Population Growth, Manufacturing Sector and Economic Growth in Nigeria

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This research explores the effect of population growth and manufacturing sector output on the economic growth of Nigeria over the period of 1985 to 2018. The ARDL result revealed that fertility rate and lagged population growth have a significant positive effect on the real GDP, while the lagged fertility rate, and population growth rate have a significant negative effect on the real GDP. The fertility rate has a long run there is a negative relationship between fertility rate and the real GDP. It was also revealed that the manufacturing sector output has a significant effect on the real GDP, both at the short and long run. It is therefore recommended that government comes up with policies that will help to control the rate of population growth, encourage foreign direct investment in the manufacturing sector and the materials for this sector be sought for domestically. (JEL Classification: P23, O14, O4, J13)

Keywords: *Population Growth, Manufacturing Sector, Economic Growth, Fertility.*

Introduction

Decades ago, agriculture was the major occupation of the people and it was believed that increase in population would translate to greater productivity since more people are available to work on the farms (Tartiyus, Dauda & Peter, 2015). The high fertility rates were therefore linked to economic growth. Rapid technological advances in modern world have drastically reduced global mortality rates, increase population and labour productivity (Ogunleye, Owolabi & Mubarak, 2018). Ogunleye, Owolabi & Mubarak, (2018) further state Nigeria is one of the fastest growing countries in the world with a population growth rate of about 2.44 % as at 2016 according to the Central Bank of Nigeria. It is the most populous country in Africa endowed with wide range of natural resources such as crude petroleum (oil and gas), water resources, massive fertile arable land, and rich forest resources (Michael, Usang, Nelson, Etim, Onah, & Chukwudi, 2014) which form a significant part of inputs for the manufacturing industries. Nigeria population size continues to rise and this affects the gross domestic product (GDP), and by extension the nation's economic growth.

Nigeria has achieved significant economic growth rates with the highest being 9.19% in the third quarter of 2015 (Ogunleye, owolabi & Mubarak, 2018). Manufacturing activities are also steadily increasing in the country.

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1 Nigeria's large and increasing population may have played a role and needs to
2 be continuously explored in research if Nigeria is to achieve higher growth
3 rates in light of its vast resources. Existing theories are evasive on the
4 relationship among population growth, manufacturing sector and economic
5 growth of developing nations such as Nigeria and therefore it is difficult
6 to make a pronouncement on Nigeria's future manufacturing and economic
7 growth prospects on account of its rising population. Furthermore, researchers
8 have come up with conflicting findings on the effect of population growth on
9 manufacturing sector and economic growth in Nigeria. This study is therefore
10 aimed at looking at the effect of the rising population and manufacturing sector
11 on the Nigeria economic growth from 1985 to 2018 using Ordinary Least
12 Squared (OLS) method. The rest of this article will included section 2-
13 litetrature review, section methodology, section 4- empirical result and section
14 5 is conclusion and recommendations
15
16
17 **Literature Review and Theoretical Framework**
18
19 Aidi, Emecheta, and Ngwudiobu (2016) investigated the relationship
20 between population dynamics, productivity and economic growth in Nigeria
21 using time series data spanning from 1970 to 2014. The data were analyzed
22 using ordinary least square estimation technique. Results revealed, among
23 other things, that all the core variables (fertility, mortality and net-migration) of
24 the study are inversely related to economic growth during the investigated
25 period. Their study revealed that gross fixed capital formation (GFCF) and
26 savings are strong drivers of economic growth in Nigeria.
27 Many other studies have examined the relationship between population
28 growth, the manufacturing sector and economic growth such as Klasen and
29 Lawson (2007); Mohsen and Chua (2015); Guga, Alikaj, and Zeneli (2015);
30 Shah, Sargani, Ali, and Siraj (2015); and Aidi, Emecheta, and Ngwudiobu
31 (2016). These studies have proposed various theories and models to explain the
32 relationship among population growth, manufacturing, and economic growth.
33 These include the liberal theory, the Marxist theory, the Malthusian theory, the
34 Harrod-Domar model, Rostow's stages of growth model, endogenous growth
35 theory, and the Romer model. However, the endogenous growth theory is
36 more relevant to this paper.
37 At a time when much of macroeconomics was devoted to studying
38 inflation and employment, Romer emphasized the centrality of questions such
39 as "What determines the long run rate of economic growth in living
40 standards?" This reminder came in the form of his 1983 dissertation (Romer,
41 1983) and the key growth publication it led to, Romer (1986). The substantive
42 contribution of that paper was to build a model in which the long-run growth
43 rate was determined endogenously and to highlight that, because of
44 externalities, the equilibrium growth rate may be lower than is optimal. In this
45 way, Romer was a key founder of what came to be known as endogenous
46 growth theory. Romer, in his endogenous growth theory, emphasized that

1   technological change is the result of efforts by researchers and entrepreneurs
2   who respond to economic incentives. Anything that affects their efforts such as
3   tax policy, basic research funding, and education, for example, can potentially
4   influence the long-run prospects of the economy. Romer's fundamental
5   contribution is his clear understanding of the economics of ideas and how the
6   discovery of new ideas lies at the heart of economic growth.

7   Endogenous growth theory explains long-run growth as emanating from
8   economic activities that create new technological knowledge. Endogenous
9   growth is long-run economic growth at a rate determined by forces that are
10   internal to the economic system, particularly those forces governing the
11   opportunities and incentives to create technological knowledge. In the long run
12   the rate of economic growth, as measured by the growth rate of output per
13   person, depends on the growth rate of total factor productivity (TFP), which is
14   determined in turn by the rate of technological progress.

15   The neoclassical growth theory of assumes the rate of technological
16   progress to be determined by a scientific process that is separate from, and
17   independent of, economic forces. Neoclassical theory thus implies that
18   economists can take the long-run growth rate as given exogenously from
19   outside the economic system. Endogenous growth theory challenges this
20   neoclassical view by proposing channels through which the rate of
21   technological progress, and hence the long-run rate of economic growth, can be
22   influenced by economic factors. It starts from the observation that
23   technological progress takes place through innovations, in the form of new
24   products, processes and markets, many of which are the result of economic
25   activities. For example, because firms learn from experience how to produce
26   more efficiently, a higher pace of economic activity can raise the pace of
27   process innovation by giving firms more production experience. Also, because
28   many innovations result from R&D expenditures undertaken by profit-seeking
29   firms, economic policies with respect to trade, competition, education, taxes
30   and intellectual property can influence the rate of innovation by affecting the
31   private costs and benefits of doing R&D.

32   The theory maintains that economic growth is made by forces within a
33   system rather than external forces. It specifically argues that economic growth
34   is a result of policies, internal processes and investment in human capital.
35   Economic growth of a country therefore on the basis of endogenous growth is
36   on account of government policies promoting innovation, investment in human
37   capital and acquisition of knowledge which constitutes internal technology
38   driving economic growth. In the context of the present study therefore, Nigeria
39   government policies on population growth controlling population growth
40   through birth rates and death rates, will affect achievement of significant
41   levels of economic growth of Nigeria.

42   Tartiyus, Dauda, and Peter (2015) evaluated the impact of population
43   growth on economic growth in Nigeria from 1980 to 2010 and found a positive
44   relationship between economic growth and population, but negative
45   relationships between economic growth and crude death rate. Dao (2012)
46   examined the economic effects of the demographic transition in developing

countries and found that the growth rate of per capita GDP is linearly dependent upon population growth.

Okwori, Ajegi, Ochinyabo, and Abu (2015) examined the Malthusian population theory in Nigeria from 1982 -2012 and found no significant impact of population growth on economic growth in Nigeria, thereby faulting the Malthusian theory which claims that population growth is detrimental to economic growth.

Mohsen and Chua (2015) examined effects of trade openness, investment and population on the economic growth and came to the conclusion that population had the biggest effect on the GDP.

In a nutshell, the relationship between population growth and economic growth is found to be positive. In other words, the variables are found to have long run positive relationship or equilibrium. Given increasing population, the population should be encouraged to develop useful skills in science and technology as well as the manufacturing sector to meet the country's need for employment and productivity.

Nwosu, Dike, and Okwara (2014) examined the effects of population growth on economic growth in Nigeria from 1960 to 2008 and found a sustainable long-run equilibrium relationship and unidirectional causality between economic growth and population growth. Adewole (2012), Shaari, Rahim, and Rashid (2013), and Tartiyus, Dauda, and Peter (2015) find that population growth enhances economic growth, the negative effects of rising population for economic growth on account of poverty, pollution, unemployment, etc. has been acknowledged. Population growth has also been found to have no significant effect on economic growth (Dao, 2012; Okwori, Ajegi, Ochinyabo, &Abu, 2015). Adewole (2012) examined effect of population on economic development in Nigeria from 1981 to 2007 and found that population growth exerts positive and significant effect on economic growth.

Methodology

In light of the objective of this study to determine the effect of population growth and the manufacturing sector on economic growth, Ordinary Least Squares (OLS) regression was employed to estimate the model. Secondary data comprising time series observations from 1985 to 2018 was employed in performing the present study.

Model Specification

The model adapted by the present study is a modification of the model of Tartiyus, Dauda and Peter (2015) in which crude death rate is excluded from the model because it has a high level of correlation with manufacturing sector output. The model therefore employed in the present study is specified as in equation below:

$$Log\ RGDP_t = \alpha_0 + \alpha_1 POPG_t + \alpha_2 FER + \alpha_3 LogRMGDP_t + \alpha_4 Log$$

$$RGDP_{t-1} + \varepsilon_t \quad (1)$$

Where;

RGDP = Real Gross Domestic Product

POGR = Population growth rate

FER = Fertility Rate

RMGDP = Manufacturing sector contribution to the Real Gross Domestic Product

α_0 is the constant term of the model and the intercept of the estimated regression line.

The coefficients α_1 … α_4 are the coefficients of the respective independent variables affecting the dependent variable (economic growth). The coefficients of the respective independent variables indicate the effect on economic growth of a unit increase in the respective independent variables. The subscripts t refers to the time period of observations which in the case of the present study is from 1985 – 2018. The lagged log of RGDP is to correct our model for serial correlation. In the formulation of the model it is assumed that large proportion of the manufacturing sector is labour intensive and the sector (manufacturing) comprises of medium and large scale enterprises.

A priori Expectations

The *a priori* expectations for explanatory variables in the present study are as follows:

$\alpha_0 > 0$, $\alpha_1 > 0$; $\alpha_2 > 0$; $\alpha_3 > 0$; $\alpha_4 > 0$ all the independent variables are expected to be positively related to the dependent variable.

Estimation Technique

The first phase consists of pre-estimation evaluation, these are the preliminary evaluation of the data using the descriptive statistics method. This will help show, describe and summarize the data in a meaningful way and also to know if the data are normally distributed through their various averages and Jarque-Bera values (Gujarati & Dawn, 2009). The second step is the determination of the stability of the variables. For the purpose of this research, Augmented Dickey-fuller (ADF) unit root tests was. This test of the time series data is required because a non-stationary regressor invalidates many standard empirical results. The presence of a stochastic trend is determined by testing the presence of unit roots in time series data (Oseni and Adekunle, 2017).

The next was the Autoregressive Distributive Lag analysis which was based on the order of integration of the variable series.

The third phase is the post estimation. In order to confirm the robustness and validity of regression model, a post-estimation test was conducted.

1 *Sources of Data*

2

3   The data used for this study was sourced from different sources. Data on
4 GDP and manufacturing sector output were obtained from Central Bank of
5 Nigeria Statistical bulletin, while data on Population growth rate, and fertility
6 rate were obtained from the World Bank's World Development indicators
7 online Database.

8

9

10 **Empirical Result**

11

12 *Descriptive Statistic, Normality Test and Correlation Matrix*

13

14 **Table 1.** *Descriptive Statistics of the Data*

	LRGDP	LMGDP	POGR	FER
Mean	10.30150	7.739524	2.579872	6.121000
Median	10.10501	7.487732	2.582499	6.094500
Maximum	11.15353	8.807505	2.680914	6.698000
Minimum	9.612728	7.225234	2.488785	5.526000
Std. Dev.	0.515143	0.511498	0.068923	0.324122
Skewness	0.354716	0.970700	0.016180	0.095993
Kurtosis	1.680626	2.556025	1.494483	2.113278
Jarque-Bera	6.43231	5.345321	14.27215	20.85343
Probability	0.024158	0.048071	0.002796	0.000022
Sum	329.6481	247.6648	82.55591	195.8720
Sum Sq. Dev.	8.226526	8.110529	0.147263	3.256710
Observations	32	32	32	32

15 Source: Researcher's E-view computation, 2020

16

17   Table 1 shows that the mean and median of all the variables lie within the
18 maximum and minimum values. This indicates that the data are normally
19 distributed. All the variables (RGDP, MGDP, fertility rate, POGR) are
20 positively skewed. The Jarque-Bera statistics shows that the series are normally
21 distributed since the p-values of all the series are individually statistically
22 significance at 5% level. Thus informing the acceptance of null hypothesis that
23 says each variable is normally distributed.

24

25 **Table 2.** *Correlation Matrix of the Data Set*

Correlation	LRGDP	LMGDP	FERTILITY	POGR
LRGDP	1.000000			
LMGDP	0.942751	1.000000		
FERTILITY	-0.960532	-0.859633	1.000000	
POGR	0.656743	0.746560	-0.442877	1.000000

26 Source: Researcher's E-view computation, 2020

27

28   Correlation among the variables was estimated to detect whether the
29 variables have high multicollinearity among themselves. Multicollinearity

1 among variables only occur when the result of the correlation coefficient is
2 above 0.95 (Iyoha, 2004). The results of the correlation analysis of table 2
3 above shows that the correlation coefficients among the variables, LRGDP
4 LMGDP, fertility rate, and population growth rate (POGR) are below 0.95
5 which shows that there is no trace of multicollinearity among the independent
6 variables.
7
8 *Time Series Properties of the Variables*
9
10 **Table 3.** *Unit Root Test: Augmented Dickey-Fuller Test (ADF)*

Variables	Level	1st Difference	2nd Difference	Order of Integration
LRGDP	-	-3.164593**		I(1)
POGR	-5.134726*	-		I(0)
Fertility	_	-2.615757***		I(1)
LMGDP		-3.23316**		I(1)

11 Source: Researcher's E-view computation, 2020 Where *1%, **5%, and ***10%
12

13   The ADF test is used to test for stationarity of the data.
14 The study employed Augmented Dickey-Fuller to ascertain the order of
15 integration of the variables. It was observed that LRGDP, Fertility and
16 LMGDP variables were stationary at first difference I(1), while POGR is
17 stationary at level I(0) at 5% significance level. As a result of the nature of the
18 date variables this study adopts the use of Autoregressive Distributive Lag
19 (ARDL)
20
21 **Table 4.** *Short Run Autoregressive Distributed Lag*
        Dependent Variable: LRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LRGDP(-1)	0.609712	0.130076	4.687365	0.0001
LMGDP	0.481750	0.099408	4.846189	0.0015
LMGDP(-1)	0.180211	0.121270	1.486031	0.1509
FERTILITY	7.802284	2.118295	3.683285	0.0012
FERTILITY(-1)	-7.948203	2.084503	-3.812996	0.0009
POGR	-1.179106	0.486174	-2.425276	0.0236
POGR(-1)	1.389080	0.463508	2.996881	0.0064
C	1.913209	1.269161	1.507460	0.1453
R-squared	0.998251	Mean dependent var		10.32372
Adjusted R-squared	0.997719	S.D. dependent var		0.507832
S.E. of regression	0.024255	Akaike info criterion		-4.382733
Sum squared resid	0.013531	Schwarz criterion		-4.012672
Log likelihood	75.93237	Hannan-Quinn criter.		-4.262103
F-statistic	1875.397	Durbin-Watson stat		1.913647
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection
22 Source: Researcher's E-view computation, 2020
23

1   Based on the fact that the time series are not of the same order, it is
2   therefore pertinent to employ the use of short run Autoregressive Distributive
3   Lag (ARDL). Co-integration is concerned with the analysis of long-run
4   relations between variables integrated of the same order (i.e. series made
5   stationary at the same order of differencing) (Olanrewaju, Raphael and
6   Olaoluwa, 2012).
7   The result of table 4 shows that there are significant effects of the lag one
8   of the LRGDP, the LMGDP, fertility and the lagged fertility rate, population
9   growth and the lagged population growth rate on the Real Gross Domestic
10   Product (RGDP). The result reveals that the lag of RGDP, LMGDP, Fertility
11   rate and lagged population growth rate have significant positive effect on the
12   RGDP. While the lagged fertility rate and population growth rate (POGR) have
13   an inverse effect on the RGDP. It could be deduced that RGDP in the previous
14   periods still significantly affects the RGDP in the current year. It was also
15   revealed that the current fertility rate has a direct significant influence on the
16   real gross domestic product while the population growth has an indirect effect
17   on the real gross domestic growth in Nigeria.
18   The value of the adjusted R^2, of 0.998 indicates that 99.8% of variations in
19   RGDP is explained by manufacturing sector growth, fertility rate and
20   population growth rate. The value of Durbin Watson is 1.91 for the model
21   implies that there is no serial correlation among the variables as it is close to 2.
22   The F-statistics of 1875.397 is statistically significant at 1 percent level,
23   indicating that the explanatory variables are jointly significant suggesting that
24   the model has a very good fit.
25
26   **Table 5.** *The Long Run Equilibrium*
     ARDL Cointegrating And Long Run Form

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LMGDP)	0.181750	0.099408	1.828316	0.0805
D(FERTILITY)	7.802284	2.118295	3.683285	0.0012
D(POGR)	-1.179106	0.486174	-2.425276	0.0236
Coint Eq(-1)	-0.390288	0.130076	-3.000472	0.0064

27   Source: Researcher's E-view computation, 2020
28
29   Coint Eq(-1) is one period lag error correction term or residual. It guides
30   the variables (LMGDP, Fertility and POGR) of the system to restore back to
31   equilibrium or it corrects disequilibrium. For this to happen, the sign of this
32   should be negative and significant. The coefficient tells about the rate at which
33   it corrects the previous period disequilibrium of the system if it is negative and
34   significant. The coefficient is -0.390288 and is significant at 1% level meaning
35   that system corrects its previous period disequilibrium at a speed of 39%
36   annually. It implies that the model identified the sizable speed of adjustment by

1 39% of disequilibrium correction yearly for reaching long run equilibrium
2 steady state position.
3
4 *Bounds Testing Approach*
5
6   The first step in the ARDL bounds testing approach was to estimate
7 equation in order to check if there is a long run relationship among the
8 variables by conducting bound-test for the joint significance of the coefficients
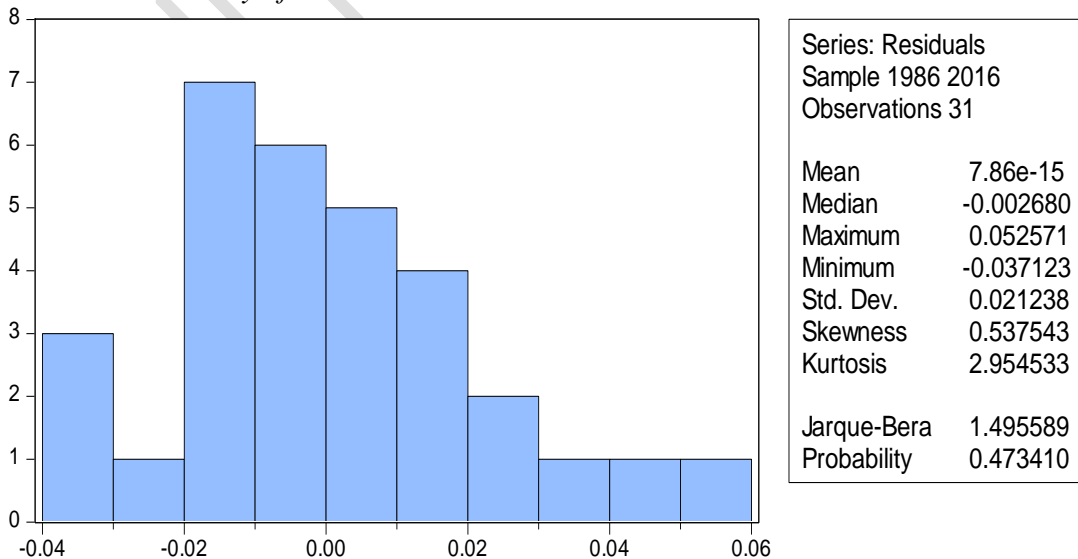9 of the lagged levels of the variables.
10
11 **Table 6.** *ARDL Bounds Test*

Test Statistic	Value	K
F-statistic	8.228175	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

12 Source: Researcher's E-view computation, 2020
13 Note: Critical bounds are obtained from the table 6 above, if the value of F-statistics is higher
14 than the upper bound critical value at 1%,2.5%,5% and 10% level, the null hypothesis of no
15 cointegration is rejected implying the long run cointegration relationship amongst the
16 variables.
17
18   From the above, the bound tests F-statistics value (8.228175) is higher
19 than the upper bound critical value at 1%, 2.5%, 5% and 10% level of
20 significant, therefore the null hypothesis of no long run cointegration is
21 rejected. Hence, there is a long run relationship amongst the variables.
22
23 **Table 7.** *Normality of Residuals Test*

Series: Residuals	
Sample 1986 2016	
Observations 31	
Mean	7.86e-15
Median	-0.002680
Maximum	0.052571
Minimum	-0.037123
Std. Dev.	0.021238
Skewness	0.537543
Kurtosis	2.954533
Jarque-Bera	1.495589
Probability	0.473410

24
25 Source: Researcher's E-view 9 computation, 2019

1   The residuals are normally distributed based on the result of the Jarque-
2 Bera, which p-value is greater than 5% level of significant.
3
4 *Test for Serial Correlation –Breusch-Godfrey (BG) Tests*
5
6   The Breusch-Godfrey tests is used to test for the presence or absence of
7 serial or autocorrelations in the model with the Null hypothesis stating that
8 there is No autocorrelation. This holds if p-value is greater than the chosen
9 level of significance otherwise reject.
10
11 **Table 8.** *Breusch-Godfrey Serial Correlation LM*
   Test:

| F-statistic | 0.661219 | Prob. F(2,21) | 0.5266 |
| Obs*R-squared | 1.836519 | Prob. Chi-Square(2) | 0.3992 |

12 Source: Researcher's E-view computation, 2019
13
14   From table 8, the p-value is greater than the chosen level of significance of
15 5%, indicating the absence of autocorrelation in the model. This is further
16 enhanced with a Durbin-Watson statistics of 1.914. Hence, we do not suspect
17 any violation of the assumptions of classical linear regression.
18
19 *Test for Heteroscedasticity*
20
21   The assumption of the classical linear regression that the variance of the
22 errors is constant is known as Homoskedastycity. If the variance of the errors is
23 not constant, this would be known as Heteroskedasticity. Hence, the presence
24 of heteroskedasticity was tested. The treatment method adopted here is the
25 Autoregressive conditionally Heteroscedastic test known as BRESCH-
26 PAGAN-GODFREY. The Null hypothesis states that there is no
27 Heteroscedasticity if the p-value is greater than the level of significance
28 (Brooks, 2014).
29
30 **Table 9.** *Heteroskedasticity Test: Breusch-Pagan-Godfrey*

	1.043010	Prob. F(7,23)	0.4295
Obs*R-squared	7.469478	Prob. Chi-Square(7)	0.3817
Scaled explained SS	4.018236	Prob. Chi-Square(7)	0.7777

31 Source: Researcher's E-view computation, 2020
32
33   The null hypothesis states that there is no heteroskedasticity if p-value is
34 not significant and is greater than the chosen level of significance of 5%.
35 Hence, in the table, the null hypothesis is accepted that there is no evidence of
36 heteroskedasticity since p-value is greater than 5% significance level.
37
38

10

1 **Table 10.** *Granger Causality Tests*

Null Hypothesis:	Obs.	F-Statistic	Prob.
LMGDP does not Granger Cause LRGDP	30	6.29540	0.0061
LRGDP does not Granger Cause LMGDP		2.92682	0.0721
FERTILITY does not Granger Cause LRGDP	30	3.71746	0.0386
LRGDP does not Granger Cause FERTILITY		27.6604	5.E-07
POGR does not Granger Cause LRGDP	30	1.74093	0.1960
LRGDP does not Granger Cause POGR		21.7343	3.E-06
FERTILITY does not Granger Cause LMGDP	31	4.87155	0.0160
LMGDP does not Granger Cause FERTILITY		46.7089	2.E-09
POGR does not Granger Cause LMGDP	32	4.71532	0.0175
LMGDP does not Granger Cause POGR		8.72277	0.0012
POGR does not Granger Cause FERTILITY	31	39.8253	1.E-08
FERTILITY does not Granger Cause POGR		19.7298	6.E-06

2

3 From the granger causality test in table 10 , it was indicated that there is
4 uni-directional causality between the manufacturing sector growth and the real
5 GDP, which implies that the manufacturing output granger cause the real GDP
6 since the P-value is less than 0.05, by implication the null hypothesis is
7 rejected, there is no causality. There is bi-directional causality between Fertility
8 rate and the real GDP, which implies that the fertility rate granger cause the
9 real GDP and the real GDP also granger cause fertility rate since their
10 respective p-values are less than 5%, while population growth rate does not
11 granger cause real GDP, but the real GDP granger cause the population growth
12 rate. From this result it could be deduced that there is bi-directional
13 relationships among the independent variables.

14

15

16 **Conclusion and Recommendations**

17

18 This study confirmed the effect of population growth rate, fertility rate and
19 manufacturing sector output on the real GDP of Nigeria. It was discovered that
20 the fertility rate and lagged population growth have a significant positive effect
21 on the real GDP, while the lagged fertility rate, and population growth rate
22 have a significant negative effect on the real GDP. This finding corresponds
23 with the findings of Nwosu, Dike, and Okwara (2014), Adewole, (2012) and
24 Ogunleye, Owolabi & Mubarak (2018). The fertility rate has a positive
25 relationship with the real GDP at the short run which is contrary to Ogunleye,
26 Owolabi & Mubarak (2018), however, at the long run there is a negative
27 relationship between fertility rate and the real GDP. It was also revealed that
28 the manufacturing sector output has a significant effect on the real GDP, both
29 at the short run and long. The model identified the sizable speed of adjustment

by 39% of disequilibrium correction yearly for reaching long run equilibrium steady state position. The study shows that there is a uni-directional causality between manufacturing output to the real GDP and a bi-directional causality between fertility and the real GDP, then population growth rate with the real GDP. Based on these empirical findings, it is therefore pertinent that the government comes up with policies that will help to control the rate of population growth, like policies that reduce economic and social risks of having small families. This can be achieved through the education of children, a reduction in infant and child mortality, policies that will improve in the economic, social and legal status of women, and provision of equitable gender relations in marriage and child rearing. The rights of children to be wanted, planned, and adequately cared for need to be supported. This will go a long way in reducing fertility, provide support for small families, and justify investment in social development. encourage foreign direct investment in the manufacturing sector, in the arears of reducing restrictions on FDI, provide open, transparent and dependable conditions for all kinds of firms, whether foreign or domestic, including: ease of doing business, access to imports, relatively flexible labour markets and protection of intellectual property rights. The materials for this sector be sought for domestically to allow this sector absorb more labour force.

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