The Effect of Capital Formation On Economic Growth in Nigeria

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Abstract

This paper examined the effect of capital formation on economic growth in Nigeria for the period of 1988 to 2017 using annual time series data on variables such as gross domestic product (dependent variable), gross fixed capital formation, total national savings and foreign direct investment (independent variables). Ex post facto research design was employed for the study and the collated data was sourced from Central Bank of Nigeria Statistical Bulletin, 2017. The data were analysed using E-view version 9. The findings show that gross fixed capital formation, and foreign direct investment have no significant effect on Nigeria's gross domestic while total national savings have a significant effect on gross domestic product in Nigeria. The study concludedbased on the f statistics probability value of 0.0000 which is lesser than 0.05 critical value. Therefore, capital formation has a significant effect on economic growth in Nigeria for the period under review. The study therefore recommends amongst others that Government must increase their efforts in mobilizing the desired level of gross national savings that could be big enough to attract foreign direct investments. This is very vital as FDI will help to complement our domestic savings.

Keywords: Capital Formation, Economic Growth, Effect, Foreign Direct Investment, and Total National Savings.

Introduction

The rate of growth in an economy cannot be fully analyzed without taking a closer look at the contribution of capital formation to that economy. This fact is based on the understanding that capital formation is an important factor that determines the growth of modern economies (Ugwuegbe&Oruakpa, 2013). What this means is that no country is able to achieve sustained economic growth and development without substantial investment in capital formation. Thus, in a bid to attain economic growth around the world, emphasis has been placed on increased capital formation. As highlighted by Okonkwo(2010), understanding the determinants of the capital formation is a crucial prerequisite in designing a number of policy interventions towards achieving economic growth. This is so because a nation that needs to meet her objective of economic growth and sustainable development must ensure that the right amount of investment is made in crucial areas or sectors of the economy (Shuaib& Dania, 2015). Ogunbi and Ogunseye (2011), explains that it is a trite rule that capital formation or a pool of savings is a necessary condition for accelerating investments represented by tangible goods. Bakare (2011) also elucidated that capital formation refers to the proportion of present income saved and invested in order to augment future output and income. It usually results from acquisition of new factory along with machinery,

equipment and all productive capital goods. It is equivalent to an increase in physical capital stock of a nation with investment in social and economic infrastructure (Ugwuegbe&Uruakpa, 2013). Capital formation, in other words, involves the increase of capital assets by efficient utilization of the available materials and human resources of the country (Gbenga&Adeleke, 2013). It is the increase in the stock of both material and human capital by making available a part of society's currently available resources. It results when some proportion of society's present income is saved and invested in order to increase material as well as human capital. The meaning of capital formation is that society does not apply to the needs and desires of immediate consumption but directs a part of it in the making of capital goods, tools and instruments, machines and transport facilities, plants and equipment, all the various forms of real capital that can so greatly increase the efficiency of productive effort (Owolabi&Ajayi, 2013).

Tushar (2018) explains that the process of forming or accumulating capital has to do with satisfying at least three parameters. First is the creation of savings which involves increase in the volume of real savings so that resources that would have been devoted to the production of consumption goods would be released for purposes of capital formation. Second is the mobilization of savings which is a finance and credit mechanism, so that the available resources are obtained by private investors or government for capital formation. The third and final process before capital can be successfully accumulated when the mobilized savings is invested so that resources are actually used for the production of capital goods. In Jhingan (2006) view the process of capital formation involves three inter-related conditions, viz: the existence of real savings and rise in them; the existence of credit and financial institutions to mobilize savings and to direct them to desired channels; and to use these savings for investment in capital goods.

In Nigeria, accumulation of capital both by the private and public sector has not been stable and may have not been enough to translate to economic growth. For example, Gross Fixed Capital Formation (GFCF) in Nigeria increased to 2494431 NGN Million in the fourth quarter of 2017 from 2129258 NGN Million in the third quarter of 2017. Gross Fixed Capital Formation in Nigeria averaged 1755873.34 NGN Million from 2007 until 2017, reaching an all time high of 2876293 NGN Million in the second quarter of 2016 and a record low of 17236.65 NGN Million in the fourth quarter of 2007 (Trading Economics, 2018). In proportion to gross domestic product, gross

fixed capital formation average was 21.3 percent of GDP in the 1980s. This proportion increased to 23.3 percent of GDP in 1991 and declined drastically to 14.2 percent of GDP in 1996. It picked and increased to 17.4 percentage in 1997 and average 21.7 during 1997 to 2000. The gross fixed capital formation rose from 22.3 percent of GDP in 2000 to 26.2 percent in 2002 and declined to 21.3 percent in 2005. The capital formation rate in 2008 was 0.060 which represent 6% of the GDP. As at 2014 the rate was 15.0 per cent of GDP while as at 2016 the rate dropped to 14.35 percent of total gross domestic product (CBN, 2016).

Overtime, the Nigeria has witnessed a tremendous increase in her revenue profile through oil exports. She has equally enjoyed cycles of oil boom with successive governments harnessing the resources of the nation to execute its budget. Ironically, there has been an increase too in her expenditure pattern overtime. Paradoxically, it does not appear as if the increase in capital expenditures has translated into increased capital formation and consequent economic growth and development. Capital formation in Nigeria has been characterized by fluctuations which may be responsible for lack of inadequate social infrastructure such as roads, power supply and health facilities. The speed and the strength of economic growth in Nigeria have not been satisfactory which contributes equally to the decline in capital formation over time (Oloyede, 2001). By implication, the initial optimism expressed about public sector reforms has not been met as Nigeria continues to be confronted with low rate of economic growth. The rate of infrastructure development is very slow in the country which hinders foreign and domestic investment (Bakare, 2011). The skills of labour are poor and technological backwardness hampering the process of new inventions and innovations (Ajao, 2011). Hence, low capital accumulation is the main obstacle faced in achieving the goal of sustained economic growth in Nigeria (Okonkwo, 2010). The above scenario is quite disturbing and is far from being satisfactory and obviously point towards an ailing economy.

Based on above highlighted problems and in order to give this research work a clear direction, the main objective of this study is to determine the effect of capital formation on economic growth in Nigeria. The specific objectives includes: To determine the causal relationship between gross fixed capital formation and economic growth in Nigeria; to examine the impact of total national savings

on economic growth in Nigeria; and to analyze the effect of foreign direct investment on economic growth in Nigeria.

Judging from the fact that there is a fluctuating trend between Gross Fixed Capital Formation (GCCF) to Gross Domestic Product (GDP) in Nigeria, this study intends to determine the impact of the former on the latter. The study also intends to complement the existing literature by investigating empirically the extent to which capital formation has impacted on economic growth in Nigeria for the period of thirty years (30years), i.e. from 1988 to 2017. Time series data will be collated from the Central Bank of Nigeria Statistical Bulletin of 2017. Gross Domestic Product (GDP) was used as a measure of economic growth while gross fixed capital formation, total national savings, and foreign direct investment were the independent variables employed for the research work. This paper is organized into five sections of which the above section is introduction of the study. Section two emphasizes the review of related literature, section three contains methodology, and section four discusses on data analysis and discussion of findings while section five provides for conclusion and policy recommendations.

Literature Review

Concept of Capital Formation

According to Gbenga and Adeleke, (2013) capital formation is the process of building up the capital stock of a country through investing in productive plants and equipment. In other words, it involves the increase of capital assets by efficient utilization of the available materials and human resources of the country. It is the increase in the stock of both material and human capital by making available a part of society's currently available resources. It results when some proportion of society's present income is saved and invested in order to increase material as well as human capital (Jhingan, 2006). The meaning of capital formation is that society does not apply to the needs and desires of immediate consumption but directs a part of it in the making of capital goods, tools and instruments, machines and transport facilities, plants and equipment, all the various forms of real capital that can so greatly increase the efficiency of productive effort (Owolabi&Ajayi, 2013).

As an indicator of the level of investment in the economy, capital formation promotes production and the speed of economic activity. It plays an important role in actualizing the production potential of the economy and results in technical progress (Pathania, 2013). Economic theories have shown that capital formation plays these roles irrespective of the model of economic development. As such it determines the domestic capacity to produce. Inadequate capital formation is therefore a major constraint to economic development. For these reasons, factors that determine growth of capital formation have always attracted policy attention

Capital formation in Nigeria is measured in monetary term and is referred to as gross fixed capital formation. Gross Fixed Capital Formation (GFCF) is a macroeconomic concept used in official national accounts. Statistically it measures the value of acquisitions of new or existing fixed assets by the business sector, governments and "pure" households (excluding their unincorporated enterprises) less disposals of fixed assets. GFCF is a component of the expenditure on gross domestic product (GDP), and thus shows something about how much of the new value added in the economy is invested rather than consumed. GFCF is called "gross" because the measure does not make any adjustments to deduct the consumption of fixed capital (depreciation of fixed assets) from the investment figures.

Determinants of Capital Formation in Nigeria

According to Kanu and Ozurumba, (2014) the identified sources of financial capital formation in Nigeria are: Total national savings, public corporation, foreign investment and aids, taxation and marketing boards. The ability of these sources has greatly influenced positively the growth of the economy. In the view of Nweke, Odo and Anoke, (2017) capital formation is the main key to economic growth. It reflects effective demand and, on the other hand, it creates productive efficiency for future production. The determinants of capital formation in Nigeria are conceptualized as follows:

Total National Savings: Succinctly stated, Stephen andObah, (2017) define savings as income minus consumption and government purchases. It is the sum of private and public savings. Igbatayo and Agbada (2012) posit that higher level of national savings leads to higher investment and consequently higher output. This is so because the level of savings determines the magnitude

of capital accumulation. On the other hand, the magnitude of total earnings depends on the level of total output, thus output also determines the level of savings (capital accumulation) and investments by households and business.

Foreign Direct Investment: This refers to investment by multinational companies with headquarters in developed countries. This investment involves not only a transfer of funds (including the reinvestment of profits) but also a whole package of physical capital, techniques of production, managerial and marketing expertise, products advertising and business practices for the maximization of global profits.Ali (2005) stressed that foreign direct investment is a significant part of capital formation in the country. Foreign direct investments consist of external resources, including technology, managerial and marketing expertise and capital.

Surplus Labour: Donwa and Odia (2009) points out how underdeveloped countries suffer from disguised unemployment on a mass scale. This surplus labour force can be put to work on capital projects like irrigation, drainage, roads, railways, and houses. They can supply simple spare tools by farmers and food by their families and through that way, surplus rural labour force can be a source of capital formation. Aiyelogbon (2011) on the other hand suggested that economic growth takes place when capital accumulates with withdrawal of surplus labour from rural sector and its employment in the industrial sector. Such workers are paid the subsistence wage which is less than the prevailing market wage rate. This leads to profits which are invested by capitalists for capital formation.

Population Growth: Jhingan (2006) argued that as population increases, per capita available income declines as people are required to feed more children with the same income. It means more expenditure on consumption and a further fall in the already low savings and consequently in the level of investment. Furthermore, a rapidly growing population with lower incomes, savings and investment compels the people to use a low level technology which further retards capital formation.

Interest Rate: An interest rate is the amount of interest due per period, as a proportion of the amount lent, deposited or borrowed (called the principal sum). The total interest on an amount lent

or borrowed depends on the principal sum, the interest rate, the compounding frequency, and the length of time over which it is lent, deposited or borrowed. It is defined as the proportion of an amount loaned which a lender charges as interest to the borrower, normally expressed as an annual percentage (Jhingan, 2006).

Government Assets: According to Mark (2012) government assets and their value at the time of assessment are the main factors behind capital formation. Governments begin capital formation by buying land in times of economic stagnation, when property values fall. In such times, they are also liable to seize land. It is then their choice to hold onto the land or to sell it. Favourable government policies aim at fostering investment-friendly environment through provision of basic infrastructural facilities, subsidies, tax concessions, investment allowances and low interest rate, high disposable incomes and business profits also determine capital formation (Donwa& Odia,2009).

Classification of Capital Formation in Nigeria

According to Ugwuegbe and Uruakpa, (2013), capital formation can be classified into private domestic investment and public domestic investment. The public investment includes investment by government and public enterprises while the domestic investment is equivalent to fixed capital formation plus net changes in the level of inventories. The combination of both the private and public sector domestic investment is what is needed to experience economic growth in Nigeria. According to Ainabor, Shuaib and Kadiri, (2014) economic growth may be measured through building of capital equipment on a sufficient scale to increase productivity in agriculture, mining, plantations and/or industry on the one hand. While on the other, capital is required to construct schools, hospitals, roads, railways, improve overall standards of living and engagement in research and development etc. (Jhingan, 2006). Notably, the essence of economic growth is the creation of economic and social overhead capitals (or costs), which leads to increase in national output and/or income through creation of employment opportunities and/or reduction of vicious circle of poverty both from the demand side and supply side.

Reasons for Low Level of Capital Formation in Nigeria

Ajao (2011) posits that some of the reasons for low capital formation are as follows:

Low Income: Large savings are essential for capital connation; savings depend upon the size of the income. Since agriculture, industry and other sectors are backward in underdeveloped countries like Nigeria, the national output is low and so is the national income. As a result, per capita income is also low. On the other hand, the propensity to consume is very high, it is near unity. So almost the entire income is spent on consumption, thus saving is not possible and the rate of capital formation remains low.

Low Productivity: Since the level of productivity is very low in such countries, the rates of growth of national income, saving and capital formation is also low. Their natural resources are either unutilized or underutilized due to the lack of efficient labor and technological knowledge, non-availability of capital, etc. these factors stand in the way of increasing the incomes of the resource-owners so that they are unable to save and invest more and the rate of capital formation does not rise.

Demographic Reasons: Less Developed Countries (LDCs) possess such demographic features which keep the rate of capital formation at a low level. The growth rate of population is very high. On the other hand, the per capita income is low. As a result, the entire income is spent on bringing up the additional numbers, and little is saved for capital formation.

Lack of Enterprise: The lack of entrepreneurial ability is another factor responsible for low rate of capital formation in less developed countries. In fact, entrepreneurship is regarded as the focal point in the process economic development. But in less developed countries, small size of market, deficiency of capital, lack of private property and contract etc retard enterprise and initiative, thus there is low rate of capital formation.

Lack of Economic Overhead: the existence of economic overheads is essential to make fruitful investment and to encourage enterprise, for capital formation depends on them to a considerable extent. But economic overheads like power, transport, communications, water etc; are lacking in

less developed countries which retard enterprise, investment, activities and the path of capital formation.

Lack of Capital Equipment: In such countries the rate of capital formation also remains low due to the lack of capital equipment. Here not only the capital stock is low, but even capital is deficient. The total capital investments are hardly 5 to 6 per cent of the national income in Less Developed Countries whereas it is 15 to 20 per cent in developed countries. Due to the shortage of capital, it is not possible to replace the existing capital equipment and even to cover its depreciation in such countries. As a result the rate of capital formation remains at a low level.

Inequalities in Income Distribution: There are extreme inequalities in income distribution which keep the rate of capital formation low in such countries. But income inequalities do not imply larger savings. In fact larger savings are possible only in the case of the top 3 to 5 percent of the people in the income-pyramid. But these people invest in unproductive channels like gold, ornaments, precious stones, real estates, foreign currency etc. This distorts real investment and the rate of capital formation is low.

Small Size of the Market: The small size of the market is another reason for the low rate of capital formation in Less Developed Countries. It is a big hindrance in the way of enterprise and initiative. People are poor in such countries. The demand for goods is limited due to their low incomes Hence it is the small size of the domestic market to absorb the supply of new products. This keeps the rate of capital formation at a low level.

Capital Formation and Economic Growth in Nigeria

Capital formation as a component of economic growth and development in any society are the process of acquiring additional capital stock which is used in productive process. The foundation of capital accumulation is savings and it results when some portion of present income is saved and invested in order to augment future output and incomes. The extent to which the level of savings can affect capital accumulation and growth largely depends on the capacity of the economy to channel the savings into productive use. Higher savings then implies higher capital accumulation

and hence, economic growth.Stephen and Obah, (2017) explained that the growth of domestic product in Nigeria reached its peak in 1970 with about 25% annual growth. In the mid-1970s, income fluctuated with little overall trend, but then it plummeted in 1981 with the onset of an acute economic crisis. Despite the discovery and exploration of crude oil in 70's, it consistently fell beyond zero percent in 1975 and 1978 with exception of 1974 when it was 11%. This continued to fall to about -13% in 1981 which marked the beginning of economic crises as a result of fall in the price of crude oil in the global market. Between 1981 and 1984, real output fell at an annual average rate of nearly 6 percent which incidentally increased to about 10% in 1985. The Structural Adjustment Program adopted in 1986 brought about temporary relief, with real growth averaging over 8% per annum between 1988 and 1990. The 1990s, however, witnessed nearly complete stagnation, with average income growing at a rate almost less than half a percentage point per annum. and throughout the 90's, it has the highest of 8% in 1990 and since then fell to zero percent in 1994 and 1 % in 1999. It increased to 5% in 2000 and 11% in 2003 and thus decreased through to 2006. In order to fully explain the trend of economic growth between1970 and 2016 period, it was found desirable to split the period into three sub-periods, with the line of demarcation given by the initiation of major economic reforms under the aegis of the 1986 Structural Adjustment Program (SAP). We refer to these periods as the pre-liberalization era (1970-1986) and the economic liberalization era (1987-1999) and democratic or post liberalization era (2000 to date). The central objective of Nigeria's Structural Adjustment Program was to restructure and diversify the productive base of the economy in order to reduce dependence on the oil sector and imports. Originally planned to last for only two years (July 1986 to June 1988), the SAP period was extended several times to allow for the phased introduction of the requisite policy reforms and provide a period within which results could come to fruition (Stephen &Obah, 2017).

Theories Applicable to the Study

Life Cycle Theory of Savings

The life-cycle theory propounded by Modigliani and Brumberg (1950) is based on the observation that individuals make consumption decisions based on the resources available to them over their life time and their current stage in life. The theory predicts that the age consumption of a country's population should influence its savings behavior in such a manner that the higher the proportion of a country's population that is not in the active labour force, the lower its savings rate should be. In other words, individuals will save when they are young and have low income, save during their

productive years, and once again save when they retire. Nwachukwu and Egwaikhide (2007) postulated that the life-cycle hypothesis is the principal theoretical underpinning that has guided the study of savings behavior over the years. Each of the determinants of savings is articulated in the context of the life-cycle hypothesis which state that the determinant of savings behaviors include income, growth of income, interest rate, inflation and macroeconomic stability, fiscal policy, external debt, term of trade and financial development. Life-Cycle Income Hypothesis (LCH) is derived from the aggregation of finitely-lived overlapping generations. It view individuals as choosing a life time stream of consumption and savings in a way that present value of their consumption equals the present value of their life time earnings and inheritance (Deaton, 1977).

The theory is related to the study because it explains that capital formation is a reflection of the age structure of the population and it is expected to affect the savings ratio within a society. The theory suggest that individuals save for retirement when they are in working age and don't save when they are old. Thus, younger societies are likely to display higher savings than other ones.

Endogenous Growth Theory

This theory is propounded by Romer in 1986. The theory suggested that investment in human capital; knowledge and innovation are the engine to accelerate economic growth. That is, the improvements in productivity will increase the pace of innovation and extra investment in human capital. He stressed the need for government and private sector institutions to encourage innovation and provide incentives for individual and business to be inventive. It is the central role of the accumulating knowledge which serve as a determinant of growth i.e knowledge industries such as telecommunication, electronics, software or biotechnology are becoming increasingly important in developing countries. The proponent of this theory also believes that positive externalities are to be exploited from the high value added knowledge economy which is capable of developing and maintaining competitive advantage and in fact growth within the global economy.The main points of the endogenous growth theory are as follows: the rate of technological progress should not be taken as a constant in growth model. Government policies can permanently raise a country's growth rate if they lead to more intense competition in markets and help to stimulate product and process innovation. There are increase returns to scale from new capital investment. The

assumption of the law of diminishing returns is questionable. Endogenous growth theorists are strong believers in the potential for economies of scale (or increasing returns to scale) to be experienced in nearly every industry and market. Private sector investment in research and development is a key source of technical progress. Availability of the workforce is an essential ingredient of long-term growth. Government policy should encourage entrepreneurship as a means of creating new businesses and ultimately as an important source of new jobs, investment and innovation. The protection of private property rights and patents is essential in providing appropriate and effective incentives for businesses and entrepreneurs to engage in research and development. Also, investment in human capital (including the quantity and quality of education and training made is important.

Brief Empirical Review

Examining the capital formation and economic development through government expenditure on education, Adeleye (2018) investigated the factors that affected long term capital formation through the Nigerian capital market and their effect on economic growth. The study covered a period of twenty-five years spanning from 1990-2014. The econometric methodology adopted is the Ordinary Least square method (OLS). Secondary data was obtained from the Central Bank of Nigeria (CBN) statistical bulletins, Nigerian Stock Exchange (NSE) fact books, Security and Exchange Commission (SEC) market Bulletins and relevant journals. The independent variables of market capitalization, number of quoted companies and traded value and the dependent variable of gross domestic product. Result revealed that the stock market had a significant but weak impact on the Nigerian economy. Absence of an efficient stock market starved economy of long term funds for sustainable growth and development. Government should formulate policies that will improve and develop the capital market for accessibility of long term investment funds by the industrial sector. A stricter regulatory environment is recommended for the capital market to curb their nebulous activities and relaxing some of the stringent requirements for viability of the Small and Medium Enterprises (SME's) listing on the stock exchange.

Nweke*et al* (2017) examined the effect of capital formation on economic growth in Nigeria. The specific objectives of the study are to: (i) determine if capital formation has any significant impact on economic growth in Nigeria. (ii) determine the direction of significant causal relationship

between capital formation and economic growth in Nigeria. The study adopted co integration and vector error correction model in the analysis of the variables specified in the model in addition to VEC granger causality test. The result of the data analyzed showed that; Stable long run relationship exists between the dependent and independent variables as indicated by two (2) co integrating equations. In the VECM, it was found that gross capital formation (GCF) has a positive insignificant impact on real gross domestic product (RGDP) in the short run and the long run. Government capital expenditure (GCE) revealed negative significant correlation with RGDP (real gross domestic product) both in the short and long run; From the causality test, the p value of 0.0004 for RGDP and p-value 0.0016 for GCF is less than 0.05; showing that a bi directional causality runs amid RGDP (real gross domestic product) and gross capital formation (GCF). Another two way causality also among GCF (gross capital formation) and GCE (government capital expenditure) indicated with a p value of 0.0007 and p-value of 0.0000 for GCF. The implication of this study is that gross capital formation has no significant impact on economic growth in Nigeria within the period of study. Based on the findings and policy implications, the study makes the following recommendations; there should be a deliberate collaboration between the government and the private sector towards building enabling environment that promotes capital investment in the economy. There should be conscious effort by both government and private sector to address the issue of corruption in the economy in addition to strengthening public statistical bodies to ensure that all private investments are captured and regulated.

Sunny and Osuagwu (2016) examined the impact of capital formation on the economic development of Nigeria from 1990 to 2015. The paper applied Harrod – Domar model to Nigerian economic development and tested if it has a significant relationship with Nigerian economy. The work studies the extent to which capital formation affects economic growth in Nigeria. Making use of the multiple linear regression model through the ordinary least square (OLS) method, the impact of capital formation on the Nigeria's economic growth was examined. The analysis discovered that there is a significant positive relationship between capital formation and economic growth in Nigeria both in the short-run and long-run. It also discovered that the rate of savings is not significant to enhance economic growth. The paper recommended based on the econometric results that the government should encourage savings, create conducive investment climate and

improve the infrastructural base of the economy to boost capital formation and hence promote sustainable growth.

Kanu&Ozurumba, (2014) examined the impact of capital formation on the economic growth of Nigeria using multiple regressions technique. It was ascertained that in the short run, gross fixed capital formation had no significant impact on economic growth; while in the long run; the VAR model estimate indicates that gross fixed capital formation, total exports and the lagged values of GDP had positive long run relationships with economic growth in Nigeria. It was equally ascertained that there exists an inverse relationship between imports (IMP), Total National Savings (TNSV) and economic growth; while GDP was seen to have a unidirectional causal relationship with export (EXP), Gross fixed capital formation (GFCF), Import (IMP) and Total national saving (TNSV). The paper recommended based on the econometric results that the government should continue to encourage savings, create conducive investment climate and improve the infrastructural base of the economy to boost capital formation and hence promote sustainable growth.

Ugwuegbe and Uruakpa, (2013) investigated the impact of capital formation on economic growth in Nigeria. To analyze the impact of capital formation, stock market capitalization, inflation rate and interest rate on economic growth, the study employed Ordinary least square (OLS) technique. To test for the properties of time series, phillip-perron test was used to determine the stationarity of the variables and it was discovered that gross fixed capital formation and economic growth are integrated of order zero I(0), Johansen co integration test was employed to determine the order of integration while error correction model was employed to determine the speed of adjustment to equilibrium. The empirical findings suggested that capital formation has positive and significant impact on economic growth in Nigeria for the period under review. The paper recommended based on the econometric results that the government should encourage savings, create conducive investment climate and improve the infrastructural base of the economy to boost capital formation and hence promote sustainable growth.

Methodology

For the purpose of this study an ex post facto research design was used to carry out an empirical investigation on the topic. The data used for this study are basically annual time series data covering the period of thirty (30) years, i.e. from 1988 to 2017. The data used for dependent variable (gross domestic product) and independent variables (gross fixed capital formation, total national savingsand foreign direct investment) were obtained from Central Bank of Nigeria Statistical Bulletin of 2017. This study adopts the statistical method of multiple linear regression approach using Ordinary Least Square (OLS) to examine the relationship between GDP, GFCF, TNS and FDI. Econometric view version 9 was used to analyse the data.

Model Specification

The multiple regression equation is explicitly specified as follows:

$Y = f(X_1, X_2, X_3, \ldots\ldots X_n)$

Substituting the variables, we have:

$GDP = f(GFCF, TNS, FDI)$ …….. (1)

In an econometric term, the model is formulated as follows:

$GDP = \beta_0 + \beta_1 GFCF_1 + \beta_2 TNS_2 + \beta_3 FDI_3 + \mu$. …….. (2)

Where, GDP = Gross Domestic Product

GFCF = Gross Fixed Capital Formation

TNS = Total National Savings

FDI = Foreign Direct Investment

β_0 = Intercept/Constant term

$\beta_1 - \beta_3$ = coefficient of independent variables

μ = error term

Data Analysis and Interpretation of Results

This section presents the result of analysis and their interpretations.

Table 1: Unit Root Test

Group unit root test: Summary
Series: GDP, GFCF, TNS, FDI
Date: 02/28/19 Time: 20:34
Sample: 1988 2017
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.61575	0.0001	4	108
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.60305	0.0002	4	108
ADF - Fisher Chi-square	39.5548	0.0000	4	108
PP - Fisher Chi-square	52.8262	0.0000	4	112

Source: Econometric view Version 9
** Probabilities for Fisher tests are computed using an asymptotic Chi

The unit root test in table 1 above shows that at various levels of significance (1%, 5% and 10%), the time series were stationary. The researcher opted for group unit root test for better output. From the result GDP, GFCF, TNS and FDI were all integrated at the same order which is first difference I(1), therefore all the time series data in this study are stationary. Thus, the model is adequate for the purpose of the study.

Table II: Model Results

Statistics	Coefficient	Standard Error
β_0	5594.021	1251.874
β_1	1.151489	0.783546
β_2	6.553843	1.001106
β_3	-0.255578	0.146334

Source: Authors compilation derived from E view 9

The model for this study can be recalled and re-written as follows:

$$GDP = \beta_0 + \beta_1 GFCF_1 + \beta_2 TNS_2 + \beta_3 FDI_3 + \mu$$

$$GDP = 5594.021 + 1.151489 GFCF_1 + 6.553843 TNS_2 - 0.255578 FDI_3$$

The rewritten model shows that if all independent variables remain constant, the gross domestic product will remain ata positive value of 5594.021. Also, the coefficient values of gross fixed capital formation and total national savings has positive values of 1.151489 and 6.553843 respectively. This simply means that, a unit increase in each of the variables will result to a

simultaneous increase in Nigeria's gross domestic product. However, foreign direct investment has a negative value of -0.255578. This explains that a unit increase in FDI will lead to a proportional decrease in Nigeria's gross domestic product.

Table III: T-Statistic Results

Variable	T- value	Probability value
GFCF	1.469587	0.1537
TNS	6.546605	0.0000
FDI	-1.746545	0.0925

Source: Authors compilation derived from E view9

The t-statistic results (probability level) of GFCF, TNS and FDI were 1.469578, 6.546605 and -1.746545. The probability values of these variables are: 0.1537 (GFCF), 0.0000 (TNS) and 0.0925 (FDI). This indicates that gross fixed capital formation, and foreign direct investment have no significant effect on Nigeria's gross domestic product because their probability values were greater than 0.05 critical values. However, total national savings has a p values of 0.0000 which is lesser than 0.05 critical value. Thus, total national savings have a significant effect on gross domestic product in Nigeria.

Table IV: Model Validity and Anova Results

Statistic	Results
R Square	0.984082
Coefficient of Determination (Adjusted R^2)	0.982246
Anova (F)	535.8007
Probability value	0.000000
Durbin Watson (DW)	0.934196

Source: Authors compilation derived from E view 9

The coefficient of determinant R^2 is 0.984082 which means that 98.4% of the variation in Nigeria's gross domestic product is explained by the independent variables employed in the model while the remaining 1.6% unexplained variation is being influenced by other variables outside the model but captured by the error term. The adjusted R^2 is 0.982246which means that 98.2% of the variation explained the fitness and generality of the model. The value is expected to be the same or very close to R^2. The Durbin Watson statistics in the model is 0.934196 falls within the range 0 and 2. Value ranging from zero to two indicates a strong positive correlation while a value from two to four imply a strong negative correlation.The F statistics in the regression line 535.8007with pvalue

of 0.0000. Therefore, the pvalue is less than 5% level of significance (0.0000<0.05). This can be easily inferred that capital formation has a significant effect on economic growth in Nigeria for the period of 1988 to 2017.

Findings and Conclusion

The study examines the effect of capital formation on economic growth in Nigeria. The analysis of the data reveals that gross fixed capital formation, and foreign direct investment have no significant effect on Nigeria's gross domestic while total national savings have a significant effect on gross domestic product in Nigeria. The f statistics probability value of 0.0000 which is lesser than 0.05 critical value, helps to conclude this study. Therefore, capital formation has a significant effect on economic growth in Nigeria for the period of 1988 to 2017. Thus, effort should be directed at increasing the level of capital formation in Nigeria since it has the potential to drivethe economy to the next level.

Recommendations

Based on the findings of this research; weproffer the following recommendations:

Government must increase their efforts in mobilizing the desired level of gross national savings that could be big enough to attract foreign direct investments. This is very vital as FDI will help to complement our domestic savings.

Government should work on her potentially exportable commodities. The proceeds should be utilized in the importation of needed technical tools and components.

Basic infrastructures like good roads, electricity supply and security must be seen to be adequate. This will help to reduce the drudgeries currently being faced by manufacturers.

Policy formulators in Nigeria need to enact some investor friendly policies that will encourage, promote and attract more capital inflows (Be it official or private inflows) and to provide a conducive and enabling environment for gross fixed capital formation to thrive.

There is also the need to reduce the level of capital flight out of country. Inflows should be tied to specific, relevant and purposeful projects. This will help to create employment opportunities in the long run.

Prudence and proper accountability should be the watchword in the management of accruals from official capital inflows and transfers. Such monies are expected to be channeled into productive ventures by the governments in power and not for profligacy.

Lastly, macroeconomic projections should guide the overall level of expenditure. As such, their projections need to be more realistic, internally consistent and based on more accurate and timely information.

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Appendix I

Data on Gross Domestic Product, Gross Fixed Capital Formation,

Total National Savings, and Foreign Direct Investment.

YEAR	GDP (N' Billion)	GFCF (N' Billion)	TNS (N' Billion)	FDI (N' Billion)
1988	320.33	23.26	23.25	1718.2

1989	419.2	35.12	23.8	13877.4
1990	499.68	40.43	29.65	4688
1991	596.04	45.19	37.74	6916.1
1992	909.8	70.81	55.12	14463.1
1993	1,259.07	96.92	85.03	29660.3
1994	1,762.81	105.58	110.97	22.2
1995	2,895.20	141.92	108.49	75.9
1996	3,779.13	204.05	134.5	111.3
1997	4,111.64	242.9	177.65	110.5
1998	4,588.99	242.26	200.07	80.7
1999	5,307.36	231.66	277.67	92.8
2000	6,897.48	331.06	385.19	116
2001	8,134.14	372.14	488.05	132.4
2002	11,332.25	499.68	592.09	225.2
2003	13,301.56	865.88	655.74	258.4
2004	17,321.30	863.07	797.52	248.2
2005	22,269.98	804.4	1316.96	654.2
2006	28,662.47	1,546.53	1739.64	624.5
2007	32,995.38	1,936.96	2693.55	759.4
2008	39,157.88	2,053.01	4118.17	971.5
2009	44,285.56	3,050.58	5763.51	1273.8
2010	54,612.26	9,183.06	5954.26	905.7
2011	62,980.40	9,897.20	6531.91	1360.3
2012	71,713.94	10,281.95	8062.9	1113.5
2013	80,092.56	11,478.08	8656.12	875.1
2014	89,043.62	13,595.84	12008.24	738.2
2015	94,144.96	14,112.17	11458.13	602.1
2016	101,489.49	15,104.18	12320.23	1124.1
2017	113,711.63	16,908.13	12965.06	1069.4

Source: CBN Bulletin, 2017

Appendix II

Group unit root test: Summary
Series: GDP, GFCF, TNS, FDI
Date: 02/28/19 Time: 20:34
Sample: 1988 2017
Exogenous variables: Individual effects
Automatic selection of maximum lags

Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-3.61575	0.0001	4	108
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.60305	0.0002	4	108
ADF - Fisher Chi-square	39.5548	0.0000	4	108
PP - Fisher Chi-square	52.8262	0.0000	4	112

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Dependent Variable: GDP
Method: Least Squares
Date: 02/28/19 Time: 20:35
Sample: 1988 2017
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5594.021	1251.874	4.468519	0.0001
GFCF	1.151489	0.783546	1.469587	0.1537
TNS	6.553843	1.001106	6.546605	0.0000
FDI	-0.255578	0.146334	-1.746545	0.0925

R-squared	0.984082	Mean dependent var	30619.87
Adjusted R-squared	0.982246	S.D. dependent var	35775.64
S.E. of regression	4766.941	Akaike info criterion	19.90036
Sum squared resid	5.91E+08	Schwarz criterion	20.08719
Log likelihood	-294.5054	Hannan-Quinn criter.	19.96013
F-statistic	535.8007	Durbin-Watson stat	0.934196
Prob(F-statistic)	0.000000		