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Effect of Life Expectancy at Birth on Income Inequality in Nigeria (1980-2018)

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A B S T R A C T

The study empirically analyzed the effect of life expectancy at birth on income imbalance in Nigeria from 1981-2018 to solve the impediments of persistent life expectancy and income disparity. The analysis employed ordinary least square method, unit root test, ARDL Bound test co-integration, ECM and Granger causality test to empirically test and analyze the secondary data. The study determined the empirical evidence showing the relationship between life expectancy at birth and income inequality in Nigeria, but specifically examined the effect of infant mortality rate on Gini, national poverty index, human development index and unemployment rate, the second model examined the effect of literacy rate on Gini, national poverty index, human development index and unemployment rate, the third model examined the effect of per capita income on Gini, national poverty index, human development index and unemployment rate. A descriptive statistic was used to test and observe the mean, median, skewness and kurtosis of each model. The OLS results revealed that 93% of income disparity was explained by the autonomous factors at 5% level. The F-stat (74.2) showed that the overall model was statistically significant at the 5 % level with the DW (1.954) indicating the model was free from serial autocorrelation. It was established that 1% decrease in income inequality will cause life expectancy to rise by 57% , also 1% rise in NPI will cause life expectancy to rise by 54%, while 1% increase in HDI will increase life expectancy by 30% and 1% rise in unemployment will cause life expectancy at birth to decline by 66%. The ARDL ECM was signed (0.3760) indicating the speed of adjustment of the short run dynamics to long run equilibrium was correcting the disequilibrium at the rate of 38% annually and the Pairwise causality test uncovered a bi-directional causality between per capita income and infant mortality rate indicating the two can be used to forecast each other and therefore concludes that life expectancy at birth negatively affect income inequality at 5% level of significance. The study recommends effective policy control on infant mortality rate, literacy rate and per capita in order to reduce income inequality gap in Nigeria.

Keywords: oxazine, Mannich reaction, Betti reaction.

1. INDRODUCTION

1.1 Background of the study

Life expectancy is a proportion of the length of life expected to be experienced by a person upon birth (Sede and Ohemeng, 2015). Improvement of Life expectancy to at least 70 years from 2020 is one of Nigeria's health strategy targets. Life expectancy is often used and dissected in the synthesis of demographic information for the nations of the world, for the achievement of infant mortality rate. Jie, et al (2001) and Courtney, et al (2002) noted that life expectancy has significant ramifications for the people and total human conduct and noted that it's crucial effects on fertility conduct, economic development, human capital investment, intergenerational transfers and incentives for annuity benefits. Gradstein and Kaganovich (2004) noted from social organizer's viewpoint that Life expectancy has repercussion for public finance.

Income disparity (as estimated by the Gini coefficient, which is zero [(0)] known as equality that is when everyone has a same income and it is [(1)] unit, which is known as absolute imbalance (inequality) when just a single individual has all the income) is a pointer of how material assets are spread across

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society (World Bank, 2014). Widening income disparity is the characterizing challenge of our times as the gap between the rich and the poor keep on rising (Aigbokhan 2008). Extending imbalance can be a sign of absence of income flexibility and opportunity, an impression of tireless burden for a specific portion of the general public. Enlarging imbalance has critical ramifications for the development and macroeconomic balance as it can focus economic, political and dynamic force in the possession of a few. Graham (1995) regarded income inequality as a line drawn between the rich and the poor. As higher income is found within the majority of the urban dwellers, low income is found within the majority of the rural households except for the few in the rural areas who own productive assets and are engaged in some commercial ventures.

In Nigeria the scale of income imbalance has reached an extreme level, disregarding numerous projects initiated by the government since 1980 till date. Notwithstanding, in the attempt to improve the living standard for every individual, several developments were introduced and actualized at various periods by various governments in Nigeria. The central goal of the projects was, among others, to lessen and possibly totally destroy disparity between the rich and poor (Dauda, 2004; Aigbokhan; 2008 and Kolawole and Omobitan; 2014). Sando (1996) lower income groups is characterized by poverty, poor health, unstable job, inadequate literacy rate and higher income groups are characterized sufficient health care, and literacy rate. The middle group shares those characteristics between the low and the high income group. World Bank (1996) stressed that the poor are mostly illiterates and encompassed with poor health and a short life span. Similarly,Olayemi (1995) argued that lack of access to basic needs and necessities of life, such as goods, clothing and decent shelter, inability to meet their socio-economic obligations, lack of skills and employment characterized income inequality. Kuh et al, (1997) emphasized that funding education is the key to restoring human dignity.

1.2 Statement of Problem

According to Cremieux *et al* (1999) wellbeing is a vital part of a person's prosperity, and since people make a country, in this manner, medical care is viewed as one of the essential conditions to accomplishing a reasonably long run economic development. Health can be characterized to mean a general state of wellbeing that is, the state of the body or brain, particularly regarding the presence or nonappearance of ailment, wounds or hindrances. The issue of wellbeing is an exceptionally touchy one since it manages people as well as the human body. Without a decent health it is practically difficult to make any economic undertaking and if there is any it will unquestionably not be effective.

However, a few studies have been done to test the sensitivity of life expectancy at birth to changes in income disparity utilizing portfolio models, VAR and OLS test; which basically depicts the factors related to life expectancy at birth. But, the empirical evidence demonstrating the relationship between life expectancy at birth and income disparity in Nigeria is lacking hence the choice of this study utilizing OLS, Unit root, ARDL Bound test cointegration, ECM model to examine how literacy rate, infant mortality rate and per capita income combined to explain the variation or conduct in income imbalance in Nigeria from 1980-2018. The following research questions will be utilized to address the study: What is the relationship between life expectancy at birth and income imbalance in Nigeria? What is the effect of literacy rate on Gini, national poverty index, human development index and unemployment rate? What is the impact of per capita income on Gini, national poverty index, human development index and unemployment?

1.3 Objectives of the Study

The broad objective of the study was to examine the effect of life expectancy at birth on income inequality in Nigeria however the specific objectives were to:

(i). Examined the effect of infant mortality rate on Gini, national poverty index, human development index and unemployment rate,

(ii) Examined the effect of literacy rate on Gini, national poverty index, human development index and unemployment rate,

(iii) Examined the effect of per capita income on Gini, national poverty index, human development index and the unemployment rate.

2 LITERATURE REVIEW

2.1 Theoretical Literature: the study is anchored on the theory of the absolute income.

2.1.1 The Absolute Income Theory

The absolute income hypothesis describes how a consumer splits his discretionary cash flow among consumption and savings. Keynes (1946) declared that genuine consumption is a component of genuine discretionary cash flow, in light of the fact that as income rises, the hypothesis attests that consumption will likewise increase yet not really at a same rate. Keynes' consumption function otherwise called the 'absolute income theory express the relationship between income and consumption depends on the essential psychological law. Due to the activity of the psychological law, it is such that $0 < MPC < 1$ and $MPC < APC$. At the end of the day, the marginal propensity to consume present in Keynes' consumption hypothesis decides what amount consumed will change because of an adjustment in income. Accordingly, a non-corresponding relationship ($APC > MPC$) among consumption and income exists in the Keynesian absolute income hypothesis. It is stated as: $C = a + bY$, where $a > 0$ and $0 < b < 1$.

2.1.2 Theory of Persistent Income Inequality

Durlauf (1996) the theory of persistence income imbalance states that parents influence the conditional probability distribution of their kids' income through the choice of a neighborhood in which to live. To begin with, the level of education relies upon the total income of a neighbourhood as all school financing is controlled by majority voting. Human resources, markets are inadequate as neighborhoods can't borrow to support tax incomes accessible for

schooling. Furthermore, the contingent probability dispersion of individual explicit efficiency stuns is influenced by the income distribution in an area. This reliance reflects social impacts, for example, the presence of effective role models. These powers associate to endogenously delineate the economy as families isolate themselves into financially homogeneous areas. Our model has two significant highlights: first, beginning from earlier conditions, families can show diverse long term wage levels, prompting relentless wage imbalance. Also, regions of lasting poverty can arise endogenously in a developing economy as neighborhood wide criticism impacts transmit poverty across generation.

Conceptual Framework

2.2.1 The Concept of Life Expectancy at Birth

Life expectancy at birth mirrors the general mortality level of a population. It sums up the mortality design that wins across all age groups - youngsters and teenagers, grownups and older/elderly (WHO, 2011). At the end of the day, Life expectancy at birth shows the extent of years a child would live if the prevalent pattern of mortality at the hour of its birth to the world were to remain the same for the duration of its life. The spur for Life expectancy at birth for 'male gender' in Nigeria was 52.24 in 2015. In the course of recent years, this pointer reached a value of 52.24 in 2015 and a base estimation of 35.58 in 1960 and the incentive for Life anticipation upon birth for 'female gender' in Nigeria was 53.76 starting at 2015. In the course of recent years, this indicator attained a value of 53.76 in 2015 and a base estimation of 38.45 in 1960(UNDP,2015).

2.2.2 The concept of Income Inequaity

Income inequality depicts the significant disparity in the distribution of income between individuals, groups, populations, social classes, or countries. Income imbalance is depicted by the critical divergence in the distribution of income between people, groups, population, social classes, or nations. It mirrors a significant element of social dispersion and social class and is influenced by numerous types of disparity: imbalances of wealth, political power and economic well being. It portrays a significant determinant of quality of life, influencing the health and prosperity of people and families and fluctuates by social factors, for example, sex, age, and race or nationality (Litchfied, 2009).

2.3 Empirical Review

Ali and Audi (2016) assessed the effect of pay disparity, globalization and natural corruption on future in Pakistan; utilizing time arrangement information from 1980-2015, Augmented Dickey-Fuller (ADF) and Phillip and Perron, unit pull tests utilized for inspecting the request for joining of the factors and Granger Causality test, Auto-Regressive Distributed Lag model. Discoveries uncovered that pay imbalance and globalization affect the life expectancy in Pakistan.

Rasella, Aqino, Barreto and Cruz (2013) investigated the relationship between pay disparity and life expectancy at birth in Brazil, including the impact of social and well being intercessions, in the time frame 2000-2009. A panel dataset was created for the 27 Brazilian states throughout the alluded time span. Multivariable linear regression was performed utilizing fixed-impact estimation with heteroscedasticity and serial autocorrelation robust. Results indicated that Gini index was negatively connected with life expectancy at birth. In conclusion, viable social approaches have empowered Brazil to reduce absolute poverty and pay disparity, offering along with PHC-to lessening death rates in the society. The lessening pay disparity may address a significant advance towards improving wellbeing and increasing life expectancy, especially in non-industrial nations where imbalances are high.

De Vogli,*et al* (2005) investigated the relationship between income inequality and life expectancy in Italy and across wealthy nations. Using Pearson correlation between income inequality and life expectancy at birth, Multivariate linear regression was used to measure the association between income inequality and life expectancy at birth, adjusting for per capita income, education, and per capita gross domestic product with secondary data was applied(1995-2005). Results show that income inequality was negatively related to educational attainment and positively associated with life expectancy and per capita income.

Hill and Jorgenson (2017) examined the effect of income inequality and male life expectancy in the United States. The research employed data for all 50 states and the district of Columbia and two-way fixed effects to model state-level average life expectancy as a function of multiple income inequality measures and time-varying characteristics. Result show that state-level income inequality is inversely associated with female and male life expectancy and observed the pattern across four measures of income inequality and under the rigorous conditions of state-specific and year-specific fixed effects and concludes that income inequality negatively affect life expectancy, redistribution policies and positively affect the health of the states.

Lebrão, Kawachi and Filho (2013) determined the effect of income inequality and mortality rate in São Paulo, Brazil. Methods (2000-2007). Using survival analysis to examine the relationship between income inequality and risk of mortality among individuals living in Brazil. Results show that the mortality rate was positively related with mortality rate. Conclusions the relationship between income inequality and mortality were positively connected and consistent with either a threshold association of income inequality and mortality.

3 METHODOLOGY

3.1 Research Design

Research design describes the method and plan the researcher adopted to prosecute the research undertaken (Guilford, 2012). Thus, in this study a quasi-experimental design was adopted and would allow for the evaluation of the effect of life expectancy at birth on income inequality.

3.2 Data Collection Method and Sources

The data used for the study was mainly secondary data obtained from the Central Bank of Nigeria statistical Bulletin.

3.2 Techniques of Data Analysis The Ordinary Least Square regression, Augmented Dickey-Fuller, ARDL Bound Co-integration test, Granger Causality, and ECM was relied upon to analyze the data collected:

3.3 Pre - Test Estimation

3.3.1 Unit Root Test

The unit root test was used in order to avoid spurious results that would lead to biased estimates and unpredictability of the model. The time series data were tested for stationarity. ADF was employed to test the order of integration of the variables. The model used ADF with a constant and deterministic pattern as follows: **$\Delta GINI_t = \Delta \beta_0 - \Delta \beta_1 LR_t + \Delta \beta_2 IMR_t - \Delta \beta_3 PCI_t + U_i$.**

3.3.2 Bound Cointegration Analysis Test:

The study adopted Bound cointegration test to determine if a long run relationship exists amongst the variables and is communicated as: **$\beta GINI_t = \beta_0 - \beta_1 LR_t + \beta_2 IMR_t - \beta_3 PCI_t + U_i$**

This is characterized as when the cointegration relationship between the factors in a model exist in various forms, either [I(0)] or [I(1)].

3.3.3 Error Correction Model(ECM) is used to correct the deviations or disequilibrium of the short run dynamics of the long run equilibrium analysis (speed of adjustment). The coefficient of the ECM condition must be negative and statistically sign at 5% and is denoted as:

$$\alpha_0 \text{ Gini} = \alpha_0 + \sum_{i=1}^{p} \alpha_0 \, LR_t + \sum_{i=0}^{q} \alpha_{2_1} \, IMR_t + \alpha_3 PCI_t + U_t$$

3.3.4 Granger Causality Test

$$\rho GINI = \rho \check{b}_0 + \rho \check{b}_1 LR + \rho \check{b}_2 IMR - \rho \check{b}_3 PCI + U_t$$

3.4 Models Specifications

Mathematical Function as:

$GINI_t = f(LR_t, IMR_t, PCI_t,)$.....eqtn (1)

$NPI_t = f(LR_t, IMR_t, PCI_t,)$.....eqtn (2)

$UNE_t = f(LR_t, IMR_t, PCI_t)$..... eqtn (3)

$HDI_t = f(LR_t, IMR_t, PCIt,)$.....eqtn (4)

Econometric form as:

$GINI_t = \beta 0 - \beta_1 LR_t + \beta_2 IMR_t - \beta_3 PCI_t + U_i$ … equtn (5)

$NPI_t = \beta 0 - \beta_1 LR_t + \beta_2 IMR_t - \beta_3 PCI_t + U_i$ … equtn (6)

$UNE_t = \beta 0 - \beta_1 LR_t + \beta_2 IMR_t - \beta_3 PCI_t + U_i$ … equtn (7)

$HDI_t = \beta 0 + \beta_1 LR_t - \beta_2 IMR_t + \beta_3 PCI_t + U_i$ … equtn (8)

Where:

LRt = Literacy Rate

PCI_t = Per capita pay

IMR_t = Infant Mortality Rate

$GINI_t$ = Gini Coefficient

UNE_t = Unemployment rate

HDI_t = Human Development Index

U_i = Stochastic Term or blunder term

β1 - β4 = coefficients of the factors

On the deduced assumptions, the investigation anticipates:

$\beta 2 > 0$; β1 and $\beta 3 < 0$. … … eqtn 5, 6 and 7

$\beta 2 < 0$; β1 and $\beta 2 > 0$. … . … .eqtn 7.

Variables in the Model

Dependent variables

$GINI_t$: Gini index (income inequality), income inequality is defined as the major disparity in the distribution of income between individuals, groups, populations, social classes, or countries.

$UNEM_t$ = unemployment is economically those dynamic populations who are without work, however accessible, willing and looking for work yet has not discovered one.

HDI_t: Human development index is comprise life expectancy, education and ability, skills which explicitly state's strength and the capacity of a country.

NPI_t: National poverty index uncovers the degree or force of hardship in a specific economy.

Independent Variables:

LR_t: This is defined as the total percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life.

PCI_t: Per capita simply means per person. It is a Latin term that translates to "by the head." It tells how a country affects its residents by dividing all the total economic output by the entire population annually.

IMR_t: Infant mortality rate is the number of deaths under one year of age occurring among the live births in a given geographical area during a given year.

U_t = Stockastic term

β_0 = Intercept

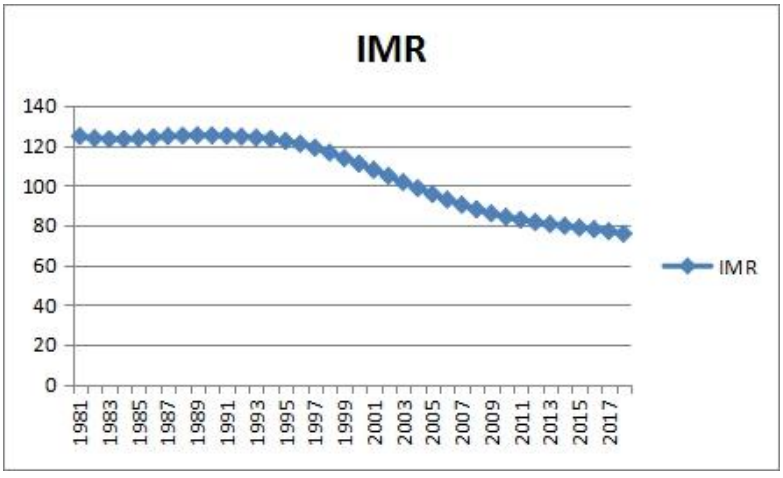
Table 4.1 Data Presentation

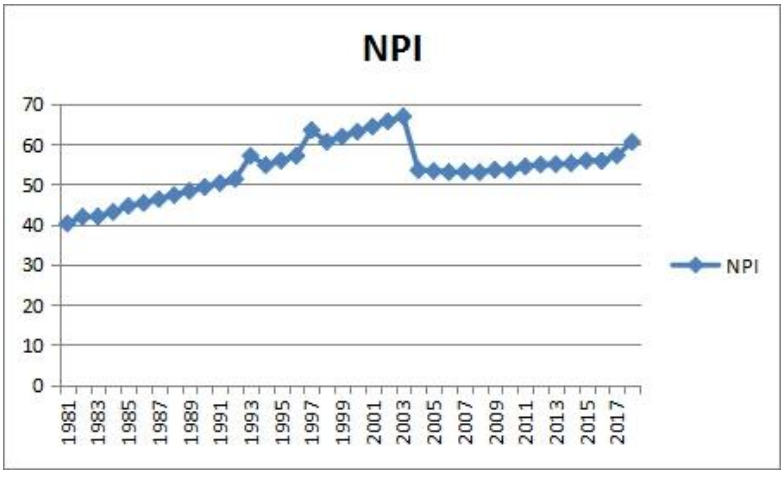
Year	UNEM	NPI	HDI	GINI	LR	IMR	PCI
1981	4.1	40.2	0.396	36.7	32.11	124.7	1340.143
1982	4.2	41.88	0.356	37.2	34.6	123.7	1396.748
1983	5.3	41.96	0.325	37.7	37.09	123.3	1481.85
1984	7.9	43.08	0.363	38.2	39.58	123.3	1523.873
1985	6.1	44.6	0.391	38.7	42.07	123.7	1715.943
1986	3.9	45.3	0.393	39.2	44.56	124.2	1668.154
1987	7	46.3	0.3802	39.7	47.05	124.7	2325.663
1988	5.1	47.3	0.3705	40.2	49.54	125	3079.847
1989	4.5	48.3	0.378	40.7	52.03	125.2	4343.962
1990	3.5	49.3	0.438	41.2	54.52	125.1	3628.721
1991	5.9	50.3	0.328	41.7	55.44675	124.9	5857.279
1992	6.2	51.3	0.348	45	55.41	124.5	9144.32
1993	6.2	57.1	0.389	46.9	55.4	124	11078.49
1994	6.2	54.76	0.384	47.02	55.76	123.4	13849.09
1995	6.3	55.9	0.452	47.73	55.5	122.3	27995.76
1996	6.9	57.1	0.393	51.9	55.31	120.9	37787.82
1997	4.6	63.5	0.456	52.1	55.02	118.9	38206.7
1998	5.2	60.6	0.439	53.5	54.22	116.5	35409.84
1999	5.9	61.9	0.455	55	50.32	113.7	40419.55
2000	13.1	63.1	0.466	56	54.2	110.9	56438.85
2001	13.6	64.4	0.463	53.2	54.02	107.8	56412.61
2002	12.6	65.7	0.445	45.08	54.81	104.8	62071.61
2003	14.8	66.9	0.445	40.1	54.77318	101.6	76819.22
2004	13.4	53.5	0.463	40.06	53.9	98.6	86055.04
2005	11.9	53.3	0.466	40.72	52.45	95.6	107233.5

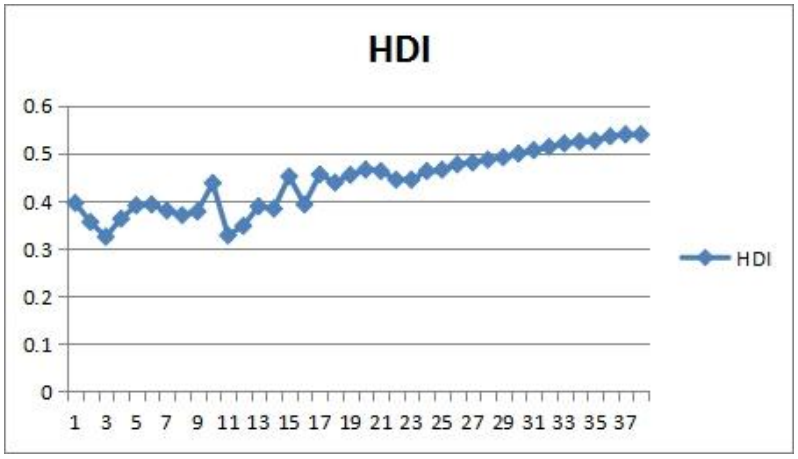
2006	12.3	53.02	0.477	41.74	53.07	92.8	132600.4
2007	12.7	53.12	0.481	41.89	50.22	90.2	143599.2
2008	14.9	52.99	0.487	42.9	51.07766	87.9	164375.4
2009	19.7	53.6	0.492	43	58.43251	85.9	163255.3
2010	21.1	53.5	0.5	43.9	59.00407	84.1	349964.2
2011	23.9	54.43	0.507	44.5	59.57562	82.7	392787.9
2012	10.6	54.9	0.514	45.1	60.14718	81.5	435284.2
2013	10	55.01	0.521	45.7	60.71874	80.5	473131
2014	7.8	55.21	0.525	46.3	61.2903	79.6	511927.4
2015	9	55.9	0.527	46.9	61.86186	78.7	522380.5
2016	4.21	55.8	0.536	47.5	62.43342	77.9	618625.1
2017	1.62	57.2	0.54	48.1	63.00497	76.9	671541
2018	13.63	60.55	0.54	48.1	62.01601	75.7	437617.4

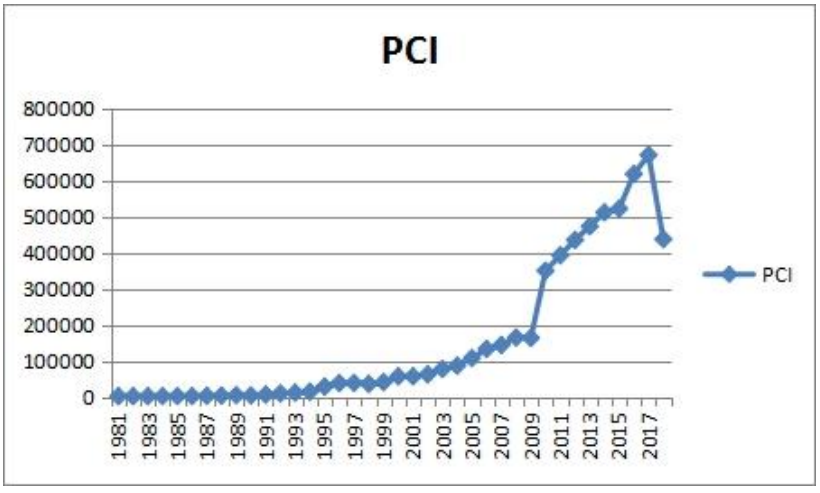
Source: World Bank data

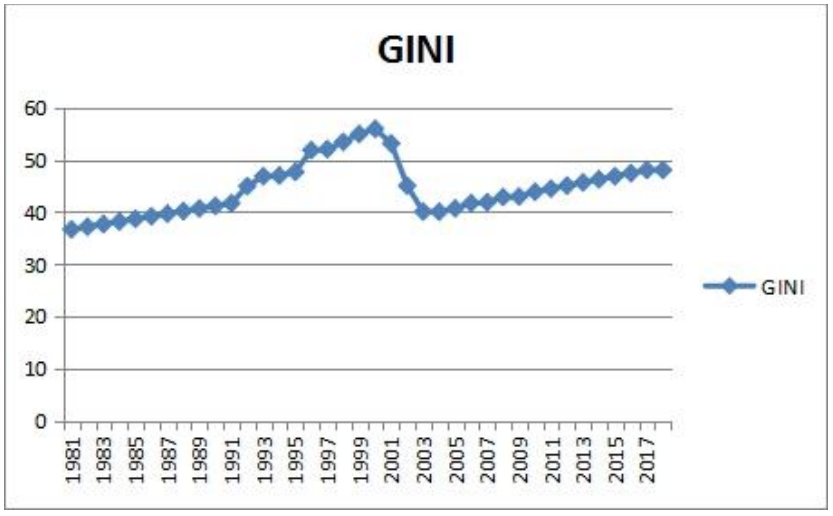
Trend Lines of Data Presented

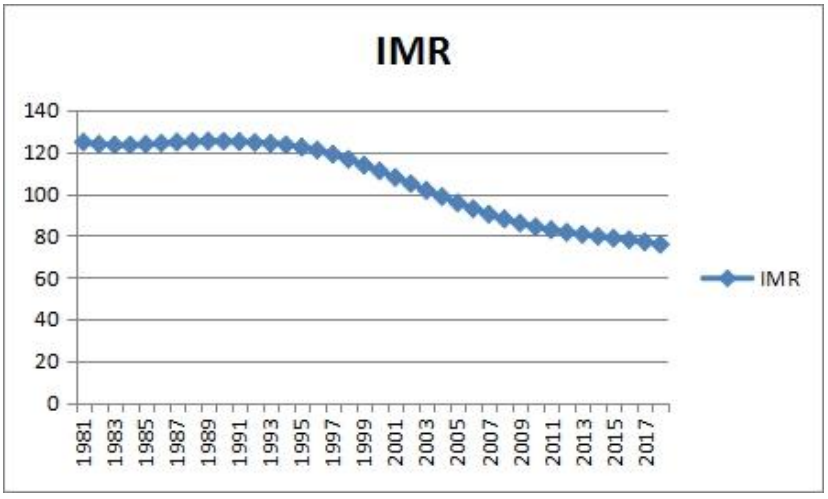





HDI
0.6
0.5
0.4
0.3
0.2
0.1
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37
HDI


PCI
800000
700000
600000
500000
400000
300000
200000
100000
0
1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015 2017
PCI


GINI
60
50
40
30
20
10
0
1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009 2011 2013 2015 2017
GINI



Presentation of Results

Unit Root Tests

Coefficient	I(0)	I(1)
GINI (At levels: prob= 0.1107) (At I(1): prob=0.0363	Nonstationary	Stationary
NPI (At levels: prob= 0.3148) (At I(1): prob=0.0000	Nonstationary	Stationary
UNEM (At levels: prob= 0.1878) (At I(1): prob= 0.0001	Nonstationary	Stationary
LR (At levels: prob= 0.0310) (At I(1): prob= 0.0004	Stationary	NA
PCI (At levels: prob=0.9105) (At I(1): prob= 0.0079	Nonstationary	Stationary
HDI (At levels: prob=0.8438) (At I(1): prob= 0.0000	Nonstationary	Stationary
IMR (At levels: prob= 0.8366) (At I(1): prob= 0.0008	Nonstationary	Stationary

Source: Eviews

Model 1: Gini	Long Run	Analysis		
ARDL ECM Regression Model				
Case 5: Unrestricted Constant and Unrestricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-30.34739	6.028711	-5.033811	0.0000
@TREND	0.805029	0.160995	5.000329	0.0000
D(GINI(-1))	0.076999	0.009160	8.406004	0.0000
D(IMR(-1))	0.032221	0.005020	6.418525	0.0030
D(PCI(-1))	0.027611	0.000443	6.232731	0.0005
D(LR(-1))	0.022112	0.053350	0.414620	0.0060
CointEq(-1)*	-0.676002	0.073739	-9.167496	0.00421

R-squared	**0.723204**	**Mean dependent var**	**0.302778**
Adjusted R-squared	**0.587879**	**S.D. dependent var**	**2.007430**
S.E. of regression	**1.288703**	**Akaike info criterion**	**3.449588**
Sum squared resid	**53.14414**	**Schwarz criterion**	**3.625535**
Log likelihood	**-58.09259**	**Hannan-Quinn criter.**	**3.510998**
F-statistic	**17.64218**	**Durbin-Watson stat**	**1.954050**
Prob(F-statistic)	**0.000001**		

Model 2: NPI	**Long Run**	**Analysis**		
Dependent Variable:				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	**48.14478**	**1.028828**	**46.79577**	**0.0000**
D(NPI)	**0.549084**	**0.177504**	**3.093361**	**0.0046**
D(NPI(-1))	**0.576186**	**0.170302**	**3.383319**	**0.0022**
D(IMR)	**-0.027189**	**2.048325**	**-0.013273**	**0.0000**
D(IMR(-1))	**0.031109**	**2.017864**	**4.312040**	**0.0002**
D(LR)	**-0.047193**	**0.289210**	**-0.163179**	**0.0016**
D(LR(-1))	**-0.026229**	**0.278041**	**-0.278040**	**0.4230**
D(PCI)	**0.05E-06**	**0.04E-06**	**1.250000**	**0.0053**
D(PCI(-1))	**0.038405**	**0.36E-05**	**0.578902**	**0.0424**
CointEq(-1)*	**-0.682436**	**0.112356**	**0.607387**	**0.0411**
R-squared	**0.860090**	**Mean dependent var**		**54.46472**
Adjusted R-squared	**0.818635**	**S.D. dependent var**		**6.282623**
S.E. of regression	**2.675579**	**Akaike info criterion**		**5.018526**
Sum squared resid	**193.2855**	**Schwarz criterion**		**5.414406**
Log likelihood	**-81.33347**	**Hannan-Quinn criter.**		**5.156699**
F-statistic	**20.74763**	**Durbin-Watson stat**		**0.922346**
Prob(F-statistic)	**0.000000**			

model 3: HDI	**Long Run Analysis**			
ARDL ECM Regression				
Case 4: Unrestricted Constant and Restricted Trend				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	**0.650541**	**0.087940**	**7.397544**	**0.0000**
D(IMR)	**-0.071786**	**0.015413**	**-4.657542**	**0.0001**
D(IMR(-1))	**0.068259**	**0.014759**	**4.625002**	**0.0001**
D(LR)	**0.001447**	**0.002049**	**0.706024**	**0.4862**
D(PCI)	**0.061452**	**2.003159**	**2.297024**	**0.0062**
CointEq(-1)*	**-0.638112**	**0.151908**	**-7.371150**	**0.0000**
R-squared	**0.643884**	**Mean dependent var**		**0.005111**
Adjusted R-squared	**0.597933**	**S.D. dependent var**		**0.031312**
S.E. of regression	**0.019854**	**Akaike info criterion**		**-4.872529**
Sum squared resid	**0.012220**	**Schwarz criterion**		**-4.652595**
Log likelihood	**92.70551**	**Hannan-Quinn criter.**		**-4.795766**
F-statistic	**14.01254**	**Durbin-Watson stat**		**1.915084**
Prob(F-statistic)	**0.000001**			

Model 4: UNEM LONG RUN ANALYSIS				
Dependent Variable: D(UNE)				
ARDL ECM Regression				
Case 5: Unrestricted Constant and Unrestricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-48.89564	6.418487	-7.617938	0.0000
@TREND	1.956300	0.268160	7.295264	0.0000
D(IMR)	0.061975	0.023576	2.628732	0.0010
D(IMR(-1))	-0.099913	0.081345	-1.2282623	0.0008
D(LR)	0.058816	0.017222	1.651837	0.1128
D(LR(-1))	0.078746	0.040821	1.929056	0.0000
D(LR(-2))	0.052305	0.068121	0.767824	0.0514
D(PCI)	-0.05E-05	0.03E-06	-1.666666	0.0000
D(PCI(-1))	0.09E-05	0.03E-05	3.00000.	0.0107
CointEq(-1)*	-0.864771	0.115869	-7.463341	0.0000
R-squared	0.806038	Mean dependent var		0.238000
Adjusted R-squared	0.736211	S.D. dependent var		3.824687
S.E. of regression	1.964374	Akaike info criterion		4.423181
Sum squared resid	96.46913	Schwarz criterion		4.867566
Log likelihood	-67.40566	Hannan-Quinn criter.		4.576582
F-statistic	11.54344	Durbin-Watson stat		2.253069
Prob(F-statistic)	0.000001			

The results indicate that LR, IMR, PCI is robust in driving life expectancy at birth in Nigeria with both F-statistic and coefficient of determination confirms the model is reliable and fit.

Short Run Analysis

Gini = - 30.34 – 0.751LR + 0.62IMR +0.802PCI model (i)
T-Test = (-3.04), (-0.05), (3.55), (1.88)
F-Test = 74.2, R^2 = 0.93, DW = 1.95
NPI = -36.49 – 0.22 LR + 0.4982 IMR + 0.80 PCI model (ii)
T-Test = (-2.33), (- 1.99), (2.69) (0.01)
F-Test = 41.6, R^2 = 0.89, DW = 2.07
UNEM = 70.48 + 0.4352 LR – 0.6850 IMR – 0.46 PCI model (iii)
T-Test = (3.63), (2.00) (-3.55) (-0.48)
F-Test = 20.50, R^2= 0.76, DW = 1.65
HDI = 0.3070 – 0.5326 LR + .8610 IMR + 0.65 PCI model (iv)
T-Test = (2.11), (-1.306), (0.7842) (0.8375)
F-Test = 49.6, R^2= 0.88, DW = 2.66

Discussion of Findings

Unit Root Test (ADF): The test for unit root was performed at 5% utilizing ADF. The time series data was exposed to levels and first difference test approach. From the ADF test results it was discovered that the first model, model two and model three were stationary at first differencing[I(1)].

ARDL Bound Test: The Bound test result for model one showed that life expectancy at birth had a long run relationship with Gini. Furthermore, model two results Bound test showed cointegration between life expectancy at birth and human development index. Third model result showed the existence of a long run relationship between life expectancy at birth and national poverty index because all these models all the variables were cointegrated given that the F-statistic was greater than the upper bound in the Bound cointegration test .

ARDL ECM Analysis: Model one, uncovered that literacy rate, infant mortality, per capita income was positively related to Gini. As 72% of income inequality is explained by life expectancy at birth and the disequilibrium in short run analysis was corrected at the speed of 68% yearly. Model two, uncovered that set literacy rate, infant mortality rate was negatively related with national poverty index as 86% of income inequality was explained by life

expectancy at birth and the errors in short run equilibrium was corrected at the speed of 68% yearly. While model three, showed that literacy rate, per capita income and infant mortality rate has a positive relationship with the human development index. The speed of change of 64% was recorded for rectifying the disequilibrium of short run investigation of a long run equilibrium with 64% of variance of income disparity was explained annually. Finally, model four, showed that education rate, infant mortality were positively related to unemployment rate. The explanatory factors portrayed 81% of the properties of unemployment rate. The disequilibrium of the short run to a long run equilibrium was explicitly adjusted at the speed of 86% annually.

4 CONCLUSIONS

The study investigated the effect of life expectancy at birth on income disparity in Nigeria (1980-2018). Model one result showed that 1% increase in LR, IMR and PCI will cause 2.2%, 3.2% and 2.7% increase individually in income disparity. The study concludes that life expectancy at birth was positively related to income imbalance. Model two, uncovered that 1% increase in LR, IMR and PCI will cause the national poverty index to reduce by 5%, 3% and 5% increase on PCI respectively and concludes that life expectancy at birth was negatively related with national poverty index. Model three, shows that 1% rise in LR, IMR and PCI caused HDI to decline by 7% and positively increased by 0.14% on HDI as well as the 6 % rise with both LEB and HDI respectively. The consequences of these discoveries are that life expectancy at birth support to moderate macroeconomic shocks by encouraging both short and long run economic development. Based on these discoveries life expectancy at birth assume significant measures affecting macroeconomic performance in Nigeria within the context of 1980-2018.

5. RECOMMENDATIONS

(i). Government policies geared towards establishing effective health policies in order to reduce, poverty, unemployment rate and increase human capital development.
(ii). Government should inact policies to accelerate education programs in order to improve income inequality, reduce poverty index, unemployment and boost human development index.
(iii). Government strict application of massive infrastural development to boast effective demand in order to increase per capita income, human capital, unemployment rate and reduction of income inequality.

REFERENCES

Aigbokhan,B.E.(2008).Poverty alleviation in Nigeria: Some macroeconomic issues. Proceedings of the 2007 Annual conference of the Nigeria Economic Society.

Ali, A., & Audi, M.(2016).The Impact of Income Inequality, Environmental Degradation and Globalization on Life Expectancy in Pakistan: An Empirical Analysis. *International Journal of Economics and Empirical Research*,4(1),182-193.

Anyanwu, J.C., Erhijiakpor, A.E. & Obi, E.(2016).Empirical Analysis of the key Drivers of Income Inequalities in West Africa. *African Development Review*, 29(3), 485-497.

Amjad, A.(2017).Solution of harmonic variational inequalities by two-step interactive scheme. *Turkish Journal of inequalities*, 1(1), 46-52.

Babalola, S.J.; Saka, J.O. & Adenuga, I.A.(2013). The validity of Okun's law in Nigeria: a difference model approach. *Asian Economic and Financial Review*, 3(12), 1598-1608.

Bakare,A.S.(2012).Measuring the income inequality in Nigeria: *American Journal of Economics*. The Lorenz curve and Gini coefficient approach, 2(5), 47-52.

Barro,R.J.(2000).Inequality and Growth in a Panel of countries, *Journal of Economic Growth*, 58(1), 5-32.

Becker, G., & Tomes,N. (1979). An Equilibrium Theory of the Distribution of Income and Intergenerational Mobility. *Journal of Political Economy* 87, 1153–1189.

Beyer, A., & Farmer, R.(2002).The joint dynamics of inflation, unemployment and interest rate in the United States since 1980. *Empirical Economics*, 31(2), 497-511.

Bhattarai, K. (2016). Unemployment–inflation trade-offs in OECD countries. *Economic Modelling*, 58(1) 93–103.

Blackwood, L., & Lynch R.G.(1994).The measurement of inequality and poverty: A policy makers guide to literature. *World Development Review*. 22(44), 567-578.

Cremieux, P.Y.,Ouellette,P., & Pilon, C.(1999).Health expenditures, health outcomes and good governance, *International Journal of health care finance and economics* ,13(1), 23-45.

Dabla-Norris, E., Kochhar, K., Suphaphiphat, N. & Ricka, F.(2015).causes and consequences of income inequality: internal monetary fund. Washington D.C. https://www.imf.org/pubs/

Demirgue Kunt, A., & Levine, R.(1996). Stock market, corporate finance and economic growth: An Overview, *The World Bank Review*, 10(2), 223-239.

Dickey,D.A.,& Fuller,W.A.(1981). Likelihood ratios for autoregressive time series. *Econometrica*, 49:1057–1172.

Ejikeme, J.N. (2014). Unemployment and Poverty in Nigeria: A Link to National Insecurity. *Global Journal of Politics and Law Research*, 2(1), 19-35.

Engle, R.F., & Granger, C. W. J. (1987). Co-Integration and Error Correction: Representation, Estimation, and Testing, *Econometrica*, 55(2), 2 251-276.

Gradstein, M.,& Kaganovich, M. (2004).Aging population and education finance. *Journal of Public Economics.* 88(12), 2469–2485. doi: 10.1016/S0047-2727(03)00065-3. Granger,

Issa, H., & Quattara, B.(2005).The effect of private and public health expenditure on infant mortality rate, does the level of development matters" Economic Development University of Wales, Swansea, United Kingdom.

Jie, Z., Zhang, J., & Lee, R. (2001), Mortality decline and long run economic growth. *Journal of Public Economics.* 80(3), 509–510. doi: 10.1016/S0047-2727(00)00122-5.

Johansen, S.(1991). Estimation and hypothesis testing of co-integration vectors in Guassian Vector Auto-regressive Models, *Econometrica*, 59:1551–1580.

Le Grand, J.(1987). Inequalities in health: some international comparisons. *European Economoic Review.* 31(1),182–191. doi: 10.1016/0014-2921(87)90030-4.

Litchfield, J.A. (1999). Inequality Methods and Tools. *World Bank Report:* Inequalitypoverty and Socio-economic performance, 3(4), 27-39.

Phillips,P.C.B,&Perron,P.(1988). Testing for Unit Roots in Time Series Regression, *Biometrika*, 75:335–346.

Rasella,D., Aqino, R., & Barreto, M.L.(2013). Impact of income inequality on life expectancy in a highly unequal developing country: The case of Brazil, *Journal of epidemiology and community health* 67(8), 111-120

Sede, P.I., & Ohemeng, W. ((2015). Socio-Economic determinants of life expectancy in Nigeria (1980-2011), *Health Economic Review*,5(2), 136-1472.

Smith, G.D., & Egger, M. (1996).Commentary: understanding it all--health, meta-theories, and mortality trends. British Medical Journal, 313(7072),1584–1585.

Tetz, G., & Tetz, V.(2018). Tetz's theory and Law of longetivity. Theory in Bio-sciences. 137(10), 1007-12064.

Wilkinson, R.G.(1992). Income distribution and life expectancy. *British Medical Journal*, 304(6820), 165–168.

Woodhall, M., & Psacharopoulos, G. (1997). Education for Development: An analysis of Investment Choice, New York Oxford University Press.

World Bank Report (2014). Attacking poverty, the International Bank for reconstruction and Development, Washington D.C.