

Determinants of Capital Formation in Nigeria: A Test of Jhingan's Proposition 1981-2014.

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ABSTRACT

The study was motivated to examine factors that determine Nigerian capital formation. The objective was to test Jhingan's propositions for sources of capital formation in Nigeria. Time series data were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin. Nigerian Gross Fixed Capital Formation (GFCG/GDP) was modeled as the function of Broad Supply (M2/GDP), Credit to Private Sector (CPS/GDP), Gross National Savings (GNS/GDP), Commercial Banks Lending Rate, Exchange Rate (EXR), Inflation Rate (INFR), External Debt (EXTD/GDP), Public Expenditure (PEX/GDP), Government Revenue (GR/GDP), Terms of trade (TT/GDP) and Operating Surplus (OPS/GDP). Cointegration Test, Augmented Dickey Fuller Unit Root Test, Granger Causality Test and Vector Error Correction Model were used to test the dynamic relationship between the variables. Findings proved that M2/GDP, GNS/GDP, EXR, EXTD/GDP, TT/GDP have negative and insignificant effect on capital formation while CPS/GDP, LR, INFR, PEX/GDP, GR/GDP and OPS/GDP have positive and insignificant effect. The model summary revealed 86.0% explained variation and f-statistics 12.38458 probability of 0.000004. The study concludes that the variables have significant impact on Nigerian Gross Fixed Capital Formation and confirm the Jhingan's proposition. It therefore recommend that the financial sector should be deepened, policies should be directed to discourage capital flight and government expenditure should be directed towards infrastructural development as against consumable goods to enhance capital formation in Nigeria.

Keynotes: Capital Formation, Gross Fixed Capital Formation, Determinants, Jhingan's Propositions.

1. INTRODUCTION

The relationship between capital stock and economic development has well been document in literature. Contributors to that high theory include Hirschman, Lewis, Myrdal, Nurkse, Rosenstein Rodan, Sevitorsky and Streeten (Anthony & David, 2013). Capital formation is a component of Gross Domestic product by income together with consumption and net exports and services as an indicator of the level of investment in the economy. The concept means that society does not apply the whole of its current production activity to the needs and immediate desire of consumption but directs some part of it to the creation of capital goods (Jhingan, 2005). Capital formation promotes production and determines the speed of economic growth and

development. It play important role in increasing the production potential of the economy and brings about balance growth of different sector of the economy that results in technical progress (Pathania, 2013). Economic theories have shown that capital formation plays critical role in the model of economic development and determine the National capacity to produce. This means that inadequate capital formation is a major constraint to economic development. Therefore factors that determine growth of capital formation should be given adequate attention.

Nigeria is a developing country that requires steady increase in capital stock to achieve her development plans. Over the years Nigeria government recognized the important of capital formation and embarked on structural, institutional and policy reforms to enhance the smooth functioning of thee economy that will enhance capital formation, for instance, the liberalization of the economy in the last quarter of 1986, financial sector reforms such as the internationalization of Nigeria capital market and the recapitalization of the financial institutions, other macroeconomic reforms such as overheads in the business environments. The extents to which these have affected the growth of capital formation remain a matter of concern to scholars. An examination of CBN Reports shows that Nigerian Gross fixed capital formation was 11.63%, 10.23%, 8.15%, 10.48% and 11.02% of Gross Domestic Product between 2010-2015, compared with 43% in Mauritania in 2014, 32% in India, and 58% in Bhutan. This means that, poor capital formation is one reason that led to the failure in achieving the various Nigeria development plans.

The reason for the marginal growth in capital formation can be traced to that fact significant proportion of the private and public income is laundered abroad in form of capital flight and not invested in the domestic economy. Another reason is the huge consumption and importation of consumable goods. For instance, the president have a convey of at least 10 cars with each cost not less than 10 million, the Vice President, the senate president, the governors, office of the first lady and other government official have similar convey. Nigeria is one country with highest number of private jets owners, up to church general overseers and commercial banks managing directors. From the above this study intends to examine the determinations of capital formation in Nigeria. . Section two focuses on both theoretical and empirical review of related literature, section three deals with the research methodology. Section four deals with the data analysis and presentation and the fifth section contain the conclusion and recommendations from the findings.

2. Literature Review

Reasons for Low Level of Capital Formation: Jhingan's Preposition

Low Income: Large savings are essential for capital connation; savings depend upon the size of 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 labour 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 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. Besides, the rapid increase in numbers aggravates the shortage of capital because large investments are required to equip the growing labour force even with obsolete equipment. Moreover, in such economic a large percentage of children in the total population entail a heavy burden on the parents in bringing them up and they are unable to save for capital formation. Lastly, such countries have a shorter life expectancy which means a smaller fraction of their population is available as an effective labour force. Since workers die in the prime of their lives, there are few adults to provide for large number of children. This brings down the per capita income further. Thus demographic reasons inhibit the rate of capital formation.

Lack of Enterprise: The lack of entrepreneurial ability is another factor responsible for low rate of capital formation in Less Developed Countries. Infact entrepreneurship is regarded as the focal point in the process economic development. But in Less Developed Countries, the 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.

Lack of Financial Institutions: Another reason for the low rate of capital formation in such countries is the lack of financial institutions to procure funds for investment. Larger capital expenditures are required for productive purposes. But this is not possible because of the lack of properly developed capital and stock markets, and credit and banking institutions. As a result, sufficient savings cannot be mobilized for investment purposes and the rate of capital formation remains low.

Economic Backwardness: Economic backwardness is also responsible for the low rate of capital formation in Less Developed Countries. Low labour efficiency, factor, immobility, limited specialization in occupation and in trade, economic ignorance, traditional values and social structure retard saving and investment, and prevent the rate of capital formation from increasing.

Technological Backwardness: Technological backwardness also stands in the way of capital formation. Obsolete techniques of production are used in such countries. As a result, per unit labour productivity and per unit capital productivity remain low. This situation keeps the national output and income low; and the rate of capital formation fails to rise.

Deficit Financing: One of the important sources of capital formation in such countries is deficit financing. But if it crosses the limits of safety then it tends to lower the rate of capital formation. It happens when deficit financing leads to an inflationary situation in the country. When prices rise, goods become dearer. As a result, consumers are required to spend a larger portion of their incomes on buying goods, and it becomes difficult to save. This retards capital formation.

Increase in Taxes: Taxes also retard and reduce capital formation. When governments increase the number and rates of taxes as a means of forced savings, the incomes of consumers are reduced. This may be due both direct and indirect taxes. Direct taxes reduce income directly while indirect tax reduces income by raising their prices. Thus savings and capital formation are retarded.

Demonstration Effect: According to Nurkse, one of the important reasons for low rate of capital formation in Less Developed Countries is the demonstration effect. Everybody has an urge to imitate the standard of living of his prosperous neighbours. Similarly, there is a tendency on the part of the people of such countries to emulate the higher consumption standards of advanced countries. This demonstration effect is usually caused by foreign films, magazines and visits abroad. As a result, the rise in incomes is spent on increased expenditure on conspicuous consumption and thus savings are almost static or negligible. Thus the rate of capital formation fails to rise.

Source of Savings: The rate of voluntary private savings is extremely low in Less Developed Countries because of the low level of incomes and a high propensity to consume. Even dissaving is common among low income household in such countries.

Sources of Capital Formation: Jhingan's Proposition

Formation of capital is determined by increase in the volume of real savings, mobilization of savings and investment savings. This means capital formation from Jhingan's view is monetary phenomenon. He disaggregates the factors as domestic and external factors.

Increase in National Income: the first important step is to increase the national output or income which will tend to raise the income of the people. This can be done by utilizing the existing techniques and employing resources more efficiently, by utilizing unused resources productively and increased division of labour.

Savings Drives. Savings drives will also help solve the problem of augmenting savings. They require concerted efforts in the form of propaganda and social education. Savings is a matter of habit which can be inculcated by propaganda. People can be persuaded to save in their own interest or in the interest of the family, for imparting education to their children, for marrying them, for building a house or as a safeguard against old age, sickness or emergency. Similarly, issuing savings certificates in the form of government bonds and annuities carrying a high rate of interest may be helpful in mobilizing savings. Further incentive to savings can be in the form of business gifts, lottery prizes and tax exemption on the purchase of government bonds.

Establishment of Financial Institutions: It is common knowledge that much of the unspent current income is hoarded in cash; jewels, gold, etc., by the people in underdeveloped countries. Therefore, the need is to establish financial institutions where small savers can safely deposit their money with confidence. The setting up of a well-developed capital and money market by the central bank can give further impetus in this direction. In order to stimulate small savings among the masses, attention should be paid to the starting of like insurance, compulsory provident fund, provident fund-cum-pension-cum, life insurance schemes, opening up of savings banks and mobile banks in rural areas, and promoting savings through cooperative societies, including the establishment of service cooperatives and strong apex institutions like the central and state cooperative banks. Such agencies will not only permit small amounts of saving to be handled and invested conveniently but will allow the owners of savings to retain liquidity individually and finance long-term investment collectively.

Rural Savings: Another important measure is to encourage rural savings for local needs which are understood and approved of by the savers. Government securities might be attached to particular development projects in rural areas. These rural debentures should as far as possible be for specific projects of development in which the villager is interested in different degrees, according as they are of direct benefit to him, or to those with whom he shares fellowship of interest because of their belonging to his district or region or state. The guiding policy should therefore, be to link rural savings with local development projects. In this way, mobilization of rural savings might lead to more rapid development. Such voluntary savings can even lead to that “critical minimum” which is so essential for a “take-off”.

Gold Hoards: Another method is the mobilization of gold hoards. This is a useful, though a neglected method of capital formation. The government should issue gold certificates carrying a high rate of interest in lieu of the gold surrendered by the public.

Perpetuation of Income Inequalities: This is also regarded as one of the measures to achieve high rates of saving and investment. Since the mass of the people have a low marginal propensity to save in underdeveloped countries, it is the higher income groups with a high marginal propensity to save that can do saving and investment for capital formation. This had been one of the major sources of capital formation in 18th century England and early 20th century Japan. But widening of income inequalities is not feasible under the prevailing political climate in underdeveloped countries. Moreover, it is not definite that the wealthy classes may utilize their

savings for productive investments, as was done by the British entrepreneurs of the 18th century. Rather the tendency is to spend on conspicuous consumption re-inforced by the international demonstration effect. In some of the African and Latin American countries where the governments are not watchful, the declining influence of the wealthy classes has led to the flight of domestic capital into the safe vaults of banks in developed countries.

Increasing Profits: Professor Lewis is of the view that the ratio of savings to national income is a function not just of inequality, but precisely, of the ratio of profits to national income. He maintains that voluntary savings form a significantly large share of national income only where inequality of income distribution is such that profits are a relatively large share of national income. If there is unequal distribution of income and the society's upper level incomes accrue to the landlords or traders, there is little chance of providing voluntary savings to finance investments.

Fiscal Measures: since sufficient voluntary savings are not forthcoming for capital formation in an underdeveloped economy, the government is in a better position to mobilize them through various fiscal and monetary measures. These measures may be in the form of a budget surplus through increase in taxation, reduction in government expenditure expansion of the export sector, raising money by public loans and even by deficit financing. Besides the government can increase savings by running public undertaking more efficiently so that they show larger profits. Above all, the government should evolve a growth oriented long-term savings policy so that savings should increase automatically as development gains momentum.

Public borrowing is also a useful tool for diverting resources from unproductive to productive channels. But its scope is limited in underdeveloped countries because of the low levels of income and savings, and high propensity to consume. Besides, there is the lack of organized money and capital markets. To make public borrowing a success, concerted campaign by propaganda and social education is essential. Further, a network of intermediate agencies should be set up in the form of savings banks, commercial banks, insurance companies, unit trusts, social security institutions and a well-organized bill market. Nurkse also suggests forced loans if voluntary public borrowing does not succeed.

Inflation: If sufficient funds are not forthcoming for capital formation, inflation is the most potent measure. It is regarded as a hidden or invisible tax. When prices rise, they reduce consumption and thus divert resources from current consumption to investment. The government creates inflation by issuing more currency into circulation to meet its requirements. But inflation raises savings at the cost of the standard of living of the masses. The fixed income groups are the most hard hit. Discontentment increases among the masses, unions fight for higher wages and productivity is adversely affected. Rising prices and costs also reduce exports to world markets. Thus inflation, as a method for capital formation, brings more harm than benefit unless counter inflationary measures are adopted by the government.

Profits of Public Corporations: The government can also mobilize domestic savings for productive investment by establishing public corporations. Public corporations receive funds in the form of equity capital and bonded debt from the open market, and in developing countries public corporation directly from the government. They also obtain foreign loans or collaborate with foreign enterprises. Public corporations are a substitute for private enterprise in underdeveloped countries. They generally utilize their resources as a revolving fund. But in

certain underdeveloped countries where public corporations are established as state enterprises, their profits are utilized for capital formation. This is being done in the case of public enterprises set up by the federal government or state government. In many underdeveloped countries, public corporations have been set up for financing the establishment and running of private enterprises. Similarly they have been formed as investment trusts. The establishment of such varied public corporations helps organize capital and money markets for the mobilization of domestic savings for capital formation.

Utilization of the Disguised Unemployment: According to Nurkse, one of the important sources of capital formation is the concealed saving potential contained in rural underemployment in overpopulated underdeveloped countries. The disguised unemployed workers contribute practically little or nothing to output, their marginal productivity is zero or negligible. Such unproductive workers can be removed from the land without a fall in agricultural output and employed on various capital projects such as irrigation, roads, house building, etc., and they can be a fruitful source of capital formation. This increased income can be taxed to finance the investment projects. When the investment projects are completed, they will tend to raise output and income which can also be taxed and utilized for further investment.

External Sources: Domestic sources for capital formation are required to be supplemented by the following external sources:

Foreign Aid: In the absence of adequate domestic resources for capital formation, it is necessary to import foreign capital in the form of loans and grants from advanced countries without any 'strings.' But the best course is to start joint ventures whereby foreign investors bring technical know-how along with capital, and they train local labour and enterprise. Capital can also be imported indirectly by paying for through export. This is the best policy because exports pay for imports. But it is for a backward economy to increase its exports to the level of imports in the initial stage of development.

Restriction of Imports: Another important external source of capital formation is the restriction of consumption imports. All luxury import should be restricted and the foreign exchange so saved should be utilized in importing capital goods. This measure can be successful only if the domestic income saved on imported consumer goods is not utilized in luxury and semi-luxury goods manufactured at home. If consumers start spending more on domestic consumer goods, the increase in the import of capital goods will be offset by reduction in domestic Investment because resources will be diverted from domestic production to increased spending of Consumer goods. An increase in domestic saving is, therefore, essential if the restriction of luxury imports is to lead to an increase in net capital formation.

Favourable Terms of Trade: Similarly, if the terms of trade move in favour of an underdeveloped country, it is in a position to import large quantities of capital goods. To take advantage of the favourable terms of trade, it is essential that the increase in domestic income due to larger export earnings should be saved and invested productively. If the extra income thus earned is spent on consumer goods, new saving will not take place for capital formation. Since improvement in the terms of trade is not an automatic source of capital formation, Nurkse suggests that this saving should be extracted through taxation to give the country a command over additional imports of investment goods.

EMPIRICAL STUDIES

Torbira and Ogbulu (2014) empirical investigation into the relationship between fund mobilization by insurance companies and gross fixed capital formation (GFCF) in Nigeria and specifically how the latter responds to stimuli emanating from the insurance companies. A five variable-predictor multivariate regression model was estimated and analyzed. The short run results reveal those four explanatory variables namely: premium from fire, accidents, motor vehicles and employee liabilities insurance policies positively and insignificantly correlate with Gross Fixed Capital Formation while the relationship between premium from marine insurance policies and GFCF is both negative and insignificant. In the long run, the fund mobilization variables by insurance companies positively and significantly impact on the growth of gross fixed capital formation. In addition, the Granger causality test provides no evidence of causality among the variable. Pathania (2013) examined linkages between export, import and capital formation investigated by time series econometric techniques like Unit root test, Co-integration and Granger causality during the period of 1991 to 2010 for India. This study checked that whether there is uni-directional or bidirectional causality between export, import and capital formation in India. In this paper, the results reveal that there is bidirectional causality between gross domestic capital formation and export growth. The traditional Granger causality test also suggests that there is uni-directional causality between capital formation and import and export.

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.

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).

Shuaib, Igbinosun and Ahmed, (2015) examined the impact of government agricultural expenditure on the growth of the Nigerian economy. The study employed secondary data sourced from National Bureau of Statistics, and Financial Review of Central Bank of Nigeria. The study employed E-view 7.2 statistical output as a window in exploring the possible links between government agricultural expenditure and economic growth. The results revealed that government agricultural expenditure has a direct relationship with economic growth which statistically significant at 5% level.

Aiyedogbon (2011) explores the relationship between military expenditure and capital formation in Nigeria. The study spanned a period of 1980–2010. It employed the econometric methodology of vector error correction model and testing the results using stationarity test, co-integration and variance decomposition. Findings reveal that military expenditure (mlex) and lending rate have negative impact on gross capital formation (GCF) in Nigeria in both the short- and long-run. The GDP is positively significant in the long run while it is positive and insignificant in the short run.

Umerede (2006) investigated possible determinants of capital formation using Nigerian data covering 1980-2004 studied. Time-series estimates are obtained using an OLS methodology which included tests for stationarity and cointegration. Empirical results showed a positive influence of cumulative foreign private investment (CFPI), index of energy consumption (INDEXEC) and total banking system credit to the domestic economy (BSTCr), and a negative influence of gross national savings (GNS), domestic inflation rate (INFR), maximum lending rate (MLR), foreign exchange rate EXCHR) and debt service ratio (DSR) on capital formation. We discovered that foreign exchange rate leads capital formation in Nigeria, followed by index of energy consumption and then, debt service ratio.

Laopodis (2001) uses Granger causality tests on a time-series data from 1960-1997 for Greece, Ireland, Portugal and Spain and finds no significant relationship either positive or negative between military spending and gross private domestic investment. To further investigate this relationship, Laopodis(2001) tests for cointegration of a number of variables relating to gross private domestic investment and estimated the associated Error Correction Model (ECM). The results also indicate that military spending had no significant effect on investment.

Ajao (2011) in his study concludes that long-term capital formation in Nigeria were not majorly sourced from the capital market as the above result shows the marginal contribution of Market Capitalization and New Issues to Gross Fixed Capital Formation. Though, it is unarguable that when investors take position for profit, it can affect the level of wealth which can then be used to build private capital. This result is in line with the findings of Sarkar (2006) where he concludes that there exist no meaningful relationship between stock market capitalization and gross fixed capital formation. Orji and Mba (2011) in their study looked at relationship between FPI, Capital Formation and Growth, in Nigeria using the two-stage least squares (2SLS) method of estimation. The study finds that the long run impact of capital formation and foreign private investment on economic growth is larger than their short-run impact. There is thus, a long-run equilibrium relationship among the variables as the error correction term is significant, but the speed of adjustment is small in both models. In their result, the two stage least squares estimates are very close to the OLS estimates suggesting that OLS estimates are consistent and unbiased. Hence, endogeneity was not a problem in the estimated models. There is therefore no simultaneity between GDP growth and capital formation model. These findings therefore have some policy implications as discussed in the work.

Adekunle and Aderemi (2012) examined the relationship between Domestic Investment, Capital Formation and Population Growth in Nigeria he used Secondary data from the Central Bank of Nigerian, for capacity utilization, capital expenditure bank credit and capital formation while growth and investment rates from World Economic Information database were used. Their result

shows that the rate of investment does not assist the rate of growth of per capital GDP in Nigeria. The paper tests on the curve estimation regression models confirm that growth is in existence but is found to be insignificant. The linear result indicates the importance of government expenditure, capacity utilization and bank credit in increasing the income of Nigerians. The results also show that there is negative relationship between growth rates of the population and capital formation. With the curve estimation method results, investment rate can engender growth in the economy though slowly, on a linear path.

Akujuobi (2008) writing on the topic “Foreign Direct Investments and Capital Formation in Nigeria, posits that, FDI, is a significant positive contributor to the overall capital formation efforts in Nigeria. However, the gains of FDI do not come so automatically. He therefore, recommended that efforts must be directed at removal of such impediments as poor transparency in laws, especially in the areas of property rights, patent rights, copy right protection and commitment to enforcement of contracts.

Donwa and Odia (2009) considered the impact of globalization on the gross fixed capital formation in Nigeria from 1980 to 2006. Using the ordinary least square, it was found that globalization proxy by openness was negatively and insignificantly related to gross fixed capital formation. In other words, globalization has not helped in assisting fixed capital formation. Foreign Direct Investment and Gross Domestic Product were positive and significant while exchange rate had a negative impact on GFCF. Interest rate had positive and insignificant relationship with GFCF. Suggestions on how Nigerian could benefit from globalization and improve on her gross fixed capital formation were proffered.

Aiyedogbon (2011), tried to explore the relationship between military expenditure and capital formation in Nigeria. The study spanned a period of 1980–2010. It employed the econometric methodology of vector error correction model and testing the results using stationarity test, cointegration and variance decomposition. Findings reveal that military expenditure (Milex) and lending rate have negative impact on gross capital formation (GCF) in Nigeria in both the short- and long-run. The GDP is positively significant in the long run while it is positive and insignificant in the short run. The study recommends that the present funding of the military should be cut to release more funds for other sectors. The military authority should utilize the available resources and discharge their role in creating investment-friendly environment in order to enhance economic development in Nigeria.

Ezekwesili (2012) posits that Nigeria’s poor capital formation comes from low education development of her people. She reiterated that, the resurgence of entrepreneurial spirit based on hard work and sound education are the panacea or critical factors to changing Nigeria.

Orji and Mba (2012) studied the relationship between foreign private investment, capital formation and economic growth in Nigeria using a two-stage least squares (2SLS) method of estimation. The study finds that the long run impact of capital formation and foreign private investment on economic growth is larger than their short-run impact. There is thus, a long-run equilibrium relationship among the variables as the error correction term was significant, but the speed of adjustment was found to be small in both models. The two stage least squares estimates were very close to the OLS estimates suggesting that OLS estimates are consistent and unbiased.

Hence, endogeneity was not a problem in the estimated models. There was therefore no simultaneity between GDP growth and capital formation model. Policy implications of study were highlighted and remedies proffered.

Kanu, Ozurumba and Anyanwu (2014), writing on “Capital expenditures and capital formation in Nigeria posits that Capital Expenditures (CAPEX) had a negative significant relationship with Gross Fixed Capital Formation (GFCF) in Nigeria at both 1% and 5% Alpha levels, while other macro economic variables such as Imports, National Savings and Gross Domestic Product formation of human capital. By investing this capital in workers, their efficiency is increased.

3. RESEARC METHODS

The objective of the study is to investigate factors that determine capital formation in Nigeria. The data was processed using Econometric View statistical package; variables in the study were sourced from the publication of Central Bank of Nigeria (CBN) statistical bulletin various issues.

MODEL SPECIFICATION

Based on the objectives of the study and the functional model is specified as follows:

$$\text{GFCF/GDP} = f(\text{M2/GDP, GNS/GDP, LR, EXR, INFR, EXTD/GDP, PEX/GDP, GR/GDP, TT/GDP, OPS/GDP}) \dots 1$$

It is empirically stated as

$$\text{GFCF/GDP} = \beta_0 + \beta_1 \text{M2/GDP} + \beta_2 \text{GNS/GDP} + \beta_3 \text{LR} + \beta_4 \text{EXR} + \beta_5 \text{INFR} + \beta_6 \text{EXTD/GDP} + \beta_7 \text{PEX/GDP} + \beta_8 \text{GR/GDP} + \beta_9 \text{TT/GDP} + \beta_{10} \text{OPS/GDP} + \mu \dots 2$$

Where:

GFCF/GDP = Nigerian Real Gross Domestic Product Proxy for dependent Variable

M2/GDP = Broad Money Supply to Gross Domestic Product

GNS/GDP = Gross National Savings to Gross Domestic Product

LR = Commercial Banks Lending Rate

EXR = Exchange Rate

INFR = Inflation Rate

EXTD/GDP = External Debt to Gross Domestic Product

PEX/GDP = Public Expenditure to Gross Domestic Product

GR/GDP = Government Revenue to Gross Domestic Product

TT/GDP = Terms of Trade to Gross Domestic Product

OPS/GDP = Operating Surplus to Gross Domestic Product

β_0 = Regression Intercept

$\beta_1 - \beta_9$ = Coefficient of the independent variables to the dependent variable

μ = Error term

ESTIMATION TECHNIQUES

i. Stationarity Test:

Time series data are assumed to be non-stationary and this implies that the result obtained from Ordinary Least Square (OLS) may be misleading (Suleman and Azeze, 2012). It is therefore necessary to test the stationarity of the variables using the Augmented Dickey Fuller 1979 test to both level and first difference. The ADF test constructs a parameter correction for higher order correlation by assuming the times series follows an auto regressive process. Mathematically expressed as

$$\Delta y_t = c + \beta_t + \alpha y_{t-1} + \sum_{j=1}^k \gamma_j \Delta y_{t-j} + \varepsilon_t \dots\dots\dots 3$$

$$\Delta y_t = c + \alpha y_{t-1} + \sum_{j=1}^k \gamma_j \Delta y_{t-j} + \varepsilon_t \dots\dots\dots 4$$

Equation 1 is used to test for the null hypotheses of non stationarity of unit root against trend stationarity alternative in Y_t where y refers to the examined time series. Equation 2 tests the null hypotheses of a unit root against a mean stationarity alternative.

ii. Johansen Cointegration Test

The cointegration test established whether a long run equilibrium relationship exist among the variables. It is generally accepted that to establish a cointegration, the likelihood ratio must be greater than the Mackinnon critical values. The model can be stated as

$$\Delta X_t = \mu + \Psi_1 \Delta X_{t-1} + \Psi_2 \Delta X_{t-2} + \dots + \Psi_{p-1} \Delta X_{t-p} + \varepsilon_t \dots\dots\dots 5$$

Where μ is a constant term.

ΔX_t Represents the first cointegrating differences

iii. Granger Causality

To determine the direction of causality between the variables, th4e study employed the standard Granger causality test (Granger, 1969). The test is based on Vector Error Correction Model (VECM) which suggests that while the past can cause or predict the future, the future cannot predict or cause the past. Thus, according to Granger (1969) X Granger cause Y if past value of X can be used to the past value of Y, the test is based on the following regression model.

$$Y_t = \alpha_o + \sum_{i=1}^n \alpha_1^y Y_{t-1} \sum_{i=1}^n X_{a1} X \mu \dots\dots\dots 6$$

and

$$X_t = \beta_o + \sum_{i=1}^n \beta_1 Y_{t-1} \sum_{i=1}^n X_{\beta_1} X Y_t \dots\dots\dots 7$$

iv. Vector Error Correction Model

Co-integration is a prerequisite for the error correction mechanism. Since co-integration has been established, it is pertinent to proceed to the error correction model. The VECM is of this form:

$$\Delta y_t = \alpha \beta y_{t-1} + \sum_{i=1}^j \Gamma_j \Delta y_{t-1} + \pi + \zeta_t, t = 1, \dots, T \dots\dots\dots 8$$

Where Y_t is a vector of indigenous variables in the model. α is the parameter which measures the speed of adjustment through which the variables adjust to the long run values and the β is the vectors which estimates the long run cointegrating relationship among the variables in the model. π is the drift parameter and is the matrix of the parameters associated with the exogenous variables and the stochastic error term.

4. RESULTS AND DISCUSSION

The following tables indicate the dynamic relationship between the dependent variable and the independent variables as specified in the regression models.

Table 1: Regression Results

VARIABLE	COEFFICIENT	STD.ERROR	T-STATISTICS	PROBABILITY
M2/GDP	-1.573207	2.332510	0.674469	0.5070
CPS/GDP	4.648786	2.108129	2.205172	0.0382
GNP/GDP	-6.125332	3.481606	-1.759341	0.0924
LR	0.91005	0.908119	1.080260	0.2917
EXR	-0.016362	0.128030	-0.127799	0.8995
INFR	0.224872	0.239549	0.938731	0.3581
EXTD/GDP	-0.644322	0.220745	-2.918846	0.0080
PEX/GDP	0.497812	0.896376	0.555361	0.5843
GR/GDP	2.571758	0.940930	2.733209	0.0121
TT/GDP	-1.645486	0.742742	-2.215419	0.0374
OPS/GDP	0.884507	0.183523	4.819592	0.0001
β_0	-39.95393	34.42073	-1.160752	0.2582
R^2	0.860971	-	-	-
ADJ R^2	0.791456	-	-	-
F-STATISTICS	12.38548	-	-	-
PROB. F	0.000001	-	-	-
D.W	1.431924	-	-	-

Source: Author’s computation from E-view 7.0

The estimated coefficient of the explanatory variables as shown in the table above proved the relationship between the dependent and the independent variables. The positive coefficient of 4.648CPS/GDP, 0.981LR, 0.224INFR, 0.497PEX/GDP, 2.571GR/GDP and 0.884OPS/GDP

shows that the independent variables have positive effect on the growth of capital formation in Nigeria. This confirm Jhingin opinion that establishment of financial institutions, inflation, fiscal measures such as public expenditures, government revenue and profits from public corporations are major sources of capital formation. However, the negative of coefficient of $-1.573M2/GDP$, $-6.125GND/GDP$, $-0.016EXR$, $-0.644EXTD/GDP$, $-1.645TT/GDP$ is contrary to Jhingang's opinion in Nigeria that financial sector deepening measured by broad money to Gross Domestic Product, Gross National Savings, Exchange Rate as external factor, External Debt and Terms of Trade affect positively capital formation.

The β coefficient of -39.95393 proved that without the independent variables Nigerian capital formation with fall by 39.9%. The R^2 and adjusted R^2 proved that 86.0% and 79.1% variation in Nigerian Gross fixed capita formation can be explained by the independent variables in the model. The F-statistics indicate that the model is significant, while the Durbin Watson statistics is greater than 1.00 but less than 2.00, this means the absence autocorrelation in the residuals. The negative effect of the variables can be traced to the following:

1. Under develop nature of Nigerian financial market. An examination of CBN Statistical Bulletin shows that $M2/GDP$ increase without corresponding increase in GDP, domestic level of investment and Gross National Savings within the period covered in this study is less than 20% of GDP except 2009 with 23.25%. This means significant proportion of Broad Money Supply is held by people outside the financial system. This might be as a result of the lost of public confidence in the banking sector in the past, increase in banking density and decrease in banking habits, for instance significant proportion of the rural areas have no access to formal financial services due to the failure of the rural banking scheme in 1975.
2. The continuous depreciation of Nigerian Naira results in capital flight and the debt burden as part of the revenue that would have invested is spent on debt serving.
3. Nigerian non-oil Terms of Trade is negative within the period covered in this study (CBN, 2014). The only major export is oil while Nigeria imports everything including toothpick. Significant proportion of the imports is consumable and luxury commodities. Import is a leakage from National accounting theory.

Table II: ADF Test at Level

VARIABLE	ADF STATISTICS	Critical values			PROBABILITY	ORDER
		1%	5%	10%		
GFF/GDP	-4.476805	-3.679322	-2.967767	-2.622989	0.0014	1(1)
M2/GDP	-2.054575	-3.646342	-2.954021	-2.615817	0.2634	1(0)
GPS/GDP	-1.920270	-3.646342	-2.954021	-2.615817	0.3193	1(0)
GNS/GDP	-2.101968	-3.646342	-2.954021	-2.615817	0.2452	1(0)
LR	-2.987838	-3.646342	-2.954021	-2.615817	0.0465	(0)
EXR	-0.190222	-3.646342	-2.954021	-2.615817	0.9302	1(0)
INFR	-3.259192	-3.646342	-2.954021	-2.615817	0.0253	1(0)
EXTD/GDP	-1.407860	-3.646342	-2.954021	-2.615817	0.5665	1(0)
PEX/GDP	-3.002222	-3.646342	-2.954021	-2.615817	0.0450	1(0)

GR/GDP	-1.796996	-3.646342	-2.954021	-2.615817	0.3754	1(0)
TT/GDP	-1.918624	-3.646342	-2.954021	-2.615817	0.3198	1(0)
OPS/GDP	-17.52075	-3.689194	-2.971853	-2.625121	0.0001	1(1)

Source: Author's computation from E-view 7.0

Table III: ADF Test at 1st Difference

VARIABLE	ADF STATISTICS	Critical values			PROBABILITY	ORDER
		1%	5%	10%		
GFF/GDP	-3.074795	-3.711457	-2.981038	-2.629906	0.0411	1(1)
M2/GDP	-5.378874	-3.653730	-2.957110	-2.617434	0.0001	1(1)
GPS/GDP	-5.726112	-3.661166	-2.960411	-2.691160	0.0000	1(1)
GNS/GDP	-6.034847	-3.653730	-2.957110	-2.617434	0.0000	1(1)
LR	-6.404979	-3.661166	-2.960411	-2.691160	0.0000	1(1)
EXR	-6.006116	-3.653730	-2.957110	-2.617434	0.0000	1(1)
INFR	-5.730629	-3.653730	-2.957110	-2.617434	0.0000	1(1)
EXTD/GDP	-4.317204	-3.653730	-2.957110	-2.617434	0.0018	1(1)
PEX/GDP	-7.998443	-3.653730	-2.957110	-2.617434	0.0000	1(1)
GR/GDP	-5.588622	-3.653730	-2.957110	-2.617434	0.0001	1(1)
TT/GDP	-6.385070	-3.661661	-2.960411	-2.619160	0.0000	1(1)
OPS/GDP	-3.487331	-3.737853	-2.991878	-2.635542	0.0175	1(0)

Source: Author's computation from E-view 7.0

The study used ADF Unit Root Test to determine the order of integration of the variables. The ADF was carried out at Level (Table II) and at First-difference (Table III). The model specified proved no intercept and no trend. The null hypotheses underlying the unit root testing is that the variables under investigation have a unit root and the alternate that there is no unit root (Chekwube et al, 2014). The ADF Unit Root results variables are not stationary except GFCG/GDP and OPS/GDP; this means the variables are integrated in Order of 1(1), while at first difference all the variables are stationary except GFCG/GDP and OPS/GDP the variables are integrated of 1(1).

Table IV: Cointegration Test Results (TRACETEST)

HYPOTHESIS CE	TRACE STATISTICS	0.05 CRITICAL VALUE	PROBABILITY	REMARK
$r=0$	545.3921	239.2354	0.0000	Reject H_0
$r \leq 1$	369.9102	197.3709	0.0000	Reject H_0
$r \leq 2$	243.2820	159.5297	0.0000	Reject H_0
$r \leq 3$	167.8876	125.6154	0.0000	Reject H_0
$r \leq 4$	112.6152	95.75366	0.0021	Reject H_0
$r \leq 5$	108.2346	94.18924	0.0048	Reject H_0
$r \leq 6$	98.0343	91.4509	0.0083	Reject H_0
$r \leq 7$	69.34070	69.81889	0.0545	Reject H_0
$r \leq 8$	42.57502	47.86613	0.1432	Accept H_0
$r \leq 9$	20.28502	29.79707	0.4037	Accept H_0
$r \leq 10$	6.187062	15.49471	0.6734	Accept H_0

$r \leq 11$	1.782702	3.841466	0.1818	Accept H_0
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Source: Author's computation from E-view 7.0

Table V: Cointegration Test (Maximum Eigen Value)

HYPOTHESIS CE	TRACE STATISTICS	0.05 CRITICAL VALUE	PROBABILITY	REMARK
$r=0$	175.4819	64.50472	0.0000	Reject H_0
$r \leq 1$	126.6282	58.43354	0.0000	Reject H_0
$r \leq 2$	75.39444	52.36261	0.0001	Reject H_0
$r \leq 3$	55.27454	46.23142	0.0042	Reject H_0
$r \leq 4$	43.27454	40.07757	0.0211	Reject H_0
$r \leq 5$	40.34118	38.62054	0.0201	Reject H_0
$r \leq 6$	37.93452	38.41103	0.0734	Accept H_0
$r \leq 7$	26.76568	33.87687	0.2761	Accept H_0
$r \leq 8$	22.29000	27.58434	0.2059	Accept H_0
$r \leq 9$	14.09795	21.13162	0.3570	Accept H_0
$r \leq 10$	4.404359	14.26460	0.8144	Accept H_0
$r \leq 11$	1.782702	3.841466	0.1818	Accept H_0

Source: Author's computation from E-view 7.0

The result from the unit root test proved that the variables are not stationary at level and are stationary at first differences, this rise for the possibility of long-run relationship among the variables. This study employed the multiple test formulated by Johansen (1988) as presented in Table IV and V. The results from the Trace Test show at least seven (7) co integrating equations, while the maximum Eigen proved six (6) cointegrating equations, therefore there is long-run relationship that exists among the variable.

Table VI: Normalized Cointegration Equation

VARIABLES	GFC/GDP	M2/GDP	CPS/GDP	GNS/GDP	LR	EXR	INFR	EXTD/GDP	PEX/GDP	GR/GDP	TT/GDP	OPS/GDP
Coefficient	1.000,000	4.258568	48.10047	23.45400	1.969476	0.405796	0.222904	0.961380	-1.82686	-3.986510	1.008496	-1.308876

Source: Author's computation from E-view 7.0

The objective of the normalized equation is to examine the direction of effect in the long-run. From the table above, the equation shows that Broad Money supply (M2/GDP), Credit to Private Sector (CPS/GDP), Gross National Savings (GNS/GDP), Commercial Banks Lending Rate (LR), Exchange Rate (EXR), Inflation Rate (INFR), External Debt (EXTD/GDP) and Terms of Trade (TT/GDP) affect Nigerian Gross Fixed Capital Formation positively in the long-run while Government Revenue (GR/GDP), Public Expenditure (PEX/GDP) and Operating Surplus (OPS/GDP) have negative impact on Gross fixed capital formation in the long-run. The positive and the negative denote that increase in the variables will lead positive or negative effect on Gross Fixed capital formation in the long-run.

Table Vii: VCM Test

VARIABLE	ADJUSTED PARAMETERS	T-STATISTICS	SPEED OF ADJUSTMENT
GCFC/GDP	1.000000	-	-
M2/GDP	-0.044739	0.63616	7.0%
CPS/GDP	-0.003404	0.100167	3.4%
GNS/GDP	-2.640403	2.931460	90.1%
LR	-0.004288	-0.06138	6.9%
EXR	-0.05712	9.50718	0.5%
INFR	0.261828	4.48750	5.5%
EXTD/GDP	-0.004561	6.182926	2.5%
PEX/GDP	0.4511798	0.0340018	76.5%
GR/GDP	0.152778	2.300271	6.6%
TT/GDP	0.826911	3.045689	27.2%
OPS/GDP	-1.409286	4.110362	34.3%

Source: Author's computation from E-view 7.0

The extent to which the variables can adjust to equilibrium in the instance of shocks is estimated in the table above. GNS/GDP has the highest speed of adjustment by 90.1% followed by PEX/GDP by 76.5. The relative low speed of adjustment can be traced to the low rate of impact on the variables.

Table VIII: Granger Causality Test

HYPOTHESIS	LAG	F-STATISTICS	PROBABILITY	OBS	DECISION
M2/GDP → GCFC/GDP	2	0.15787	0.8547	32	Accept H ₀
CFC/GDP → M2/GDP	2	0.13955	0.8704	32	Accept H ₀
GNS/GDP → GCFC/GDP	2	0.05796	0.9438	32	Accept H ₀
GCFC/GDP → GNS/GDP	2	0.00105	0.9896	32	Accept H ₀
GR/GDP → GCFC/GDP	2	1.39159	0.2659	32	Accept H ₀
GCFC/GDP → GR/GDP	2	0.55303	0.5818	32	Accept H ₀
EXTD/GDP → CFC/GDP	2	0.07853	0.9247	32	Accept H ₀
GCFC/GDP → EXTD/GDP	2	1.03128	0.3702	32	Accept H ₀
EXR → GCFC/GDP	2	2.27154	0.1225	32	Accept H ₀
GCFC/GDP → EXR	2	0.81705	0.4524	32	Accept H ₀
CPS/GDP → GCFC/GDP	2	0.33843	0.7159	32	Accept H ₀
GCFC/GDP → CPS/GDP	2	0.16175	0.8515	32	Accept H ₀
LR → GCFC/GDP	2	1.49872	0.2414	32	Accept H ₀
GCFC/GDP → LR	2	2.32826	0.1167	32	Accept H ₀
INFR → GCFC	2	0.93082	0.4065	32	Accept H ₀
GCFC/GDP → INFR	2	0.82423	0.4493	32	Accept H ₀
OPS/GDP → GFCF/GDP	2	6.51029	0.0049	32	Reject H ₀
GCFC/GDP → OPS/GDP	2	2.38438	0.1113	32	Reject H ₀
PEX/GDP → GFCF/GDP	2	1.59586	0.2213	32	Reject H ₀
GCFC/GDP → PEX/GDP	2	0.57969	0.5069	32	Reject H ₀

Source: Author's computation from E-view 7.0

The granger causality test above shows no causal relationship running through the variable except OPS/GDP to GFCF. This is contrary to expectation of the result and could be traced to marginal growth of Nigerian Gross Fixed Capital Formation.

5. Conclusion and Recommendations

This study was motivated to examine factors that affect Nigerian Gross Fixed Capital Formation with reference to Jhinigan's opinion of source of capital formation. Findings of the study proved that Broad Money Supply, Gross national Savings, Exchange Rate, External Debt, Terms of Trade have negative relationship with Gross Fixed capital formation while credit to private sector, Lending Rates, Inflation rate, Public Expenditure, Government Revenue and Operating Surplus have positive relationship with capital formation. The R^2 of 86.0%, F-statistics of 12.38548 and probability of 0.000001 confirms the significant of the variables. The study conclude that Jhingan's proposition have significant effect in determining capital formation in Nigeria. Therefore it makes the following recommendations:

1. The operational efficiency of the financial sector should be enhanced; the banking habit shall be increase and banking density reduced through effective branch banking policies to enhance effective savings mobilization and credit allocation that will bridge the wide savings-investment gap in the economy.
2. Significant proportion of public expenditure and revenue should be directed to development of infrastructure through effective investment in the economy.
3. The government should make policies that will discourage capital flight from the economy to enhance domestic investment.
4. There is need to strengthen the non-oil sector of the economy to enhance the productivity capacity of the economy for positive Nigerian Terms of Trade.

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