Long –Run relationship between population growth and economic growth in Nigeria.

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Abstract

This research work analyzes the impact of population growth on economic growth in Nigeria by using time series data sourced from central bank statistical bulletin from 1981 to 2016 for Nigeria. The ordinary least square (OLS) technique was employed to estimate the influence of the explanatory variables.it was found that co-efficient [R2] of 40% variation in economic growth was explained by the variation in the independent variables and population growth has positively and significantly affects gross domestic product over the period of the study.Other additional explanatory variable like government expenditure on health is negatively related to economic growth according to the results. To determine the long-run relationship between the two variables, Augmented Dickey Fuller (ADF) test found that the two series were stationary. The ECM result revealed that population growth and economic growth had long-run relationship. The research concludes by recommending that government should adopt policies that will promote human capital development and make the teeming population more productive to further boost the economy.

Keywords: Economic growth, Population growth, ECM

JEL Classification: J11, O47, P23

1. Introduction

The link between population growth and economic development has been a topic of discourse for a very long time, perhaps not well documented. As far back as 500AC pre-Islamic Arabs were reported to had been practicing depopulation perhaps brutally, for fear of too much economic burden and poverty. Infanticide was a normal practice amongst Arabs, especially female infanticide, on the ground that female kids have less economic value to add to the household Giladi(1990) see also (Q5:61, Q81:8-9, & Q17:31). This view of population growth as impediment to economic growth is similar to one of the most prominent theories of population of Thomas Malthus, which states that population growth contribute negatively to per capita income and deteriorates human development index. Thomas Malthus warned

about the danger of "over-population". As Kelley and Schmidt (1996, 13) commented, "Pessimism about the economic impacts of population has dominated the thinking of population analysts since the original alarmist treatise by the Reverend Thomas Malthus was published over two centuries ago".

Ironically, richer countries seem to have lower population growth. For example, a country like Niger, where the total fertility rate is 7.00 children per woman, is sixty-one times poorer than the United States, where the total fertility rate is 2.05. Qatar with 1.91 fertility rates is twenty-six times richer than Nigeria where fertility rate is 5.53 birth per woman. This compelling statistics has convinced many, including academicians and policy makers, of the validity of the old argument first popularized by the Reverend Thomas Malthus, at the turn of the eighteenth century (Abhijit & Duflo, 2011). Malthus believed that the resources countries have are more or less fixed, landwas his favorite example, and he therefore thought that population growth was bound to make them poorer.

Yet this is less obvious than it sounds. After all, there are many times more people on the planet today than when Malthus first formulated his hypothesis and most of us are richer than Malthus's contemporaries. Technological progress, which did not figure in Malthus's theories, has a way of making resources appear from nowhere; when there are more people around, there are more people looking for new ideas, and so perhaps technological breakthroughs are more likely. Indeed, for most of human history (starting in 1 million BC), regions or countries that had more people were growing faster than the rest (Kremer 1993).

It therefore, suggests that the impact of population growth on the economic development of less developed countries and developed countries are not the same because the conditions prevailing in these economies are quite different and the relationship between the variables in developing countries is very complex (Yao, *et al.*, 2013). Rapid population growth is said to be the demographic pattern of most developing countries, characterized by high birth rates and death rates; where as that of developed economies is stable in which both birth and death rates are low. And the fact that today, countries with higher fertility rates are poorer, doesn't mean that they are poorer because of high fertility: It could be that they have high fertility because they are poor, or some third factor could cause both high fertility and poverty. Even the "fact" that periods of rapid economic growth often coincide with sharp declines in fertility, as in Korea and Brazil in the 1960s, is ambiguous at best (Abhijit & Duflo, 2011).

Despites the importance attached to capital in his classical economic growth theory, Robert Solow noted that, capital alone cannot by itself explain the sustained economic growth observed in most parts of the world, and Simon (1996, 589) put it more accurately, "The ultimate resource is people – skilled, spirited, and hopeful people who will exert their wills and imaginations for their own benefit, and inevitably they will benefit not only themselves but the rest of us as well". Indeed, for the most part the literature on the relationships between population and economic growth is one of unusual empirical consensus.

Moreover, the population of any country constitutes the most vital component of its resource base. This aspect is based mostly on its size, growth rate, spatial distribution, demographic structure and quality in terms of level of education, skills etc. Policy makers consider population to be an indispensable tool for economic planning for government, businesses and individuals. Any serious government keep close track of its population growth to estimate the need for infrastructures and necessary skills and knowledge for the future workforce; and to invest wisely in health research and development.

Consequently, the world population has been increasing and the last two decades have been demographically unprecedented as it rose from 4.7 billion people in 1985 to 7.2 billion in 2015. Much of this occurred in the developing nations as their population grew from 3.6 billion to 5.9 billion as against that of developed nation which grew from 1.1 billion to 1.3 billion over the same period (United Nation, DESA 2016).

Nigerian has one of the fastest growing populations in the world. Nigeria is termed the "giant" of Africa, because of its economy and population. She is the most populous country in Africa and sevenths globally with an estimated population of over 185 million in 2016, 3% annual population growth and a total fertility rate of 5.53 births per woman. The reason for the uncontrolled population growth since the mid 20th century is the decrease of infant mortality and general increase of life expectancy without a corresponding reduction in fertility rate, due to a very limited use of contraceptives. The large population implies a large market for goods and services as well as large pool of human resources for development. However, the impact of population on development depends not only on the absolute size but also on its quality. Many argues that uncontrolled population growth threaten to overwhelm infrastructure development and can cripple economic development. A quite number of developing countries are pursuing programs to promote family planning in an attempt to curb population growth rates in Nigeria, whose population is estimated to be growing at 3% per annum.

Despite all these it was not until mid 1980s that Nigeria began to see the uncontrolled population growth as a problem, because the nation enjoyed oil boom in the 1970s. Nigeria started to see increased population as a threat when oil prices declined drastically in the international market. It became crystal cleared that it could no longer adequately provide for the teeming population, then the need to adopt a population policy become imperative. Since then population policy had been adopted to curb population growth. The country's first national policy on population was promulgated in 1984 and later revised in 2004. All these policies were normally short lived and ineffective due to the nation's multiculturalism, religious beliefs among other things. It is then important to answer this question, how detrimental is population growth to the economic growth? This study therefore, set to analyze the impact of population growth on economic development in Nigeria. It contributes to the literature by: using a new data set starting from 1981 to 2016 and applying a comprehensive set of explanatory variables to explain the intricate relationship between the variables.

Nevertheless, the economic indicator that best describes the relationship between economic growth and population is GDP or GNI per capita — GDP divided by the total population.   GDP and GNI numbers show a country's aggregate economic growth. But it's often more important to know how individual citizens are doing economically. This equation implies that if population is rapidly growing faster than GDP, such increase in population would negatively impact the economy and vice versa. A country may seem to be doing well with a high or increasing GDP. But if its population has grown as well, then its total income will be spread out over more people. This makes the country poorer than one showing a lower aggregate production but supporting a much smaller population.

Relationship between population and economic growth
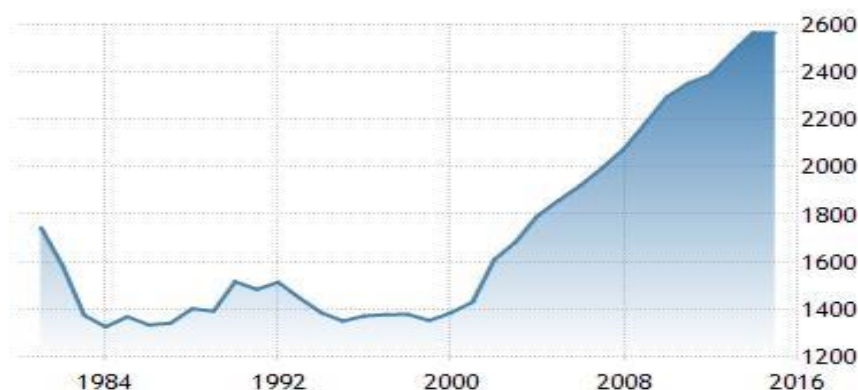
Source: tradingeconomics.com

This figure (Figure 1) represents the variations in population with respect to per-capita income. It is evident from this graph that the slope is positive meaning that as population increases in Nigeria over the time, per-capita income follows. This graph is a summary of population growth relationship to per-capita income between 1981 and 2016. In 1981 the cumulative population in Nigeria was 75 million and the per-capita income was around 1700 USD. As years go by, population grows as well as per capita income up to the level that in 2016, the cumulative population was 185 million and the per-capita income was 2600 USD. This figure helps us to stand on the hypothesis that: population growth is positively related to economic growth. The variables move in the same direction, we can therefore conclude at this level that there is an apparent positive relationship between population growth and per capita income. To cast out any doubt we follow our analysis using advanced econometric tools, which we develop at the data and methodology section.

2. Literature Review
There is no consensus on the actual relationship between population growth and economic growth in economies around the world. The nature of this relationship has so attracted the attention of a large number of world's most influential thinkers that most of them have started propounding theories to explain it. Generally, the various explanations of the relationship between population growth and the society

have focused on the causes of population growth, the consequences of population growth, and the responses of people to population growth. Most of the early writers on population growth were very much concerned with the need to balance population with resources. Currently there are two absolutely parallel and well developed theories of population, which are optimistic (Kremarian) and the other pessimistic (Malthusian).

Thomas Malthus was an English clergyman who lived from 1766-1834. He was widely known as the first professional demographer. It was during the period of the physiocrats thinking in the 18th century that he postulated his theory. He had the most influential work relating to population growth and its consequences. He was the first man to draw out in a systematic way a picture that links the consequence of growth to its causes. According to him, population grows geometrically, while resources arithmetically. Meaning that, the increase in population is faster than food supply. Malthus was of the opinion that in the absence of a formal check on population, scarce resources will be distributed among an increasing number of individuals in the short run. If such checks do exist, Malthus has divided them into two categories, preventive and positive. In the absence of these two checks, the rate of population is maintained by diseases, famines, war and earthquakes (Malthus, 1798).

Whilst Malthus saw population growth as a threat to rising living standards, economist Michael Kremer has suggested that world population growth is a key driver of advancing economic prosperity. If there are more people, Kremer argues, then there are more scientists, inventors and engineers to contribute to innovation and technological progress. As evidence for this hypothesis, Kremer begins by noting that over the broad span of human history, world growth rates have increased together with world population. If technological progress is more rapid when there are more people to discover things, then the more populous regions should have experienced more rapid growth. And, indeed they did. Kremer concludes from this evidence that a large population is a prerequisite for technological advance (Kremer, 1993).

Related Literature
There are little empirical evidences on the relationship between population growth and economic growth and much of the empirical evidence of the relationship uses cross section at data across countries. For example (Jacob, Cesaire, & Marie, 2016) explored this relationship on a sample of 30 most populated countries of the world, regardless of their level of development. Jacob et al (2016) employed Error Correction Model (ECM) to test if there is a long run relationship between population growth and per capita income. The ECM result revealed that there is a long run equilibrium relationship between population growth and economic growth, and the granger causality test showed that there also exists a bi-directional causality between economic growth and population growth and concluded that population growth and economic growth are positively related. On the contrary, Dao (2012) conducted similar study using a sample of forty-three developing countries and concluded that, the effect of population growth on per capita GDP growth is linear and negative everywhere.

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Similar studies conducted across several regions reported a strikingly negative associations between the two variables, Thorn (2001) in seven Latin American countries and Song (2013) in Asian countries, though Song was able to disintegrate the impact of population growth on economic development on different structures of population and reported a positive association with the growing working-age population and concluded that the rapid economic growth in Asia can be the result of the favourable demographic changes that took place there.

Numerous researches reinforce the pessimistic view of population growth as impediment to economic development by reporting a significantly negative statistical relationship between the two variables (See Dawson & Tiffin, 2004; Afzal, 2009 & Yao, Kinugasa & Hamorib, 2013). Specifically Yao *et al.* (2013) empirically tries to understand the factors behind the unprecedented growth in China over many decades and reported that all the variables (Total Factor Productivity, Savings and Degree of industrialization) except population growth have positive impact on GDP.

On the other hand, findings from other studies empirically supported the population-driven economic growth hypothesis; Furuoka (2014) reports the existence of long-run positive and bi-directional relationship between population growth and GDP in Thailand. Ali *et al.*, (2013) reported that population growth had positive impact on economic growth in Pakistan.Similarly, Adediran (2012) found that population growth was positively affected by growth in per capita income and population growth also positively influence per capita income indicating a positive bi-causal relationship between the two in Nigeria.

Olabiyi, (2014) examined the relationship between population and economic growth in Nigeria using the data from 1980 to 2010, specifically focusing on the effects of fertility and infant mortality rates on the economic growth. The method of estimation was Vector Auto Regressive (VAR) econometric techniques. The results showed that decrease in fertility rate increase economic growth gradually from 3.3% to 7.9% for horizon of 12 years during the period of the study. Also, an increase in infant mortality rate increase economic growth rate from 0.6% to 15.9 % for same time horizon.

Onwuka (2006) empirically tested the association between population growth and economic development in Nigeria between 1980 and 2003 making use of OLS technique. He found that growth in population outweighed that of output and that this had negatively affected development in the country because a considerable proportion of the nation's resources were consumed rather than accumulated for development purposes. However, in much of the developed world where the fertility rate was widely noted to have fallen well below the replacement rate of 2.1 children per woman, Livi-Bacci (1997) examined demographic shocks from a historical perspective and noted that there had been huge decline in fertility rate throughout the industrial world and that only the United States had a fertility rate that was close to the replacement level among the ten largest high income eaner countries. He noted that the plague of demographic shocks resulted in a century of depopulation in Europe. The consequent shortage of labor was said to have resulted

in higher real wages; land previously cultivated were turned into pasture; and families and landholdings were restructured into larger units. Weil (1997) showed skepticism on whether the traditional Malthusian mechanism was currently operative but noted then that there appeared to be little relationship between income per capita and the birth rate in industrial countries.

Boucekkine (2003) showed that in the budding industrialization in Europe, as mortality generally decreased at adult age in the 19th and the beginning of the 20th century in Europe and North America, it was followed by decrease in fertility that drew down dependency rates and accelerated economic growth rates to levels never observed before. However, in the late 20th century, mortality gain above retirement age became predominant.

Mokyr (2001) argues that the variant of the model that best describes the current situation in industrial countries is one where, as income increases beyond some threshold, the birth rate decreases. His reason was that raising children and consuming goods and services both take time. As income goes up and people can afford to increase their consumption, they choose to spend less of their time on children and as such causing the birth rate to decrease. If the birth rate falls below what is needed for population replacement, real wages and incomes will rise as a result of the declining population, reinforcing the process. Hahn and Park (2009) considered fertility rate, working-age population ratio, and population growth rate as three alternative demographic indicators in a cross sectional study. For each of the indicators, they constructed the measure of the speed of demographic transition and considered three specifications as the "standard" regression models. Two of them were as suggested by Levine and Renelt (1992) and one with additional explanatory variable. The first regression from Levine and Renelt (1992) include explanatory variables, initial real GDP per capita, investment share of GDP, initial secondary-school enrollment rate and the average annual rate of population growth. The second regression from Levine and Renelt (1992) had almost equivalent structure to Barro (1991), which, in addition to the first specification, included primary-school enrolment rate, average rate of government consumption expenditure to GDP, a dummy variable for socialist economic systems, indicators for revolutions and coups, and dummy variables for countries in Latin America and sub-Saharan Africa. The third regression includes institutional quality, openness, natural resource abundance, and terms of trade growth in addition to the explanatory variables in the second regression. They used OLS, as well as GMM estimation technique to address the endogeneity problem that might exist in measures of speed of demographic transition. They found average estimated speed of change in fertility rate in the whole sample to be about -0.06, which means that it took about 17 years on average for fertility rate to decline by one, say, from 3 to 2 children per woman.

In the study conducted by Klasen and Lawson (2007), as reported by Dao 2012, the link between population, per capita growth and poverty in Uganda was examined. The research was conducted using both cross-section data and panel data. The results of the estimates show that population growth has a positive impact on overall economic growth. But the coefficient is always smaller than 1 suggesting

that the additional people have a less than proportionate influence on economic growth. In the cross-sectional specification, the impact is generally larger than in the panel specifications. From the discussion above, this is to be expected since the (positive short-term) impact of income growth on population growth is likely to reduce the negative coefficient in the panel specification. The impact of population growth on economic growth does not appear to be different in Sub Saharan Africa from elsewhere.

Prskawetz (2007) also was of the view that demographic factors matter for economic growth just as much as, or sometimes even more than, the factors commonly stressed in the growth literature, such as technological change, innovation and political/institutional explanations. Through a series of tests, they found that demographic effects turned out to be extremely robust, independent of the economic variables included and the specific method (cross-country vs. panel data regressions) applied. Control variables that entered the equation significantly were Life Expectancy at Birth, Hours Worked, Employment Rate, Phone Lines, Crude Birth Rate, Total Fertility Rate, and Capital Stock. From the forgoing, the importance of demography in the process of economic growth and development has been recognized.

Bringing these two polar views of the impacts of population growth on economic development together, Yamaguchi (1973) as cited in Yao et al (2013) categorized the impacts as either direct or indirect. The direct impacts of population growth on economic development, in Yamaguchi's view, are negative as they lead to lower income per capita. The indirect impacts, by contrast, are positive in that they promote economic development by accelerating technological progress. Yamaguchi (1973) arrived at these results based on empirical analyses of experiences in Japan Thailand, China and Taiwan, concluding that the overall impact of population growth on economic development is positive.

Depending on the framework used and the economy in question, the effects differs greatly. While some studies reported strong positive/negative relationship others suggested a very weak relationship between population growth and GDP (see for example Easterlin, 1976 & Weil, 1997). Whereas indirect studies, based on neo-classical production functions, show that the effect of population growth on per capita income growth is neutral (e.g. Thirlwall, 1972).

Not withstanding, the volume of research performed thus far is substantial, there still remains a shortage of studies of the experiences of individual countries over long periods. Therefore, it has tend to examine the general experiences of individual countries. However, nigeria with unimpressive rates of economic growth and unfavorable demographic environment has little empirical evidence on the relationship with diverse findings. Hence, this study critically examined the relationships between Nigeria's population dynamics and economic growth with a view to finding by how much would income per capita change if the fertility and infant mortality rates change by a specified amount.

3. Methodology

The study examines population and economic growth in Nigeria: An empirical analysis. The methodology of this study is ordinary least square (OLS) technique, which was used to estimate and analyze the influence of the explanatory variables; Population (POP), Death Rate (DHR), Government Expenditure on Health (GEH) on Gross Domestic Product (GDP) at current price as the dependent variable. This research work embraces the use of secondary time series data. The analysis employed consists of the following: Regression, the Augmented Dickey Fuller (ADF) unit root cointegration tests and the Error Correction Model to examine the long run movement between population growth and economic growth in Nigeria.

Data Sources

Data used for this study were secondary data. They are annual time series data on gross domestic product, population, death rate, government expenditure on Health. All data used for the impact of population are sourced from Central Bank (CBN) statistical bulletin for 2016 volume 27 and various other recognized sources.

Model Specification

The hypothesis had been stated with the view of ascertaining the significant impact of population growth on Nigeria economic growth. The functional form of the model is as expressed below;

GDP = f(POP, DHR, GEH) 1

Equation 1 reads that Gross Domestic Product is a function of population, death rate, government expenditure on health. In order to capture the influence of the stochastic or random variable, the equation is explicitly transformed as

$GDP_t = \beta_0 + \beta_1 POP_t + \beta_2 DHR_t + \beta_3 GEH_t + U_t$... 2

By logging the model we have

$logGDP_t = \beta_0 + \beta_1 logPOP_t + \beta_2 DHR_t + \beta_3 logGEH_t \ U_t`$... 3

Where; GDP is the gross domestic product, POP represent population, DHR measured death rate, GEE stands for government expenditure on health, β_0 is constant, β_1, β_2, β_3 are the parameter estimates, and U_t means error term.

4. Results

The populations of a country play a crucial role in the growth of the economy. The economic effect is rapid, compared to the slow or moderate rate of population. This shows through several ways, which include population size and rate of growth, age distribution of population and labor force in relation to the total population. The method of regression analysis is used in this chapter to analyze the relationship between population growth and POP, GDP, GFCF and inflation of the period 1983 to 2014 was used to cover the period.

Unit Root Test

In other to test for the presence or absence of unit root in the data used for the empirical analysis, Augmented Dickey-Fuller (ADF) test was employed and the test result is as presented below:

Table1: Augmented Dickey Fuller Unit Root Test (Trend and intercept)

Variables	ADF @ Level	1st difference	Critical value (1%)	Critical value (5%)	Order of integration	Remarks
(GDP)	2.128327	5.279981	4.273277	3.557759	I(1)	Stationary
(POP)	3.602878		4.273277	3.557759	I(0)	Stationary
(DHR)	0.244451	5.385163	4.374307	3.603202	I(1)	Stationary
(GEH)	4.607181		4.262735	3.552973	I(0)	Stationary

Source: Authors' Computation

From Table 1 above, at 5% level of significance, two of the variables (POP and GEH) for this regression was stationary at level since by comparison, their critical values were less in absolute values than their augmented dickey fuller (ADF) test statistics. However, at first difference, the remaining two variables (LR, and INT) were stationary. Thus, two of the series (POP and GEH) are stationary and integrated of the first order, I (0) while the remaining two series (GDP and DHR) are also stationary and integrated of the second order I (1). Since the variables are stationary, the Johansen cointegration was conducted to test for the long-run relationship.

Co integration Result
Co integration was used to test for the long run relationship between the variables considered. For this purpose, the Johansen cointegration test was adopted. In Johansen's Method, the eigenvalue statistic is used to determine whether cointegrated variables exist. Cointegration is said to exist if the values of computed statistics are significantly different from zero or if the trace statistics is greater in absolute value than the critical value at 5% level of significance. The model with lag 1 was chosen with the linear deterministic test assumption and the result is presented below.

Table 2: Johansen CointegrationTest

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.613066	62.52122	47.85613	0.0012
At most 1 *	0.414966	32.13715	29.79707	0.0264
At most 2	0.321764	14.98240	15.49471	0.0596
At most 3	0.076828	2.558081	3.841466	0.1097

*Trace test indicates 2 cointegratingeqn(s) at the 0.05 level, * denotes rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) p-values*
Source: Authors' Computation

The results of the co-integration in the table above indicated that the trace statistics is greater than the critical value at 5% level of significance in two of the hypothesized equations. This confirms that there is at least two co integrated relationship among the various variables used to model the relationship between population growth and economic growth in Nigeria for the period under study. Specifically, they are 62.52122>47.85613, and 32.13715 >29.79707. Also, their p-value are less than 0.05 (0.0012, and 0.0264) respectively. In other words, the null hypothesis of no co integration among the variables is rejected. Hence, the test

result shows the existence of a long-run equilibrium relationship in three cointegrating equations at 5% significance level. The normalized co integrating coefficients for one co-integrating equation given by the long-run relationship is

$$logGDP = 68.84683log(POP) + 30.48963DHR – 7.906051log(GEH) …….…… 4$$
$$\quad\quad\quad (13.9031) \quad\quad\quad (6.36130) \quad\quad\quad (1.36778)$$

Where GDP is the dependent variable, 68.84683 is the coefficient of population (POP), 30.48963 is the coefficient of death rate (DHR) and –7.906051 is the coefficient of government expenditure on health (GEH). The values in this relationship were extracted from the Johansen's Co integration Test under the "Normalized Co integration Coefficients: 1 Co integrating Equation" sub-section. They are coefficients showing the direction and strength of the relationship between the explanatory variables and dependent variable in the long-run.

Error Correction Model (ECM)
It has been pointed out earlier that the error correction mechanism (ECM) is meant to tie the short-run dynamics of the cointegrating equations to their long-run static dispositions in order to maintain equilibrium. In order to capture the short run fluctuation, the Error Correction Method (ECM) was employed and the result is presented below.

Table 3: Error Correction Model Result
Dependent variable: LOG (GDP)

Variables	Coefficient	Std. Error	t-Statistic	Prob.
C	-44.39407	4.886619	-9.084823	0.0000
LOG(POP)	3.345807	0.702355	13.30639	0.0000
DHR	1.604523	0.412285	3.891778	0.0006
LOG(GEH)	-0.001399	0.054050	-0.025876	0.9795
ECM(-1)	-0.605458	0.146490	-4.133104	0.0003
R-squared	0.994093			
Adjusted R-squared	0.993250			
S.E. of regression	0.180048			
Sum squared resid	0.907683			
Log likelihood	12.46560			
F-statistic	1178.098			
Prob(F-statistic)	0.000000			

Source: Authors' Computation

The ECM coefficient has three criteria that it must satisfy, one is that it must be negative; two is that it must be in fraction and three is that it must be statistically significant. From the table ECM (-1) -0.60 meet the above criteria, it wasconsistentbyassuming anegative values, was statistically significant and was in fraction form..Itsuggests that if in the short run variables deviate from equilibrium,

they tend to re-adjust themselves back to equilibrium in the long run. The speed of this adjustment is 60% per annum.

Implications of the Study
The OLS result presented above showed that GDP had a positive relationship with population, a 1% increase in population brought about 7.97% increase in GDP, a positive relationship with Death rate, showed that a 1% increase in DHR led to a 1.1% increase in GDP and a positive relationship with government expenditure on health showing that a 1% increase in government expenditure on health brought about a decrease in GDP by 0.09%. The relationship between economic growth and population conformed to a priori expectation. The implication is that GDP moves in the same direction with population and it is in line with the Liberalist theory that were of the opinion that increase in labour supply may have a synergistic effect on Productivity. Equally, the positive relationship between economic growth and death rate which does not conform to economic expectation implies that economic growth and death rate moves in the same direction, meanwhile economic growth can only be propelled by increase labour force which will be hampered by death rate. At the same time, the positive relationship between economic growth and government expenditure on health, indicates that government expenditure on health have positive relationship with economic growth, which conforms to the priori expectation. As an increase in government expenditure on health lead to higher life expectancy rate and invariably better and efficient labour force, and in turn lead to economic growth, though the coefficient was statistically insignificant.

5. Conclusion and Recommendation
This study like many others attempted to provide additional empirical evidence to the on going debate about the complex nature of there relationship between population growth and economic development. The findings from the econometric analysis of this study make the path smooth for us to reach the conclusion that, there is a long-run dynamic relationship between population and economic growth in Nigeria. The effects of population on GDP may be the results of increased labour force which increases labour supply and consequently the stock of capital in the economy.

These findings give support to the population-driven economic growth hypothesis that states that, the population growth in a country promotes its economic development. Despite this the growth in GDP is not as promising as it should be and it clearly shows that the trend is not sustainable without purposeful effort from the authorities. The unfavorable match between population growth and means of subsistence in the country has breed poverty, diseases, unemployment and other social ills. Nigeria needs to design an intervention programmes that will help in reducing population growth rate and stimulate socio-economic development. Government should create enabling environment that will facilitate savings, investment, innovation, entrepreneurship and technical know-how.

Despite the positive relationship that exists between population and economic growth in Nigeria as revealed by this study, economic potentials of the country have not been maximized. It is on this basis that the following recommendations

were made: Since population had a positive impact on economic growth in Nigeria, there is need for government to adopt policy that will promote human capital development, this will ensure that the teeming population will be engaged productively which will result to an increase in output and as well lead to an increase in export and in the long run boost of economic growth. Government expenditure on health should be increased and channeled properly towards its objective as this will increase the life expectancy rate of the population. This will ensure that the good heads are around for transfer of knowledge from old generation to new generation.

There should also be an increased in Government expenditure on education this will also ensure an improvement in the quality of education as well as large pool of competitive and productive labor market which can even be supplied to the rest of the world. Government should make concerted effort to check population growth rate. Any population growth that occurs too fast will have diminishing returns or create a circumstance where economic growth is stagnating. Policy-makers need to be careful too, when trying to influence the economy through changes in macroeconomic variables such as money supply or interest rate; while aiming to correct macroeconomic ills such as inflation or unemployment. They may inadvertently depress economic growth.

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