



## Birth Rate and Economic Growth of Nigeria (1990-2020)

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### ABSTRACT

**Background:** The relationship between birth rate and economic growth remains a critical issue in development discourse. While high fertility rates may either stimulate or impede economic growth depending on contextual factors, Nigeria has historically paid limited attention to the role of population dynamics as a driver of economic performance. Persistent high birth rates, if not effectively managed, may exert pressure on economic resources, reduce savings, and constrain investment. This study examines the effect of birth rate on Nigeria's economic growth between 1990 and 2020.

**Objective:** The study investigates whether birth rate stimulates or impedes economic growth in Nigeria.

**Methods:** An ex-post facto research design was adopted for the study. The theoretical framework is anchored on Simon's population theory, which posits that high fertility can stimulate economic growth through increased human capital. The study utilised secondary data comprising annual time series data on Nigeria's Gross Domestic Product (GDP) and birth rate from 1990 to 2020.

**Results:** The findings indicate that birth rate declined insignificantly over the study period, while Nigeria's economic growth experienced a significant decline. Further analysis reveals a significant negative relationship between birth rate and economic growth.

**Conclusion:** The study concludes that birth rate has a significant negative effect on Nigeria's economic growth. This outcome is largely attributable to increased household and public consumption, which reduces savings and limits investment necessary for economic expansion.

**Unique Contribution:** This study provides empirical evidence on the negative influence of birth rate on economic growth in Nigeria, contributing to ongoing debates on population and development within the Nigerian context.

**Key Recommendation:** The study recommends that the Nigerian government should implement effective population management strategies through policy frameworks, advocacy, and public enlightenment, while also enhancing the productivity of the existing population to support sustainable economic growth.

**Keywords:** Birth rate, economic growth, fertility, productivity, Nigeria.



## INTRODUCTION

Over the years, Nigeria's economic growth has been poor. To fully comprehend Nigeria's economic growth, a large number of determinants must be studied. Birth and death rates are two important variables that can affect the socioeconomic situation of any country. Changes in a nation's birth and death rates have an impact on its socioeconomic progress. An economically prosperous nation must not downplay the analysis of birth and mortality rates in connection to its economy. However, it appears better to separate the effects of birth from the effect of death on the economy to enhance intervention clarity.

Many countries with growing economies have decreasing birth rates. The United States' total fertility rate has been on an average annual birth decline of 4% since 2019 (National Vital Statistics System 2021). Data released by the National Statistics Bureau shows China's population stood at 1.4 billion people at the end of 2021, with 10.6 million babies born in 2021, a rate of 7.52 births per 1,000 people. By contrast, 12 million infants were born in 2020, a rate of 8.52 births per 1,000 people (National Statistics Bureau, 2022). In 2020, the birth rate for Egypt was 25.1 per 1,000 people. The birth rate of Egypt fell gradually from 41.2 per 1,000 people in 1971 to 25.1 per 1,000 people in 2020 (Knoema, 2021). In 2020, the birth rate for Canada was 10.3 per 1,000 people. The birth rate of Canada fell gradually from 16.1 per 1,000 people in 1971 to 10.3 per 1,000 people in 2020 (Knoema, 2021). In 2020, the birth rate for Ghana was 28.6 per 1,000 people. The birth rate of Ghana fell gradually from 45.8 per 1,000 people in 1971 to 28.6 per 1,000 people in 2020 (Knoema, 2021). Each of these countries is known to have increasing economic growth.

The birth rate for Nigeria in 2022 was 36.440 births per 1000 people, with 1.3% decline from 2021. The birth rate for Nigeria in 2021 was 36.855 births per 1000 people, a 1.11% decline from 2020. The birth rate for Nigeria in 2020 was 37.269 births per 1000 people, a 1.1% decline from 2019. The birth rate for Nigeria in 2019 was 37.684 births per 1000 people, a 1.09% decline from 2018 (Microtrends, 2022). As at 2014, Nigeria ranked the third poorest country in the world (Kale 2014), with a poverty index of 33.1% (World Bank 2014). Nigeria's case is unusual as declining fertility does not go with economic prosperity, hence the need for this study.

Previous studies have explored the relationship between population growth as a whole and economic growth. Population growth is a function of an interplay among birth, death and migration, but the present study unbundled these population variables specifying only birth rate for study as it relates with economic growth within the 30-year period of 1990-2020. This is the knowledge gap and periodicity gap that the instant study has filled. It is against this background problem that the researcher wishes to determine the effects of birth rate on the economic growth of Nigeria from the period of 1990 to 2020. The objective of the study is to find out whether birth rate stimulates or impedes Nigeria's economic growth.



## LITERATURE REVIEW

### Birth Rate

Birth rate is the total number of live births per 1,000 individuals per year (Indexmundi, 2011; World Bank, 2017). The birth rate is an issue of concern and policy for national governments. Some countries like Italy and Malaysia seek to increase the birth rate with financial incentives or the provision of support services to new mothers. Conversely, other countries have policies to reduce the birth rate (for example, China's one-child policy which was in effect from 1978 to 2015). Policies to increase the crude birth rate are known as pro-natalist policies, and policies to reduce the crude birth rate are known as anti-natalist policies. Non-coercive measures such as improved information on birth control and its availability have achieved good results in countries such as Iran and Bangladesh towards fertility decline.

There are many factors that interact in complex ways, influencing the birth rates of a population. Developed countries have a lower birth rate than underdeveloped countries. A parent's number of children strongly correlates with the number of children that each person in the next generation will eventually have (Murphy, 2013). Factors generally associated with increased fertility include religiosity, intention to have children and maternal support (Lars, Klobas and Trude, 2014). Factors generally associated with decreased fertility include wealth, education, female labor participation, urban residence, intelligence, increased female age, women's rights, access to family planning services and (to a lesser degree) increased male age (Lutz, Goujon and Kebede, 2019). Many of these factors however are not universal, and differ by region and social class. For instance, at a global level, religion is correlated with increased fertility, but in the West, less so. Scandinavian countries and France are among the least religious in the EU, but have the highest TFR, while the opposite is true about Portugal, Greece, Cyprus, Poland and Spain (Eurosta, 2016).

Reproductive health can also affect the birth rate, as untreated infections can lead to fertility problems, as can be seen in the "infertility belt" – a region that stretches across central Africa from the United Republic of Tanzania in the east to Gabon in the West, who have lower fertility than other African regions (Collet, Reniers, Frost, Gass, Yvert, Leclerc, Roth-Meyer, Ivanoff and Mcheus, 1988).

Child custody laws, affecting father's parental rights over their children from birth until child custody ends at age 18, may have an effect on the birth rate. U.S states strict in enforcing child support have up to 20 percent fewer unmarried births than states that are lax about getting unmarried fathers to pay, the researchers found. Moreover, according to the results, if all 50 states in the United States had done at least as well in their enforcement efforts as the state ranked fifth from the top, that would have led to a 20 percent reduction in out-of-wedlock births (Uwnews, 2016).



## **Economic Growth**

An economy is defined as a social domain that emphasizes the practices, discourses and material expression associated with the production, use, and management of the resource. Economic growth is the increase in the inflation-adjusted market value of the goods and services produced by an economy over time. It is conventionally measured as the percent rate of increase in real gross domestic product (GDP). According to Bjork (1999), growth is usually calculated in the real effect of inflation on the price of goods produced. So, every country takes measure to reduce inflation to achieve balanced growth. According to Finnemore (1996), economic development is any effect or undertaking which assist in the growth of the economy. In other words, it is the “process” of developing and maintaining “suitable economic”, “social and political environment” in which “balance growth” may be realized increasing the wealth of the community. While this definition looks simple enough at first glance, an examination of each of its components parts shows how complex economic development actually is. Economic development is a “process” which highlight the fact that economic development has complex steps that build on each other to create a desired product/outcome.

## **Effects of Fertility on Economic Growth**

It is yet not settled among scholars whether fertility inhibits or stimulates economic growth. Studies originating from Malthus model have generally found that there are important links between per capita income, wage rates, men and women’s education level and fertility rate, urbanization and other economic variables (mortality) (Du, 2001). The understanding of fertility issues in the theories of economic growth preceded by neoclassical theory is divided into two phases: In the first phase, which is described in the Solow Model, although the population growth rate affects the level of steady economic growth, its rate is exogenous; in the second stage, in the growth model, economic development influences family birth plan, which means that the fertility rate is an endogenous factor within the economic system. This view has left fertility-economic growth relationship fluid.

However, some scholars see only the positive effects of population on economic growth based on “the Economics of Scale”. The optimistic population growth economists like Kuznets (1956), Boserup (1965) and Simon (1981), believed that population growth can really help the national economy to return from ineffective economy into “Economies of scale” state. According to Kendrick (1977), economies of scale are an important factor to increase the productivity (increase in output per unit of labor) of one nation. A country, which has rapid population growth, can suffer many burdens such as capital dilution, shortage of necessary resources and the casualty could lead the whole population to poverty, famine, and starvation. However, there are three arguments supported by the idea that population growth can boost the country economy by “economies of scale” phenomenon; large population size leads to (1) large market size which stimulates high productivity (Simon, 1994); (2) increase in specialization (Smith, 1776); (3) cost effective transportation system. The third element needs some elaboration.

The rapid population growth rate could cause a positive effect on communication and transportation. Transportation plays an important role in economic development. A good transportation system can help reduce transportation cost and travel time. Along with the high



population growth rate, the increase in population density is inevitable. A dense population is likely to pressure the government to develop more in transportation systems such as railroads, highways and roads. This has happened in China (UNPD, 1985). Population growth clearly leads to an improved transportation system, which in turn stimulates economic development” acceleration of technological progress (Boserup and Simon, 1981). In Simon-Steinmann economic growth model (1985), Simon also shows the idea that the greater the total population, the greater the level of technological growth which eventually leads to yield in greater per capita income.

### **Negative Impact of Fertility Rate on Economic Growth**

The negative effects of fertility rate include, Capital dilution: The first problems caused by population growth is capital dilution (NAS, 1971). Assume that the amount of capital in a country is constant, an increase in population will lead to a decrease in capital per worker. In economics, this situation is called capital dilution. The second problem relates to standard of living. Population growth also leads to higher total consumer demand for goods and services. This creates scarcity and poor living standard. The third problem affects age structure. The demography divides the population into three categories, which are: young age population (0-14 ages). Working-age population (15-64 ages) and old age population (over 65 age). Preponderance of the young age and old age population can negatively affect the output per capita as it allows a high dependency ratio as shown by the Solow model. This model has raised many population pessimists like Cambell et al. 2007, Sindig, 2009; Das Gupta, Bongaarts and Cleland 2011; Kohler 2012; insists that high fertility impedes economic growth.

### **EMPIRICAL REVIEW**

Efuntade and Efuntade (2020), investigated the impact of population growth on Nigeria's economic growth from 1994 to 2019. Time series data on GDP, mortality rate, fertility rate, and immigration rate were obtained from the Central Bank of Nigeria (CBN) and world development indicators. The data in this study were analyzed using the co-integration and vector error correction models. According to the study's findings, the mortality rate has a negative significant effect on GDP in Nigeria, whereas the fertility rate has a significant positive effect on GDP. International migration (IM) has a positive impact on Nigeria's economic growth. The study recommends that the Nigerian government should ensure that Nigeria's rising population should be channeled into areas of the economy where they may be fully, effectively, and efficiently utilised in bringing about high rates of economic growth for the country. In addition, the Nigerian government should increase access to affordable health care services to reduce death rates for Nigeria to achieve increased economic growth.

Amade and Ibrahim (2018), examined the impact of population growth on the economic growth of African countries using a panel data approach from 1980 -to 2015. The study used annual secondary data of fifty-three (53) African countries sourced from the World Development Indicators database. Data were collected for economic growth, proxied by GDP, population growth, fertility rate, crude death rate, and inflation rate. The data were analyzed using descriptive statistics, as well as dynamic panel models of difference and system GMM. The results of the difference and system GMM suggest that population growth exerts a positive impact on the economic growth of Africa while fertility hurts the economic growth of Africa.



The study concludes and recommends that population growth impacts positively on economic growth and thus African countries should adopt and implement pragmatic policy measures that will enhance the productivity of their population to reap more demographic dividends.

**THEORETICAL FRAMEWORK**

This study is anchored on Simon's Population Theory (1981). According to this theory, more people contribute to increase in the stock of knowledge through competition among them. Division of labour and economies of scale happens if there is increase in population growth. Thus. population growth increases growth and development. As was earlier discovered, this theory is the reverse or opposite of the Malthusian Demographic Theory - based on the dreadful negative effects of high population on growth (scarcity of food, et cetera) as postulated by Rev. Malthus. This theory is relevant to this study because high fertility rate is loaded with potentials of turning the Nigerian's economy around if we focus on boosting the resourcefulness of the populace through skills and financial empowerment. As the American Economist Simon Julian postulated, "The ultimate resource of economic growth is people who are skilled and spirited. People who will exert their will and imagination for their benefit and for others are needed.

**METHODOLOGY**

This study adopted the ex post facto research design. The study focused on the effects of birth rate on the economic growth of Nigeria from the period of 1990 to 2020. The study sought to determine the relationships that exist between birth rate and Nigeria GDP. Data used for this study were secondary data. They are annual time series data on Nigeria's gross domestic product and birth rate for the period between 1990 and 2020. The data used for the gross domestic product is sourced from Central Bank (CBN) statistical bulletin volume 30, 2020. Data on birth rate were sourced from Microtrends (2020), from 1990 to 2020. The variables used for the empirical analysis in this work are dependent variable: The dependent variable of this study is Economic Growth. The GPD was logged to be in the same base with birth rate. Independent variable: The independent variable is the birth rate.

**Model Specification**

To estimate the impact and test the hypothesis, the study adopted the general formula for simple regression:

$$Y = \beta_0 + \beta_1 BR_t + \xi \dots\dots\dots 1$$

The hypothesis had been stated with the view of ascertaining the birth rate on Nigeria's Economic growth. The functional form of the model is as expressed below;

$$GDP = F (BR) \dots\dots\dots 2$$

$$GDP = \beta_0 + \beta_1 BR_t + \xi \dots\dots\dots 3$$

Where;

GDP = Gross Domestic Product

BR = Birth Rate

$\beta_0$  = Constant

$\beta_1$  is Parameter Estimates

$\xi$  = Error Term

Apriori Expectation:  $\beta_0 < 0, \beta_1 > 0$



### Method of Data Analysis

The specified multiple regression models will be estimated using the Ordinary Least Squares (OLS) technique

## RESULTS

### Presentation of Regression Result

Available data on Nigeria Economic Growth (GDP), and Birth Rate (BR) were collected and used for the purpose of this analysis.

#### TABLE 2 OLS Test

Dependent Variable: LOGGDP

Method: Least Squares

Date- 06/30/22

Time: 14:53

Sample: 19902020 Inducted observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGBTHR	-30.55193	3.136234	-9.741596	0.0000
C	123.7282	11.70652	10.56917	0.0000
R -squared	0.765938	Mean dependent var		9.697971
Adjusted R-squared	0.757867	S.D. dependent var		1.749601
S E of regression	0.860927	Akaike info criterion		2.600727
-Sum squared resid	21.49466	Schwarz criterion		2.693242
Log likelihood	-38.31126	Hannan-Quinn criter.		2.630884
F- statistic	94.89870	Durbin-Watson stat		0.057569
Prob (F statistic)	0.000000			

#### SOURCE: Researchers Own Computation (E-View version 10)

From table 2 above the variables of the intercept under coefficient which are 123.7282, shows that Nigeria GDP will experience a 123.7282 unit increase when birth rate is held constant. This is to say that when birth rate is constant, the Nigeria GDP will experience a 123.7282.

Birth Rate (BR) has a coefficient of -30.55193. This shows that the variable is negatively related to the Nigeria GDP. This means that a unit increase in the birth is followed by a decrease in Nigeria GDP.

### Tests of Hypothesis

From the Ordinary Least Squares (OLS) results shown in Table three (3) indicates that the birth rate has a negative effect on Nigeria GDP. The coefficient of birth rate is -30.55193 and the p value is 0.000 this shows that the effect is negative and significant. Therefore, we reject the null hypothesis and accept the alternative hypothesis with the conclusion that birth rate has a significant effect on economic growth of Nigeria.



#### **4.4 DISCUSSION OF FINDINGS**

From the Ordinary Least Squares (OLS) results shown in Table three (3), birth rate has a negative effect on Nigeria GDP. The co-efficient of birth rate is -30.55193 and the p value is 0.000 this shows that the effect is negative and significant. Therefore, we reject the null hypothesis and accept the alternative hypothesis with the conclusion that birth rate has a significant negative effect on the economic growth of Nigeria. The effect of birth rate on economic growth of Nigeria was negative due to diminishing returns. Although birth rate is decreasing, the rate of decrease is too low to have positive effect on the economy. The origin of utility is yet to be attained. It is also negative because a lot of resources are taken out to manage and cater for the teeming increase population. Over the time, the rate of female education has not been relatively satisfactory compared to the male counterpart and this contributed to the rising level of both population and fertility in the country. An increase in population in Nigeria is also associated with unemployment, with figures ranging from 17% per year for the entire population to 6% for youths, (Federal Republic of Nigeria, 2004), because employment opportunities are fewer than the number of people looking for them, and stagnant economic performance because a large proportion of available resources is consumed rather than invested to generate growth. It is feared that much female dropouts in Nigerian schools, higher than males, 42.10% as against 28.67% (Ajaja, 2011), has an influence on the fertility rate in the country because fertility during educational enrolment is often lower than fertility without educational enrolment. The finding of this study supported the Malthusian theory of population whose notion was that population grow in geometrical ratio while the means of subsistence grows in mathematical ratio. The finding also supports the social capillarity theory of Asene Dormant, whose notion was that smaller population improves growth in the society while larger population impedes growth in the society. This study disagreed with the findings of Tartiyus, Dauda and Amade (2015), whose result revealed that there is a positive relationship between fertility and economic growth of Nigeria. High birth rate impedes economic growth in Nigeria because of much service industries which do not add to real economic output.

#### **CONCLUSION**

This study sought the effect of birth rate on the economic growth of Nigeria over the period of 1990-2020, and found negative effect on Nigeria's economic growth. High birth rate is a disincentive for savings and investments as most household incomes are consumed and public resources are used up in recurrent welfare services. The study concludes that high fertility slows economic growth and should be regulated by law and popular education while the existing population should be managed for productivity. Based on the finding, recommendations were made: Government should take the increasing birth rate as a virtue by investing more resources in human capital development through quality education, employment provision, improved healthcare services, infrastructures as well as encouraging small and medium scale industries in order to achieve the long run economic growth.



### **Ethical clearance**

Secondary data were used. So participants consent was inapplicable.

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### **Conflict of Interest**

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

### **Authors' Contributions**

O. J. Okereke conceived the study, made the initial manuscript including the design, and G.O. Ngwoke collated the data, handled the analysis and interpretation. All the authors have critically reviewed and approved the final draft, and are responsible for the content and similarity index of the manuscript.

### **Data availability statement**

The datasets on which conclusions were made for this study are available on reasonable request.

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