities like education, apprenticeship training, and health care. There was no evidence that they were poor money-wise. The probit estimates show that incidence of poverty has a significant impact on human capital in the rural areas. It can be concluded that rural household in

Baruten and Edu are not poor money-wise, rather they are poor in terms of other basic facilities.

The study recommends that, government should embark on policies that would improve the state of existing human resources in the rural areas. The rural people should be empowered through creation of more jobs for the teeming youth in their environment. Government, non-governmental organisations and development agencies should assist in promoting household access to education and apprenticeship training in the rural areas. This can be done through provision of free education and possibly award of scholarships up to secondary school level in order to allow the children of the rural poor have access to basic education thus, reduce their level of poverty and improve their standard of living.

REFERENCES

Abdulrahman, I.A.(2017). Human capital development and the incidence of poverty in the rural households of Kwara State, Nigeria. Unpublished Ph.D. Thesis submitted to the Department of Economics, University of Ilorin, Ilorin, Nigeria.

Adeyemi, S. L; Ijaiya, G. T & Ijaiya, B. L (2007). Human right abuse and the incidence of poverty in Nigeria: A case study of women operating in the informal sector of Kwara State, Nigeria. *Report of the United Nations Educational, Scientific, and Cultural Organization* (*UNESCO) Small Grants Programme on Poverty Eradication: Building National Capacities for Research and Policy Analysis.* Paris: UNESCO, 78-84.

Aku, P. S., Ibrahim, M. J. & Bulus, Y. D. (1997). Perspectives on poverty and poverty alleviating strategies for Nigeria. Selected papers for the 1997 *Nigerian Economic Society (NES),* annual conference, Ibadan, 41-53.

Behrman, J. R. (1990). *The action of human resources and poverty on one another. What we have yet to learn.* Living Standards Measurement Study. Working Paper No.74. The World Bank.

Becker, G.S (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy, 70(4),* 205-219.

Braun, V. & Joachin, et al (1992). Improving food security of the poor: concept, policy and programs. *International Food Research Institute,* Washington D.C.

Federal Office of Statistics (1997). *Poverty profile for Nigeria, 1980-1996(with references to 1985 and 1992 survey),* FOS, Lagos, Nigeria.

Grootaert, C. (1999). Social capital, household welfare and poverty in Indonesia. The World Bank Social Development Family Environmentally and Socially Sustainable Development Network, *SDA Working paper policy analysis, No.6,* April.

Ijaiya, G.T. (2000). Impact of water shortage and depletion on the productive time of women in Ilorin metropolis: a pilot survey. *An International Journal of Environmental and Policy Issues. Geo-Studies Forum, 1(1&2):* 38-45.

International Labour Organisation (2008).

Kwara State Annual School Census Report 2011-2012. *State Ministry of Education and Human Capital Development*.

Mincer, J. (1974). *Schooling experience and earnings.* Columbia University Press, New York.

Ministry of Health, Ilorin, Kwara State, 2004.

Narayan, D., & Pritchett, L. (1997). Cents and sociability: household income and social capital in rural Tanzania. *World Bank Policy Research Working Paper*. The World Bank, Washington DC.

National Bureau of Statistics (2011). *Annual Abstract of Statistics 2011,* Abuja: Federal Republic of Nigeria, December.

National Bureau of Statistics (2012). *Nigeria Poverty Profile 2010,* Abuja, Nigeria: National Bureau of Statistics, December.

Okunmadewa, F., Olaniyan, O., Yusuff, A. O., Bankole, S.A., Oyeranti, B. T., Awoyemi, T. & Olayiwola, K. (2005). Human capital, institutions and poverty in rural Nigeria. A paper submitted to the *African Economic Research Consortium* (AERC), Nairobi, Kenya.

Oni, B., Akerele, W.O., Akinbola, O.A., Odekunle, S.O., Opatola, A.O. (2003). *Human resources development perspective of poverty in Nigeria.* In: poverty in Nigeria, a multidimensional perspective. Nigerian Institute of Social and Economic Research(NISER), 137-182.

Oni, O. A. & Adepoju, T.A. (2011). A capacity approach to the analysis of rural households' well-being in Nigeria. *Munich Personal RePEc Archive Paper* No.34508, August. Online at http://npra.ub.uni-muenchen.de/34508/

Rank, M. (2005). *One nation, underprivileged.* New York: Oxford University Press.

Sachs, J. (2005). *The end of poverty. How we can make it happen in our lifetime.* Penguin Press, London.

Sagbamah, J.E.L. (1997). Macroeconomic issues in poverty alleviation: the Nigerian experience. In: Poverty Alleviation in Nigeria. Selected papers for 1997 annual conference. *The Nigerian Economic Society,* Ibadan. 233-254.

Schultz, T. (1961). Investment in human capital. *The American Economic Review.www.ame.org 51(2):* 1-17.

Schultz, T. (1981). Investing in people: *The economics of population quality.* University of California Press.

State Economic Enhancement and Development Strategy, 2004.

United Nations Development Programme (2014a). *Democratic Republic of Congo Millennium Development Goals Status Report, 2012*, Kinshasa: UNDP.

Von Hauff, M. & Kruse, B. (1994). Conceptual bases for a consistent poverty oriented policy. *Economics 49(50)*: 41-55 Tubingen.

ECONOMETRIC ESTIMATION OF INVESTMENT MULTIPLIER IN NIGERIA: AN ARDL APPROACH

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ABSTRACT

Investment as a component of aggregate demand may not be the largest of the components, but it is the most volatile. Its volatility is a function of so many other variables that dictates its movement. Investment's movement thus have a very strong bearing in the ultimate movement of nation's gross domestic product. This significance of investment in the equation of economic growth and development was the basis for the estimation of Nigeria's GDP with the aim of determining investment multiplier for the country. Therefore, the broad objective of the study was to estimate investment multiplier for Nigeria. The methodology adopted was autoregressive distributed lag. The data for the methodology was time series data spanning 38 years. Unit root tests using the Augmented Dickey Fuller Test and Phillips-Perron shows that none of the series that make up the model was stationary at level. They were all made stationary after first differencing. The empirical result shows that no cointegration exists among the variables that make up the model. The study also found that for every 1 unit rise in investment, gross domestic product increase by 0.55 unit. It was therefore recommended that policy directives that will drive investment and ultimately drive the nation's GDP should be rigourously pursued by the economic team of Nigeria.

Key words: Investment, Multiplier, Gross Domestic Product and Autoregressive Distributed Lag.

JEL Classification Code:C10, E22, E60

1.0. Introduction

A nation's economic growth is often gauged by the country's gross domestic product (GDP). This in other parlance is described as national expenditure or national output or aggregate demand. It is composed of five major variables; namely consumption (C), investment (I), government expenditure (G), export (X) and import (M). Whereas consumption is the largest component of aggregate demand, investment is the most volatile. As a background, a clear cut distinction is imperative to readers about the context in which investment is being discussed here. Generally speaking, investment is the purchased of goods and services that are consumed at a later date per unit of time. It includes day to day investment made by individuals and business firms for the purpose of increasing wealth. Investment is broadly divided into two; fixed investment or fixed capital formation (the

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purchase of durable goods) and investment in stocks (inventories). Investment in this context however refers to gross private investment often proxy in economic analysis by gross fixed capital formation. It is national output net the nation's consumption, government expenditure and net export.

Issues on multiplier analysis are the subject matters of the famous work of John Maynard Keynes. According to Hansen, Keynes epoch making to the tool of economic analysis is analogus to, but even more important than Marshall's discovery of demand function. Multiplier is a major tool of economic analysis especially as it concerns projecting the future performance of a given economy. Taking a cue from the five components of aggregate demand mentioned above, it is expected that should there be a change in any of the components of aggregate demand, such a change will impact on aggregate demand itself. Technically speaking therefore, the multiplier is the amount by which a change in any of the components of aggregate demand is multiplied to arrive at a new national income at equilibrium. Given this multiplier, it is always possible for policy makers to know the kind of a change that is expected in each of the components of aggregate demand to achieve a desired level of gross domestic product. Narrowing down this definition to the issue on ground, the investment multiplier is the amount by which change in investment is multiplied to achieve a new level of national income.

Facts from Keynes' theory on multiplier shows that investment is an injection to the economy and therefore the investment multiplier carries a positive relationship with economic growth. Thus, for a country that wishes to boost the level of national income via the investment approach, the investment multiplier will guide such a country regarding how much of a change that is expected in investment to achieve a particular target level of national income. Once this is known first hand, the other issues that will be pivotal to economic thinkers for such a country is devoting much attention to economic environment that will aid the advancement of investment for ultimate impact on national income. The questions that come to mind are what is gross domestic product itself, what is investment, what is multiplier, what is investment multiplier, how is multiplier calculated and what is the economic meaning of a calculated multiplier? These and many other related questions form the basis of this study.

2.0. Stylish Facts about Investment in Nigeria

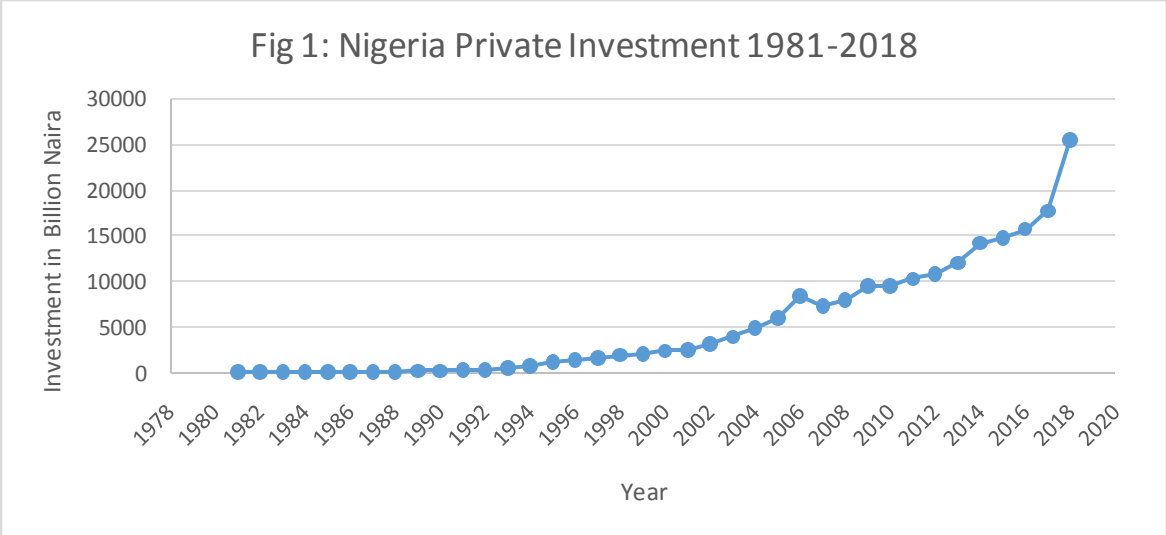
A critical look at the composition of the nation's investment shows that investment has been the second most important component of aggregate demand after consumption.

Table 2.1: Components of Aggregate Demand in Nigeria 1981-2018

	GDP	CONS	INV	GEXP	EXPT	IMP
1981-1990	259.95	85.15	140.75	22.32	28.59	16.86
1991-2000	3637.08	1717.84	1279.99	366.16	814.04	540.95
2001-2010	28,919.24	17458.45	6362.82	2178.78	6518.93	3599.73
2011-2018	93846.88	70154.29	15166.54	5526.00	13693.43	10693.38

Source: CBN Statistical Bulletin 2018

The table above shows that consumption constitute major components of aggregate demand, especially from 1991 upward. So big is consumption that it sometimes constitutes more that half of the whole aggregate demand. The decade of 1991-2000 shows a consumption figure of N1717.84 billion out of a total N3,637.08, this represent about 47% of the aggregate demand. Followed closely was investment which N1279.99 and which represent about 35%. This pattern was followed in the two decades of 2001-2010 and 2011 and 2018. The upward trend in investment is presented in the figure below.



Source: CBN Statistical Bulletin 2018

Figure 2.1 shows a near constant figures between 1981 to 1991. A slight improvement in the nation's investment began manifestation from 1994 upward when the investment figure of N744.37billion almost doubled the 1992 figure of N396.65. Since then investment has been steadily rising until it peaked in 2018 at a figure of N25,577 billion. The implication of this rising figures on the national income is empirically examined in the subsequent subsections.

3.0. Objective of the Study

The broad objective of the study is to estimate investment multiplier in Nigeria. Specifically, the study will:

i. Estimate the gross domestic product of Nigeria between the periods of 1981 and 2018.
ii. Determine the multiplier of each of the components of aggregate demand, especially investment multiplier.

4.0. Review of Literature

4.1. Theoretical Literature

Economic literature is awash with theories of investment. Prominent among them are the accelerator theory of investment, the flexible accelerator theory and the profits theory of investment. Others include Duessenberry's accelerator theory, the financial theory, the Jorgensons' neoclassical theory and Tobin's q theory. What appears to be the pioneering work on the theory of investment, the accelerator theory is always attributed to the work of John Maynard Keynes in 1936. However, history of economic thought made us to understand that the chief architect of the theory of investment was Thomas Nixon Carver (1865-1961) and Albert Aftalion (1874-1956).

The accelerator principle states that an increase in the rate of output of a firm will require a proportionate increase in its capital stock. The capital stock refers to the desired or optimum capital stock, *K*. Assuming that capital-output ratio is some fixed constant, *v*, the optimum capital stock is a constant proportion of output so that in any period *t*,

$$K_t = vY_t \quad \text{.....1}$$

Where K_t is optimal capital stock in period t, v (the accelerator) is a positive constant, and Y is the output at period t.

Any change in output will lead to a change in the capital stock. Thus

$$K_t - K_{t-1} = v(Y_t - Y_{t-1}) \quad \text{.....2}$$

And if we represent $I_{\text{int}} = v(Y_t - Y_{t-1})$ 3

We have

$$I_{\text{int}} = K_t - K_{t-1} = v\Delta Y \text{.....4}$$

Equation 4 is the naïve accelerator principle. In the equation, level of net investment is proportional to change in output. If the level of output demand is constant, $\Delta Y = 0$, net investment would be zero. Thus for net investment to be a positive constant, output must increase.

As fundamental as the accelerator principle is, it is flawed with the major weakness that that the capital stock is optimally adjusted without any time lag. Proposed to address this weakness was the flexible accelerator or the capital stock adjustment model propounded at various times in the works of Chenery (1952), Goodwin (1951), Koyck (1954) and Junankar (1972). Junankar (1972) observed that there is lags in the adjustment between output and capital stock. This study was first done at the firm level before extending it to aggregate level. According to the theory, suppose there is an increase in the demand for output. To meet it, first the firm will use its inventories and then utilise its capital stock more intensively. If the increase in the demand for output is large and persists for some time, the firm would increase its demand for capital stock. This is the decision-making lag. There may be the administrative lag of ordering the capital. As capital is not easily available and in abundance in the financial capital market, there is the financial lag in raising finance to buy capital. Finally, there is the delivery lag between the ordering of capital and its delivery. Assuming that different firms have different decision and delivery lags then in aggregate the effect of an increase in demand on the capital stock is distributed over time. This implies that the capital stock at time t is dependent on all the previous levels of output, i.e.

$$K_t = f(Y_t, Y_{t-1}, \text{.....} Y_{t-n}) \text{.....5}$$

Koyck's approach to the flexible accelerator assumes that the actual capital stock depends on all past output levels with weights declining geometrically. This is given by the equation:

$$K = v(1-\lambda)(\lambda^0 Y_t + \lambda^1 Y_{t-1} + \lambda^2 Y_{t-2} + \lambda^3 Y_{t-1} + \text{.....} \lambda^n Y_{t-n}) \text{.....6}$$

This equation represents the flexible accelerator or the stock adjustment principle. This suggests that net investment is some fraction of the difference between planned capital stock and actual capital stock in the previous period. The coefficient $(1 - \lambda)$ tells us how rapidly the adjustment takes place. If $\lambda = 0$ [i.e. $(1 - \lambda) = 1$] then adjustment takes place in the unit period. The main import of the flexible accelerator theory is the introduction of lags in investment demand. It not only incorporates the effects of lags but also of depreciation and excess capacity in the capital stock adjustment.

The profit theory of investment was developed by Edward Shapiro. (----------). The profits theory regards profits, in particular undistributed profits, as a source of internal funds for

financing investment. Investment depends on profits and profits, in turn, depend on income. In this theory, profits relate to the level of current profits and of the recent past. If total income and total profits are high, the retained earnings of firms are also high, and vice versa, Retained earnings are of great importance for small and large firms when the capital market is imperfect because it is cheaper to use them. Thus if profits are high, the retained earnings are also high. The cost of capital is low and the optimal capital stock is large. That is why firms prefer to reinvest their extra profit for making investments instead of keeping them in banks in order to buy securities or to give dividends to shareholders. Contrariwise, when their profits fall, they cut their investment projects. This is the liquidity version of the profits theory.

The financial theory of investment has been developed by James Duesenberry. It is also known as the cost of capital theory of investment. The accelerator theories ignore the role of cost of capital in investment decision by the firm. They assume that the market rate of interest represents the cost of capital to the firm which does not change with the amount of investment it makes. It means that unlimited funds are available to the firm at the market rate of interest. In other words, the supply of funds to the firm is very elastic. In reality, an unlimited supply of funds is not available to the firm in any time period at the market rate of interest. As more and more funds are required by it for investment spending, the cost of funds (rate of interest) rises. To finance investment spending, the firm may borrow in the market at whatever interest rate funds are available.

Tobin's q theory of investment is an economic theory of investment behavior, where 'q' represents the ratio of the market value of a firm's existing shares (share capital) to the replacement cost of the firm's physical asset (i.e. the replacement cost of the share capital). That is

$$q = \frac{share\ capital}{\text{Replacement cost of the share capital}}$$

The theory states that if q representing equilibrium is greater than 1, additional investment in the firm would make sense because profit generate would exceed the cost of firm's assets. If q<1, the firm would be better off selling its assets instead of trying to put them to use. The ideal state is where q is approximately equal to 1, denoting that the firm is in equilibrium.

4.2. Empirical Literature

Studies on investments in economics literature are abound and still emerging. Depending on the angle from which a researcher wants to view it, it is highly unlikely that studies in investments cease in the nearest future. Abiola and Egbuwalo (2010) examined the relationship between savings and investment, and between investment and economic growth. A corollary of the work is the determination of which of the inputs of production

contributes more to economic growth in Nigeria. The study makes use of time series data spanning thirty-three years using Ordinary Least Square methods. The result shows a positive relationship between savings and investment. It also confirms the existence of a positive relationship between Investment and economic growth. Of the determinants of savings considered in the study, inflation rate contributes negatively to saving, while interest rate positively affects saving. All these confirm economic theory. The striking feature of the study however is the confirmation of the impact of labour on economic growth, which according to the study far outweighs the contribution of capital.

In their own contribution to the discuss on investment, Gatawa and Bello (2011) analyses the effect of government expenditure on gross domestic private investment in Nigeria using time series annual data for 34 years. Multiple regression and cointegration methods were used to analyse the data. Result of the analysed data revealed that the actual impact of government expenditure on private investment varies depending on the type of expenditure under consideration. The negative relationship established that the federal government recurrent expenditure crowded out or substituted for private investment in the period under study. Furthermore, the study revealed a positive effect of inflation rate on private investment. The analysis suggests that government should give more priorities to expenditures that compliment private investment rather than spending on expenditures that substitute for private investment.

Ezeabasili and Nwakoby (2015) attempts to reexamine the controversial relationship about the possible crowding out effect of government expenditure in general and particularly deficits on private sector investments within the Nigerian context, using data over 1970-2006. A modeling technique that incorporates co-integration and structural analysis was adopted. Evidence shows that there is a positive long run relationship between private investment and real growth of the national economy. This confirms the relevance of the accelerator principle to Nigeria, with contemporaneous accelerator parameter of 1.84. On aggregate, a 1% improvement in national income engenders 1.84% increase in private investment in Nigeria. In addition, the result indicates that fiscal deficits has had a depressive effect on private investment in the country. The estimation results suggest that a 1% increase in fiscal deficit leads to 0.267% decline in private investment. The results also indicate that Nigeria's debt profile has had strong and negative impact on private investment in Nigeria.

Omojolaibi, Mesagan and Bello (2016) explores the relationship between non-oil export and domestic investment in Nigeria Relevant data were collected from the Central Bank of Nigeria statistical bulletin between 1980 and 2011. The error correction model was estimated in determining how non-oil export impacts domestic investment and the granger causality test was conducted to determine the causal relationship among the variables. The findings revealed that the impact of non-oil export on domestic investment was positive but insignificant. The insignificance is as a result of the monocultural nature of production

skewed towards the oil sector, although the positive coefficient shows that a lot of prospects still exist in the sector. Also, the findings show that while domestic investment granger causes non-oil export, non-oil export did not granger cause domestic investment. Hence, the study the recommended that effort must be made at formulating explicit export promotion policies that will encourage the growth of the non-oil sector in order to make them more viable at generating export earnings for the country and also boost their contribution the level of domestic investments in the country.

Alkhatib, Altaleb and Alokor (2012) analyzes the trends of determinants of investments in Jordan within the period (1980-2010) with focus on post-reform era efforts. The study examines both the short-run and long run movement of the investment process, using the co-integration econometrics method to estimate the dynamic of the variables in the study. This is in order to assess their behavior over time, and evaluate how these have either hindered or encouraged the growth of investment in the Jordanian economy. The results confirm previous results found in empirical literature. Namely, the growth rate GDP and exports and their significance in stimulating domestic investments. In addition to Foreign direct investment (FDI), and the development level of the financial sector and human capital in stimulating domestic investment only in the long-run.

The application of the flexible accelerator to Ugandan economy was the major concern of Twine, Kiiza and Bashaasha (2015). The study uses the flexible accelerator model to examine determinants of the level and growth of investment in machinery and equipment for a sample of tea-processing firms in Uganda. Using a dynamic panel data model, the study found that, in the long run, the level of investment in machinery and equipment is positively influenced by the accelerator, firm-level liquidity, and a favourable investment climate in the country. Depreciation of the exchange rate negatively affects investment. The study concluded that firm-level strategies that increase output and profitability, and a favourable investment policy climate, are imperative to the growth of the tea industry.

Studying investment at micro level, Obudah and Tombofa (2013) examine the effects of interest rate and domestic debt on private equity investment growth in Nigeria covering the 1987-2010 period as well as to determine if government borrowing crowds out private investment and borrowing. The study used the co-integration technique to test the long run relationship among the variables and went to use standard ordinary least squares technique and error correction analysis. The results show that domestic debt and GDP growth rate had a positive effect on equity investment as expected. On the other hand, monetary policy rate had a negative effect on equity investment. The study concluded among others, by recommending that funds from debt should be used productively and avoid misappropriation. Also that the monetary policy rate should be allowed to exhibit the interplay of the market forces so as to encourage both internal and external capital investment in the Nigerian economy.

More on the micro study on investment is paper by Edame and Okoi (2014). This study examines the impact of taxation on investment and economic growth in Nigeria from 1980-2010. The ordinary least square method of multiple regression analysis was used to analyze the data. The annual data were sourced from the central bank of Nigeria statistical bulletin and NBS. The result of the analysis showed in conformed to a priori expectation because the parameter estimates of corporate income tax (CIT) and personal income tax (PIT) appears with negative signs, this means that an inverse relationship exists between taxation and investment. The economic implication of the result is that a one percent (1%) increase in CIT will result in decrease in the level of investment in Nigeria. Consequently, an increase in PIT will result in decrease in the level of investment. Finally, the result therefore showed that taxation is negatively related to the level of investment and the output of goods and services (GDP) and is positively related to government expenditure in Nigeria. The result also observed that taxation statistically is significant factor influencing investment, GDP and government expenditure in Nigeria. The study then recommended that the government of Nigeria should use taxation to achieve its set target that will enhance economic growth and development.

Cheriam (1996) attempts to re-examine the competing theories on investment using panel data. The study compares five theories of investment namely; accelerator theory, cash flow theory, neo-classical theory, modified neo-classical theory and Q theory. Taking the results from cross-section regressions as long term equilibrium, the study affirms that the single most important determinant of capital spending appears to cash flow. The study concludes that to generalize in a way that might be useful for developing countries, financial decisions at the firm level are closely linked to real decisions in the economy. That internal finance is the most important source of funds and capital spending is the most important use of funds, so there is a close relationship between real and financial decision.

The study by Tawose (2012) looked at investment from the angle of bank loans and advances. This paper investigates the effect of bank loans and advances on industrial performance in Nigeria between 1975 and 2009. Co-integration and Error Correction technique was adopted for the analysis. The results showed that industrial performance co-integrated with all the identified explanatory variables. Industrial sector as dependent variable is proxied by real GDP, while Commercial Banks' Loan and Advances to Industrial Sector (BLM), Aggregate Saving (SAV), Interest rate (INT), Inflation Rate (INF) are the independent variables. This suggests that the behavior of real Gross Domestic Product contributed by industrial sector in Nigeria is significantly explained by the commercial banks' loan and advances to industrial sector, aggregate saving, interest rate and inflation rate. The findings implies that every action towards infrastructural development, strengthening of commercial banks, deregulation of interest rate, encouragement of saving among rural dwellers and reduction of inflation rate will boost the performance of industrial sector significantly.

Ogunbayo, Sangodoyin, Lawal and Okoruwa (2014) discusses macroeconomic analysis of the determinants of private investment in Nigeria. The paper examines the behaviour of private investment and influencing factors in Nigeria. The result reveals that there is a linkage between private investment and economic growth vis-à-vis public investment; exchange rate; corruption perception index; inflation; savings rate; terms of trade; political instability; and credit to private sector. The parsimonious Error correction model (ECM) shows that all variables that are significant have a negative relationship with private investment except domestic credit to private sector. The R^2 of over-parameterized and parsimonious ECM are 98% and 96% respectively. The null hypothesis of no relationship between nominal private investment as a percentage of nominal GDP and other explanatory variables were rejected at 5%, because the F-statistic which test the significant of overall regression result stood at 15.8665 and 28.9937 for over-parameterized and parsimonious regression model respectively. Private investment in Nigeria is being affected negatively by mostly all the explanatory variables and serve as cogs to the wheel of progress in investment at large.

What catches the attention of Akpaeti, Bassey, Okoro and Nkeme (2014) was agricultural investments in Nigeria. This study examined the growth rates in agricultural investments and output in Nigeria from 1970-2009 using ordinary least square in a time series analysis. Findings revealed that agricultural investments and growth recorded a growth rate of 37.44 percent and 30.47 percent in the pre-financial sector reform periods. The result for the financial sector reform periods showed a growth rate of 23.00 percent and 7.04 percent for agricultural investment and growth respectively. The differences in growth rates were not significantly different at 5 percent (tcal < ttab at P=0.5) between the periods. There was also deceleration in growth of agricultural investments in the two periods under consideration, implying that financial sector reform might have brought an overall decrease in agricultural investments in the two periods. Also, while there was stagnation in the growth process of agricultural output in the pre-financial sector reform periods, there was acceleration in the financial sector reform periods. Hence, policies and sound regulatory framework that would enhance the development of a strong, healthy and dynamic financial system were recommended. The paper further advocated that such policies should be tailored towards the provision of sound infrastructures and macroeconomic stability that would create incentives for agricultural investment and growth of business opportunities on a sustainable basis and foster the expansion of financial institutions.

5.0. Theoretical Framework and Methodology

The theoretical framework for this work is derivable from the epoch making contribution of John Maynard Keynes' theory of consumption function and multiplier analysis[31]. The theory states that given the components of a typical aggregate demand, be it in autarkic economy or open economy, that a change in any of the components of aggregate demand will trigger a change in aggregate demand, but not by as much as the change in the component but rather in a multiple of the change. Thus technically speaking, multiplier is the amount by which a change in the component of aggregate demand is multiplied to arrive at a new level of aggregate demand. For ease of analysis of this theory as propounded by Keynes, we assume an open economy with two set of investment functions; namely exogenously determined investment and investment as a function of income.

The case of exogenously determined investment:

Given a typical aggregate demand function of the form

$$Y = C + I + G + X - M \quad \text{.....7}$$

Where the variables Y, C, I, G, X and M are as defined in the opening section. Assume further that

$$C = \alpha + \beta Y^d \quad \text{.....8}$$

$$I = I_0 \quad \text{.....9}$$

$$G = G_0 \quad \text{.....10}$$

$$X = X_0 \quad \text{.....11}$$

$$M = m_1 + m_2 Y \quad \text{.....12}$$

$$T = T_0 \quad \text{.....13}$$

Equations 9, 10, 11 and 13 suggest that investment, government expenditure, export and tax are exogenously determined, while equations 8 and 12 show that both consumption and import are a function of income.

From the above structural equations, the national income at equilibrium is given by the equation

$$\bar{Y} = \frac{\alpha}{1-\beta+m_2} + \frac{-\beta}{1-\beta+m_2} T_0 + \frac{1}{1-\beta+m_2} I_0 + \frac{1}{1-\beta+m_2} G_0 + \frac{1}{1-\beta+m_2} X_0 + \frac{-1}{1-\beta+m_2} m_1 \text{..14}$$

[31] Keynes, J. M. (1936) "The General Theory of Employment, Interest and Money" Palgrave Macmillan, UK.

Thus a change in aggregate demand Y as a result of a change in investment given

$$\frac{\partial \bar{Y}}{\partial I} = \frac{1}{1-\beta+m_2}$$

The case of Investment as a function of Income:

Given the above structural equations with a minor adjustment to the investment equation as shown below:

$$C = \alpha + \beta Y^d \quad \text{.....8}$$
$$I = I_0 + I_1 Y \quad \text{.....9'}$$
$$G = G_0 \quad \text{.....10}$$
$$X = X_0 \quad \text{.....11}$$
$$M = m_1 + m_2 Y \quad \text{.....12}$$
$$T = T_0 \quad \text{.....13}$$

The national income at equilibrium becomes

$$\bar{Y} = \frac{\alpha}{1-\beta-I_1+m_2} + \frac{-\beta}{1-\beta-I_1+m_2} T_0 + \frac{1}{1-\beta-I_1+m_2} I_0 + \frac{1}{1-\beta-I_1+m_2} G_0 + \frac{1}{1-\beta-I_1+m_2} X_0 + \frac{-1}{1-\beta-I_1+m_2} m_1 \text{..15}$$

Thus the investment multiplier from equation 15 is given by $\frac{\partial \bar{Y}}{\partial I} = \frac{1}{1-\beta-I_1+m_2}$

On the basis of this theoretical foundation, the model for the study was specified as:

$$GDP = f(CONS, INV, GEXP, EXPT, IMP) \quad \text{.....16}$$

GDP = Gross Domestic Product

CONS = Household Consumption Expenditure

INV = Private Investment Expenditure

GEXP= Government Expenditure

EXPT= Export

IMP= Import

Linearly expressed as

$$GDP = \pi_0 + \pi_1 CONS + \pi_2 INV + \pi_3 GEXP + \pi_4 EXPT + \pi_5 IMP + \varepsilon_t \quad \text{.....17}$$

With a priori expectation that

$$\pi_1, \pi_2, \pi_3, \pi_4 > 0 \text{ and } \pi_5 < 0$$

5.1. Methodology

Econometric analysis of long-run relations has been the focus of much theoretical and empirical research in economics (Pesaran and Shin).The methodology adopted for this study is autoregressive distributed lag. The main reason adopting this methodology is because it is an improvement on the Johansen cointegration technique. While the Johansen cointegration approach tests for the existence of long run relationship among the variables that make up a particular model, the ARDL combines both the short run and long run relationship in a given model. The ARDL for the study is derived from equation 17 above and is specified as:

$$D(GDP) = \pi_0 + \pi_1 \sum_{i=1}^{n} D(GDP)_{t-i} + \pi_2 \sum_{i=1}^{n} D(\text{CONS})_{t-i} + \pi_3 \sum_{i=1}^{n} D(\text{INV})_{t-i} + \pi_4 \sum_{i=1}^{n} D(\text{GEXP})_{t-i} + \pi_5 \sum_{i=1}^{n} D(\text{EXPT})_{t-i}$$

$$+ \pi_6 \sum_{i=1}^{n} D(\text{IMP})_{t-i} + \pi_7 GDP_{t-i} + \pi_8 CONS_{t-i} + \pi_9 INV_{t-i} + \pi_{10} GEXP_{t-i} + \pi_{11} EXPT_{t-i} + \pi_{12} IMP_{t-i} + \varepsilon_t \quad \text{.....18}$$

6.0. Discussion of Results and Findings

6.1. **Unit Root Test**(Critical values for 1%, 5% and 10% are -4.2845, -3.529 and -3.2153 respectively

	Augmented Dickey-Fuller			**Phillips-Perron**		
	Level	1st Diff	Order of Integration	Level	1st Diff	Order of Integration
GDP	-0.1318	-3.4028***	I(1)	-0.9791	-3.3327***	I(1)
CONS	-1.2552	-5.4649*	I(1)	-1.3280	-5.4697*	I(1)
INV	-1.4960	-3.7752**	I(1)	-2.0048	-3.7510**	I(1)
GEXP	-1.8355	-5.9772*	I(1)	-1.9153	-5.9771*	I(1)
EXPT	-1.2681	-7.4345*	I(1)	-1.2681	-8.3983*	I(1)
IMP	-1.4651	-5.2536*	I(1)	-1.7409	-5.2536*	I(1)

Source: Author's calculation*,**,*** significant at 1, 5 and 10% respectively.

The unit roots test above shows that none of the series is stationary. They all were made stationary after first differencing. In order to proceed to the estimation of the ARDL, we first find the optimal lag length of the series as presented in table 5.2. below:

Table 5.2.Optimal Lag Length for ARDL Model

VAR Lag Order Selection Criteria						
Endogenous variables: GDP CONS INV GEXP EXPT IMP						
Exogenous variables: C						
Sample: 1981 2018						
Included observations: 35						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	134.8396	NA	2.56e-11	-7.362262	-7.095631	-7.270221
1	296.6957	258.9698*	1.99e-14*	-14.55404*	-12.68762*	-13.90975*
2	320.9536	30.49561	4.71e-14	-13.88306	-10.41686	-12.68653
3	367.3740	42.44154	4.55e-14	-14.47851	-9.412523	-12.72973
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

All the five selection criterion suggest an optimal lag length of 1.

Table 5.3. The ARDL Estimates

Dependent Variable: D(GDP)				
Method: Least Squares				
Sample (adjusted): 1983 2018				
Included observations: 36 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.485360	0.266344	1.822305	0.0814
D(GDP(-1))	0.766298	0.506379	1.513290	0.1438
D(CONS(-1))	-0.115650	0.191666	-0.603391	0.5522
D(INV(-1))	-0.094391	0.304010	-0.310486	0.7590
D(GEXP(-1))	-0.071044	0.070224	-1.011683	0.3222
D(EXPT(-1))	-0.100575	0.095703	-1.050915	0.3042
D(IMP(-1))	-0.000458	0.094426	-0.004846	0.9962
GDP(-1)	-0.649986	0.339057	-1.917037	0.0677
CONS(-1)	0.235201	0.120151	1.957554	0.0625
INV(-1)	0.250283	0.230495	1.085850	0.2888
GEXP(-1)	0.068251	0.056154	1.215427	0.2365
EXPT(-1)	0.041314	0.082972	0.497929	0.6233
IMP(-1)	0.037717	0.113192	0.333211	0.7420

Following from the results in Table 5.3, we proceeded to test for the long run relationship among the variables using the Wald Test and the results are presented in the table below:

Table 5.4: Wald Test for the Existence of Long run relationship

Wald Test:			
Test Statistic	Value	df	Probability
F-statistic	1.149926	(6, 23)	0.3662
Chi-square	6.899556	6	0.3302
Null Hypothesis: C(8)=C(9)=C(10)=C(11)=C(12)=C(13)=0			
Null Hypothesis Summary:			
Normalized Restriction (= 0)		Value	Std. Err.
C(8)		-0.649986	0.339057
C(9)		0.235201	0.120151
C(10)		0.250283	0.230495
C(11)		0.068251	0.056154
C(12)		0.041314	0.082972
C(13)		0.037717	0.113192
Restrictions are linear in coefficients.			

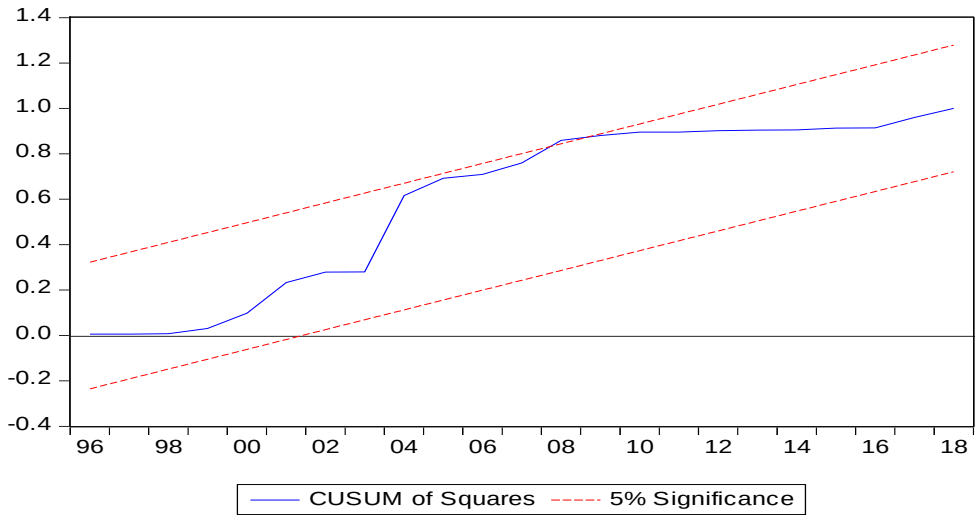
The F statistic is of interest to the determination of long run relationship in the model. This statistic is compared with a pair of critical values as given by Pesaran, Shin and Smith (2001). The pair of statistics by Pesaran *et al* (2001) is such that one assumes that all the variables are I(0), while the other assumes that all the variables are I(1). With the H_0 of no cointegration, if the F statistic obtained from the Wald test exceeds the upper bound value of the Pesaran critical, the H_0 is rejected and we conclude that there is cointegration. However, if the F statistic is less than the lower bound value of the Pesaran critical test statistic, we do not reject the null hypothesis. But if the F statistic falls within the two sets of values, there is inconclusive evidence of the presence of cointegration in the model. Abiola and Egbuwalo (2015).

Table 5.5: Bound testing for Cointegration Analysis

Model	Variables Examined	Lag length	F statistic	5% Bound Values	Remark
1	GDP, CONS, INV, GEXP, EXPT, IMP	1	1.15	2.86-4.01	We do not reject H_0, there is no cointegration

The result from the bound testing shows that there is no long run relationship among the series that make up the model. For robustness of the result,a stability test was conducted and the result is presented in Figure 6.1 below

Figure 6.1: CUSUMQ Stability test results



The fact that the blue line falls within the bounds of the redline suggests that the aggregate demand equations series in the study is stable and the result obtained will be amenable for predictive and forecasting purposes.

5.6: The OLS Estimates of the Equation

Since the bounding test suggests the absence of long run relationship, we estimate only the ordinary least square regression of the aggregate demand equation and the results is presented in Table 5.6 below:

Table 5.6. Ordinary Least Square Regression Results