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Abstract

The study examined the determinants of economic growth in Nigeria and that of China for the period 1980-2016. Time-series data from the World Bank was sourced for study using the analytical tool of multiple regression analyses and error correction mechanism to find out the contributions of each economic growth determinant - credit to private sector, interest rate, manufacturing, inflation and export as a percentage ratio of the respective country's GDP. The findings provide evidence that manufacturing and export were more crucial in impacting economic growth in China than that of Nigeria. Based on the result of our investigation, we recommend that the Nigerian government should pursue a policy of financial inclusion to accommodate the poor and the vulnerable by making credit available, infrastructural development increased to stimulate the manufacturing sector and buying of made in Nigeria goods encouraged.

Keywords: Economic growth, Credit to private sector, Interest rate, Manufacturing, export, China, Nigeria

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**Background to the Study**

The rate and size of China's economic changes have never been witnessed before. In 1978, the poverty rate in China was one of the highest on earth. The real per capita income was almost one-fortieth of that of the United State and one-tenth of that of Brazil. From then onwards, China's real per capita GDP has been growing at a regular rate exceeding 8 percent per year. From the back, China has grown to have real per capita GDP of nearly one-fifth of the United States and the same level with Brazil. This fast and yet, sustained economic growth and living standard occurred in a country with 20% of the world's economy.

Although the petro-dollar earnings and GDP rebasement placed Nigeria as the biggest economy in Africa and 26th globally, UN 2013 still paints as ugly picture of how she has fared based on the Human Development Index as regards welfare improvements for a great percentage of the population. Based on the study, Nigeria is seen as the one of the countries with low development index at 153 out of the 186 countries surveyed. Nigeria's Economic Report: World Bank, May 2013 reports that despite the high economic growth reported in official statistics, Nigeria has not gotten a proven recipe for transforming its resource wealth into huge welfare growth for the citizens.

Job creation and poverty reduction are not keeping at the same rate with population explosion, meaning that the number of underemployed and needy Nigerians keeps growing. Some countries, especially Nigeria and Venezuela, the inability to develop has be terrible. In these cases, real per capita income has gone down to levels never experienced before 1960. Nigeria has received $340 billion in oil revenue yet, more than 70% of her citizens live on less than $1 a day. 43% lack access to sanitation and clean water while the infant mortality rate is one of the highest in the world Karl (2004). Corroborating the above assertion, Xavier (2003) adds that Nigeria has had a disastrous development experience. On all fronts, Nigeria's performance since 1960 has been terrible. The purchasing power parity has been declining over the years. It reduced from $1113 in 1970 to $1084 in 2000. This has reduced the country to one of the 15 poorest countries on earth.

The Gini index measures the rate at which the distribution of income (or in some cases, consumption spending) among people or households within an economy digresses from a perfectly equal distribution. Gini index of zero depicts perfect parity, however, index of 100 shows perfect inequality.

**Statement of the Problem**

As earlier stated, Nigeria has been a country of paradoxes. It is a country well blessed with both human and natural resources. However, in the first fifty years of independence, the potentials have been generally ignored and also mismanaged. At the moment, only 40% of arable land can be used for cultivation. With more than 150 higher institutions churning out 400,000 graduates yearly, the needed human capital for progress is there. There are copious natural resources deposited that have not been tapped. About
27 million Nigerians are predicted to live outside Nigeria, with thousands of them being world class medical doctors and other professionals. In the midst of these resources, Nigeria (on the average) stagnated over a period and worse off now economically. The poverty situation has worsened consistently such that by 2017, poverty rate was estimated at 70 percent. The question remains: How can we learn from the experiences of others?

**Objectives of the Study**
The broad objective of the research is to examine what lessons can be learnt by Nigeria from China's economic growth model. Specifically, the objectives were to: Investigate the effect of Ratio of Credit to Private Sector to GDP in both China and Nigeria; Determine the Ratio of Interest Rate to GDP in both China and Nigeria; Analyze the Ratio of Manufacturing to GDP in both China and Nigeria and Examine the Ratio of Export to GDP in China and Nigeria.

**Literature Review**

**Theoretical Framework**

**Neo-Classical Growth Theory**
Robert Solow was the first to come up with this over 40 years ago. The model states that a steady rise in capital stock investments also increased the economy only temporarily for the rate of capital to labour increases. The marginal product of extra items is presumed to reduce and therefore, an economy eventually goes back to longstanding increment with real GDP increasing at the same rate as the growth of the working population including factor to show improving productivity. Neo-classical Economists who believed the Solow model trust an economy's long-term growth rate needs a raise in labour supply and increased level of productivity.

**Harrod – Domar Growth Model**
Harod Domar believed that economic prosperity is achieved when more investments lead to more progress and growth. The theory has its foundation on linear production function with output given by capital stock \( k \) times a constant. Investment, based on the theory, generates income and also boosts the industrious capability of the nation by increasing the capital stock. So long as there is net investment stock, real income and production carry on to expand. So, for full employment equilibrium, income and output level be maintained, together, real income and output ought to grow at the same rate with the productive capability of the capital stock.

**Economic Growth in Nigeria**
Several countries that have achieved rapid economic growth since World War II, have two common features. First, they invested in education of men and women and in physical capital. Second, they realized high productivity from these investments by making available effectual markets, economical trade-leading roles, increased level of productive efficacy spurred by technological growth rate, unchanging polity, suitable economic policies and systems, World Bank, (2002). However, because of market letdown
that may likely occur in the process of development, it may not be ideal to leave the process of economic betterment solely to the interplay between demand and supply in growing economies like Nigeria.

**W.W. Rostow Economic Growth Theory**

One of the key thinkers in twentieth-century Development Studies was W.W. Rostow, an American economist, and government official stated that all economies exited somewhere along the line, then move up through the development strata. **Traditional Society:** This stage is known by a subsistent agricultural based economy, with a lot of physical labour and low levels of merchandizing, and a population that is so backward in science and technology.

i. **Preconditions to Take-off:** Here, the economy starts to venture into manufacturing at a national/international stage, rather than at a regional stage.

ii. **Take-off:** Rostow pictures this stage as a short period of rigorous growth, by which industrial development starts to come up, and labourers as well as institutions become focused around the new industry.

iii. **Drive to Maturity:** This stage takes place over a long period of time, as standard of living increases, use of technology rises, and the general economy grows and expands.

iv. **Age of High Mass Consumption:** At this stage, Rostow believed that Western nations, especially USA, occupied this last “developed” stage. Here, a nation's economy grows in a capitalist system, categorized by mass production and consumerism.

**Justification for W.W Rostow's Economic Growth Theory**

Industrialization, urbanization, and trade based on Rostow’s model are still considered by many as a clear way for a nation’s development. China is a good example of a country that rose this way and is now one of the biggest economies in the world. Nigeria is also growing along this line if we are to take a historical excursion into her economic odyssey.

**Conceptual Framework**

From 1949-1978, China's economy was stagnant. A command economy, all but wholly owned and operated by the government, it was unable to realize the rapid economic growth of its market-oriented counterparts in the West. Mirroring the Soviet economy, central planners controlled allocation of resources goods, prices, and production (Naughton 2007).

Mismanagement of resources, especially grain and other food sources, led to the Great Famine. Reaching its peak in 1960-61, China experienced the largest famine of the 20th century. Populations, especially those of rural provinces like Sichuan, were devastated. In total, an estimated 25-30 million people died. The famine ended by 1962, and a period of readjustment ensued. Political instability and a static economy continued throughout the 1960s and 70s. Not until the death of Mao Zedong in 1976 did China begin its transition. Deng Xiaoping took office in 1978 and began the reforms of China's economy that would
set in motion the fastest economic rise in history. At the time when Deng Xiaoping took office, China accounted for approximately 0.5% of global economic output. Now, China accounts for about 10%. Bergsten, Freeman, Lardy, and Mitchell (2008).

To accomplish this growth, China adopted a dual-track system of command and market-based economies to ease its transition. Overall, China has enjoyed an average GDP growth rate of around 10% per year and has lifted over 500 million people from poverty. World Bank (2015). While China has realized unprecedented growth since the late 1970s, it faces many challenges that accompany high growth rates. Income inequality is one such problem. To measure income inequality, the Gini coefficient is often applied. This coefficient ranges from 0 to 1, with 0 signifying perfect income equality, and 1 meaning all the income is owned by one individual. In the 1980s, China's Gini coefficient was 0.28, making it one of the more equally distributed countries in the world with respect to income.

The Nigerian economy mostly not a closed economy and therefore, has internationals transactions making up a great portion of her total economic activity. Therefore, the economic potentials and development of the country, just as other developing nations, rely chiefly on her international interactions. From the time past, in spite of her expanded level of trade openness, her economic performance has remained poor and ugly, Odedekun (1997). Again, Nigeria's trade policy since gaining independence has been fluctuating from high protectionism to liberalism. The major aim of her trade policy is targeted at manipulating trade process than can promote sustainable economic growth. However, this objective has become very difficult to achieve, Yesufu (1996).

**Empirical Literature**

Robert Barro (1996) investigated a panel of 100 economies from 1960 to 1990 to find the factor that affected the economic progress of the countries. He discovered that the growth rate of real per capita GDP was related to maintenance of the rule of law, reduced government consumption, longer life expectancy, more males in the secondary and tertiary levels of schooling, lower fertility rates, and openness to trade. He also stressed the theory of convergence, which means that as the real GDP levels increase, the growth decreases. In his research, Barro examined 100 economies comprised of 18 nations from Africa, 22 from Latin America and 18 from Asia. They were randomly chosen from different economic strata. However, the poorest of the countries were not included as they lacked the required data for the analysis.

Caves (19971) discovered that there was a positive correlation between the productivity of trans-corporations and labour productivity in local firms in the same sector. He claimed that this was a result of competition and continuous improvement brought by foreign investment to the domestic market. Foreign direct investment may also have benefits not only to the industry that receives the investments but also to other domestic industries that gain from excess effects of better human capital and technological improvements (Rappaport, 2000). Foreign direct investments favour the host country
through increased employment generation, technological growth and knowledge transfer. More so, it leads to an increase in the volume of local investments (Borensztein, De Gregorio, and Lee 1998). Kumar and Woo (2010) discovered that linear inverse relationship between initial debt and subsequent increase in a sample of emerging and advanced economies. The effect of high debt was smaller for advanced economies. They also discovered that only high levels of debt-to-GDP ratio had significant negative effects on economic growth. Reinhart and Rogoff (2010) examined 20 advanced economies for about 20 years and discovered that the negative relationship between growth and level of debt was not strong.

Research Design
The research design adopted for this study is the quasi experimental design because it seeks to explore the causal effect of financial sector deepening on unemployment. Nwankwo (2013) argued that a quasi-experimental design allows for the evaluation of the effect of independent variable(s) on a dependent variable without random assignment.

Data Collection Method and Source
The data used for this study is obtained from the Central Bank of Nigeria Statistical Bulletin 2015 and from the World Development Indicators published by the World Bank.

Model Specification
This is expressed in its functional form as follows:

\[ GDP_{\text{ChinaNiger}} = f(\text{CPS, Exports, Interest Rate, Manufacturing}) \]  \----------- (1)\\n
Where:

- GDP = Gross Domestic Products of the two economies for comparism.
- CPS = Credit to Private Sector to GDP ratio
- Manufacturing = Manufacturing to GDP ratio
- Interest Rate = Interest Rate to GDP ratio
- Exports = Exports to GDP ratio

The above functional equation is further stated in econometric form as presented below:

\[ GDP_{\text{ChinaNiger}} = \beta_0 + \beta_1\text{CPS} + \beta_2\text{Man} - \beta_3\text{IR} - \beta_4\text{INF} + \beta_5\text{Exp} + U_i \]  \----------- (2)\\n
Where:

- \( U_i \) = Error Term. It captures all the other variables not included in the model specification.
- \( \beta_0, \beta_1, \ldots, \beta_5 \) = the Parameters

A prior Expectation = \( \beta_4, \beta_5 < 0 \) (implying that \( \beta_4, \beta_5 \) will reduce GDP)

Data Presentation
The data for this study are GDP as the dependent variable and the ratios of CPS, MAN, INF, IR, and EXP as the independent variables. These data were collected for the two countries being studied. They all span from the year 1980 to 2016. The table shows that data for Nigeria on Manufacturing and exports have been fluctuating over the years. Manufacturing has not changed much since the 80’s, moving from 9% of the GDP and
then peaking to 10%. It however, crashed to 2% between 2005 and 2008 before picking up again later in 2009 and above. For the Chinese economy during the same period, the manufacturing sector has been robust but has showed steady decline over the period. It was 39% in the 80's but dropped down to 29% towards the end of the last decade.

For exports, Nigeria has enjoyed some peak periods. In 2000, exports contributed 51% to the total GDP with the manufacturing of 3%. In comparison, the Chinese economy had her exports at 21% with the manufacturing of 31%.

**Trend Analyses of the Series**

**Fig 1: Trend Analyses of the Chinese Economy**

The trends of each variable – inflation, credit to private sector, manufacturing, interest rate, export and the GDP – over the sampled period (1980-2016) are illustrated using line graph as shown in Fig 1 below.

**Source:** Author's estimation
Fig 2: Trend Analyses of the Nigerian Economy
The trends of each variable – inflation, credit to private sector, manufacturing, interest rate, export and the GDP – over the sampled period (1980-2016) are illustrated using line graph as shown in Fig 1 below.

Source: Author's estimation
Presentation of the Results

Second – order Analysis: Parsimonious Error Correction Mechanism

\[ \text{GDP}_{\text{China}} = 0.26 + 45.2\text{CPS} + 22.2\text{Man} - 3.2\text{IRC} - 4.1\text{Inf} + 11.16\text{Exp} \]
\[ \text{t-values} = (2.91) (3.08) (2.1) (3.7) (4.1) \]
\[ \text{R-Square} = 0.74, \text{f-test} = 2.7; \text{DW} = 3.03; \text{ECM(-1)} = -0.59 \]

Nigerian Economy:

\[ \text{GDP}_{\text{Nigeria}} = 0.04 + 0.2\text{CPS} + 5.3\text{Exports} - 5.2\text{Inflation} - 38.2\text{IRCN} + 22.9\text{Mann} \]
\[ \text{t-value} = (3.7) (3.72) (2.1) (2.7) (3.1) \]
\[ \text{f-value} = 3.5 \]
\[ R^2 = 0.73 \]
\[ \text{Durbin-Watson (d)} = 2.01 \]
\[ \text{ECM(-1)} = -0.64 \]

Granger Causality Test

The granger causality test examines the direction of cause between two variables. This can be unidirectional (if one variable causes the other variable to move to a certain direction) or bidirectional (if the variables cause themselves to move in certain directions).

The analysis above shows that CPSC granger causes GDPc based on the f-test (3.6). At the same time, GDPC granger causes CPSC based on the f-test (4.8). Again, the result shows that EXPORTSC granger causes GDPC (4.1). Again, GDPC was also found to granger cause MANC at 3.08. However, the result shows that INFLATIONC, IRC do not granger cause GDPc and vice versa.

For the Nigerian economy, the result reveals that CPSN and GDPN granger causes each other at f-test (2.8, 3) while MANN granger causes GDPN at f-test (3). The other variables were established to have no causality relationships.

Tests of Hypotheses

The relationship existing between variables is tested at 5% level of significance using the Ordinary Least Square (OLS) regression analysis. The test of hypotheses will be based on the second-order test using the results of the ECM analysis.

\[ H_0: \text{CPS does not significantly affect GDP} \]

Chinese Economy

The results showed that CPS is shown to have a positive and significant relationship with GDP. Therefore, a unit change in CPS brings about 45.2 percentage units in the GDP. It is also statistically significant at 5% level of significance. We therefore accept the alternative hypotheses and conclude that CPS has a significant relationship with GDP.
**Nigerian Economy**

The data shows that the CPS has positive and significant relationship with the economy. Therefore, for every percentage increase in the CPS, the GDP increases by 0.2 and vice versa. The CPS was equally found to be statistically significant at 5% level. We therefore reject the alternative hypotheses and conclude that there is a significant relationship between CPS and the Nigeria's GDP.

In all, it has been established that the CPS significantly affects the GDP and as such, the relevant authorities have figure out ways of increasing the Credit to Private sector as this equally leads to increase in investments in the private sector and therefore, that of the GDP.

**H0: Man has no significant impact on GDP**

**Chinese Economy**

The results also showed that manufacturing is shown to have a positive and significant relationship with GDP. Therefore, a unit increase in MAN brings about 22.2 increases in the GDP and vice versa. The variable is also statistically significant at 5% level using the student t-value based on the rule of thumb of 2. Therefore, we accept the alternative hypothesis by rejecting the null one and conclude that there is a significant relationship between manufacturing and the Chinese economy.

**Nigerian Economy**

The data shows that the MAN has a positive and significant relationship with the GDP. Therefore, for every percentage increase in MAN, the GDP increases by 22.9 units. The t-value also shows that MAN is statistically significant at 5% level. We therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between MAN and Nigeria's GDP.

In all, the results have been able to establish the fact that there is positive relationship between the manufacturing sector and the economy. As the manufacturing sector improves, the economy relies even lesser on imported products as most of them are already being manufactured in the country. More so, this also leads to increase in finished and exportable products and consequently, increase in foreign exchange earned thereof.

**H0: Interest Rate is not significantly related to GDP**

**Chinese Economy**

The results showed that IR is shown to have a negative but significant relationship with GDP. Therefore, a unit increase in IR brings about −3.2 decrease in the GDP and vice versa. Again, the t-value shows that Interest Rate has a significant relationship with GDP. We therefore accept the alternative hypothesis, reject the null and conclude that there is a significant relationship between interest rate and the GDP.
**Nigerian Economy**
The data shows that the IR has negative but significant relationship with the economy. Therefore, for every percentage increase in IR, the GDP decreases by -38.2 and vice versa. The results also revealed that IR is statistically significant at 5% level using t-test. We will reject the null hypothesis and conclude that there is a significant relationship between IR and GDP.

Interest rate is the price for the funds borrowed from people or institutions. This allows business people to access funds to increase and improve on their businesses. The more the interest rate increases, the less people and business organizations have access to funds to use in their businesses. This will lead to lower production, income and ultimately shutting down the company. The GDP decreases too.

**H0: Inflation Rate is not significantly related to GDP**

**Chinese Economy**
The results showed that INFLATION is shown to have a negative but significant relationship with GDP. Therefore, a unit increase in INFLATION rate brings about – 4.1 decrease in the GDP. The t-value revealed that the independent variable is statistically significant at 5% level. We therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between inflation and the GDP.

**Nigerian Economy**
Again, the results revealed that INFLATION is shown to have a negative but significant relationship with GDP. Therefore, a unit increase in INFLATION rate brings about - 5.2 decrease in the GDP. The t-value (2.1) revealed that the independent variable is statistically significant at 5% level. We therefore reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between inflation and the GDP.

Inflation works as interest rate. As the rate of inflation increases, prices of primary and secondary commodities increase. This puts the business people under intense pressure trying to ensure their business survives. Most importantly, it leads to the decrease in the purchase of capital goods needed for production. Consequently, businesses get shutdown and unemployment increases. The GDP ultimately suffers for it.

**H0: Exports are not significantly related to GDP**

**Chinese Economy**
The results showed that EXPORTS is shown to have a positive and significant relationship with GDP. Therefore, a unit increase in EXPORTS brings about 11.16 increases in the GDP. The t-value also states that the variable is statistically significant at 5% level of significance. We will reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between Exports and the GDP over the period studied.
**Nigerian Economy**

Finally, the results showed that EXPORTS has a positive and significant relationship with GDP. Therefore, a unit increase in EXPORTS brings about 5.3 increases in the GDP. The t-value also states that the variable is statistically significant at 5% level of significance. We will reject the null hypothesis, accept the alternative and conclude that there is a significant relationship between Exports and the GDP over the period studied.

Exports works just like the manufacturing, agricultural and quarrying sectors are able to supply what to export. As exports increases, there is an inflow of foreign exchange and that means that the economy is performing very well. Relevant authorities must focus on this relationship in order to expand and grow the economy efficiently.

The analysis shows that the ECMs are correctly signed and they are seen to be correcting the long-term relationships at the rate of (China = 59%) and (Nigeria = 64%) annually.

**Conclusion**

First, Credit to Private Sector was found to impact both the economies of the Nigerian and China implying that as more people gain access to finance, more job creating investments will be established to employ more people and reduce unemployment. The Chinese government has shown to have given more focus to this singular area over the years. This will also help to stimulate demand where necessary.

Second, Exports were found to be declining while Manufacturing was increasing. The Chinese economy based the success of their products on the Chinese economy. They, therefore, consumed more of what they produced over the years, depending less on the outside world.

Again, the research showed that manufacturing was key in the Chinese economy. The data showed that manufacturing has been high over the years as compared to that of Nigeria. They therefore, exported part of their manufactured products as against the export of raw materials by Nigeria. This was also found to reduce unemployment.
Recommendations
From the above conclusion this study suggests that financial authorities (the Government and the Central Bank of Nigeria) should pursue the following:

i. Provide ways of making credit available to the citizenry. They should pursue a policy of financial inclusion to accommodate the poor and the vulnerable either through the Deposit Money Banks or Special Development Banks. This will result to the setting up of enterprises that will generate jobs in the economy and reduce unemployment.

ii. Infrastructural development should as a matter of urgency, be embarked on if the economy must make a head way in the manufacturing sector. This is in addition to other programmes and policies to be put in place.

iii. Chinese economy made and bought their own products. Nigerians should buy made in Nigeria products too. Less focus should be on imported products.
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