

Inflation and Standard of Living in Nigeria

Ogbebor, Peter I. (Ph.D)^{1*} Oguntodu, James A (Ph.D)² Oyinloye, Paul O. (M.Sc Student)³

Department of Banking & Finance, School of Management Sciences, Babcock University, Ilishan-Remo, Ogun State, Nigeria

Abstract

Standard of living is very germane to every economy. It gives a broad view of how the economy is fairing on a global scale. If an individual cannot get required basic necessities due to low purchasing power, his/her marginal propensity to consume (MPC) rises which makes it more difficult for the individual to live comfortably hence the standard of living dips. Several researches have been carried out but the standard of living still remains abysmally low. From empirical review we find that several countries in sub-Sahara Africa, Nigeria inclusive suffers from low standard of living. The case of Nigeria being evidently sever as the Nigeria currently the poverty capital of the world with over 91 million people living below in abject poverty. Time series data on inflation rate and standard of living proxied by the Human Development Index (HDI) between 1998 and 2017 was used for this research. Augmented Dickey Fuller and Phillip-Perron unit root tests were used to test for stationarity of the data. Based on findings, the Auto Regressive Distributed Lagged (ARDL) model was adopted for inferential analyses. Descriptive statistics employed include skewness, kurtosis, Jarque-Bera test and Breuch-Pagan-Godfrey serial correlation LM test, Breuch-Pagan test for heteroscedasticity and the Durbin-Watson test. Results indicated that there exists a long-run relationship between Inflation and standard of living. Inflation exhibited a negative and significant effect with a coefficient of -0.034 against a P-value of 0.017 which implied that a unit increase in inflation brings about 0.034 unit decrease in standard of living over the period of study. Based on findings we recommend that a proper blend of fiscal and monetary policies should be employed to improve the standard of living of Nigerians.

Keywords: Inflation rate, Monetary policies, Poverty, Standard of living, Fiscal policies

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1. Introduction

Inflation, simply put is the continuous fall in the purchasing value of money such that more money chases fewer goods and services which adversely impacts the economy. Inflation rate can influence the standard of living of the population. Once inflation exceeds its required threshold, regulators deploy policy instruments to control and cushion its effects on the population as part of the broad macroeconomic stabilization objectives. If an individual cannot get required basic necessities due to low purchasing power, his/her marginal propensity to consume (MPC) rises which makes it more difficult for the individual to live comfortably hence the standard of living dips. As the MPC increases, the marginal propensity to save (MPS) declines which culminates in negative savings mobilization with adverse consequences for financial deepening and eventual economic growth and development of the country.

High inflation rate characterizes the economies of less developed economies while the advanced economies are characterized by low inflation rate. This exemplifies why the standard of living of

people living in less developed economies is low and the standard of living of their counterparts in advanced economies are high.

Farid, Khan, Warriach and Warriach (2012) point out that as the prices of commodities increase, consumers' marginal propensity to save declines thereby adversely affecting standard of living. Farid, *et al* (2012) further adduced that uncertainty in prices of goods and services results in such individual desires to earn more income which causes them to take on more income generating jobs sometimes at the expense of their health in a bid to maintain a minimum standard of living. This would also have a ripple effect culminating in stunted economic growth and development of the country involved.

In the opinion of Burke and Ozdagli (2013), households on average do not expect wage growth to correlate with inflation rate, therefore, increases in expected inflation ultimately creates a negative income effect which discourages spending. In the case of Nigeria, inflation rate shows a cyclical trend. Nigeria recorded single digit inflation in 7 years between 1982 and 2007. According to Bawa, Abdullahi and Ibrahim (2016), the years between 1982 and 2007 during which Nigeria recorded single digit inflation rate were; 1982 with an inflation rate of 7.7%, 1985 with an inflation rate of 7.4%, 1986 with inflation rate of 5.7%, 1990 with inflation rate of 7.4%, 2000 with inflation rate of 6.9% and 2006 with inflation rate of 8.2%. Bawa, *et al* (2016) also revealed that inflation rate in Nigeria reached a peak of 18.87% in 2001. The high inflation rate in Nigeria which was above single digit rate portrays the dire straits of Nigeria regarding poor macroeconomic growth and stability.

Koch and Bosch (2009) pointed out that high inflation hurts the poor but did not have an overly pernicious effect on them. Mwanzia (2014) argued that there was a decrease in standard of living of people in South Africa

due to increase in household expenditure and negative real income as a result of high inflation which leads to decline in quality of life such as health, life expectancy or high rate of death in poor households.

Tolcha (2015) argued that high inflation rate disproportionately affected the poor and rich as consumption patterns were found sensitive to variations in real income but at low income levels, the effect was found to be more acute. In the case of Nigeria, controversy still exists about the effects of inflation on standard of living. For instance, Chimobi (2010) was of the view that no strong relationship existed between inflation and standard of living in Nigeria while authors like Bawa, Abdullahi, and Ibrahim, (2016), and Gagarawa, and Mehrotra, (2017). were of the view that strong relationship exists between inflation and standard of living in Nigeria.

The Problem, Objective and the Hypothesis of the study

Nigeria is a country which has 87 million people living in abject poverty with an estimated increase to about 91 million by the first quarter of 2019 according to the World Poverty Clock (2018). This makes Nigeria the country with the highest population of people living in poverty in the world. The World Bank (2018) human development index (HDI) ranking of countries equally ranked Nigeria among the group of low HDI countries with HDI of 0.532 and life expectancy of 53.7 years in compared to developed countries like Norway and Switzerland which were grouped among countries with high HDI. Norway has a high HDI of 0.953 and life expectancy of 82.3 years and Switzerland on its part has HDI of 0.944 and life expectancy of 83.5 years. The Global Hunger Index (GHI) (2018) also ranked Nigeria as 103 out of 119 countries with a score of 31.1. The organization stated that this score indicates that Nigerians suffer from a chronic problem of hunger. All these indicate the deplorable standard of living in Nigeria and this problem has remained hydra-headed and governments at all levels have not been able to improve on the living conditions of the populace.

Objective;

- 1) The objective of this study is to determine the effect of inflation on standard of living of Nigerians.
Research hypothesis quoted in null form;
- 2) Inflation has no significant effect on the standard of living of Nigerians

2. Literature/theoretical

Conceptual review

Inflation exists in every economy. Inflation is the continuous increase in price level that can lead to low productivity of the population is low the economy will not grow as it should. Money is a medium of exchange for goods and services and the strength and stability of the purchasing power of money can be affected by inflation which influences the ability of individuals to acquire goods and services (Jacobs, Perera & Williams 2014).

Francis (2015) pointed out that inflation can rise when there is high volume of money in circulation such that each unit is worth less. In developed, developing and under developed economies inflation plays a vital role. Inflation causes a shift in the distribution of income between different sections of people it also influences the GDP per capita income of the economy. According to Asekunowo (2016) those who are worse hit by inflation are individuals who are unable to acclimatize with the prevailing inflationary situation of the economy and still maintain at least average standard of living. Chand (2013) is of the opinion that the producing class such as agriculturist, manufacturers and traders gain at the expense of salaried and white collar jobs. Many economists like Shahor (2011) and Sands (2016) prefer moderate inflation which helps to engender economic growth of a country. Haq, Nazil and Meilke (2008) note that a great deal of economic literature and different schools of thoughts concerning the reasons for inflation and what effects it has are divided into two broad areas; quality theories of inflation and quantity theories of inflation with many combining both. The authors stressed further that quality theory of inflation rests on the expectation of a seller accepting currency to be able to exchange that currency at a later time for goods that are desirable as a buyer, whereas, quantity theory of inflation rests on the equation of the money supply, its velocity, and exchanges.

Brewer, O'dea, Paul and Sibieta (2009) are of the view that living standard has a correlation with purchasing power of households. The magnitude of inflation is usually the annualized percentage growth of some broad index of money prices termed inflation rate (Akinsola, 2017). Inflation rates vary from year to year, from currency to currency and from country to country.

Theoretical Underpinning

Fiscal Theory of Price Level (FTPL)

The fiscal theory of the price level (FTPL) was propounded by Eric Leeper in 1991 and redeveloped by Woodford, Cochrane and Sims among several researchers, it describes policy rules such that the price level is determined by government debt and the present and future tax and spending plans, with no direct reference to monetary policy (Buiter, 2002). The velocity equation defines the velocity of money in period t (V_t) as the ratio

of nominal output (the price level P_t times real output Y_t) to nominal money balances (M_t): $P_t Y_t = M_t$ (2) Differences across monetary models arise in the way these four economic variables are determined, and in the specification of which (if any) of these variables is to be treated as exogenous or endogenous, the price level needs to be determined jointly with M_t , Y_t , and V_t by computing the entire equilibrium path of the economy (Bassetto, 2002). The FTPL traces its roots to an incompleteness in the monetarist view of the price level, often, the equilibrium price level fails to be uniquely determined. There are many paths of P_t that satisfy (2) as well as all the other equilibrium requirements. This is especially true when monetary policy prescribes an exogenous interest rate, Sargent and Wallace (1975) show that the initial price level is indeterminate, and subsequent inflation is subject to sunspots, uncertainty driven by self-fulfilling expectations. A key implication of mutually consistent current and future policies implies that changes in current fiscal policy must (i) change the real value of government liabilities and therefore change future policies; (ii) force the price level to adjust, in which case the money market will clear only if the money supply adjusts to satisfy the demand for real money balances; or (iii) some combination of (i) and (ii). The ultimate effect on the price level depends on exactly which policies adjust (Gordon & Leeper, 2002). Since its inception, the FTPL has been extremely controversial, some of the criticisms are: the FTPL is about the inverse of the value of government debt, there is no reason in general for the value of debt and the value of money to coincide to the extent that households anticipate a government default, they may trade government debt at a discount, without necessarily affecting the value of money (Cochrane, 2001). This criticism is particularly serious when the central bank adopts a monetary policy that rules out monetization of government debt, however, the same criticism does not apply when the monetary policy of the central bank allows unlimited monetization of debt, as in the case of an interest rate peg, in this case, the central bank commits to exchange arbitrary amounts of money and one-period government debt at a fixed price, this commitment is not inconsistent with a second commitment, to redeem all maturing government debt at par, offering money in exchange, since the central bank has unlimited ability to produce money, a government default on nominal debt is ruled out, In this case, the FTPL is simply a version of a commodity money standard as well as other government liabilities, backed by the present value of future government surpluses (Cochrane, 2001). This theory although having controversy still seems to be more in line with this study as it recognizes the impact of speed of money supply in the economy and also the extent to which the government can control to a fair extent the effect on inflation on the economy.

Empirical review

Horwitz (2003) investigated the effect of inflation on costs. Using insights from Austrian economics, public choice theory and new institutional economics the author established that inflation imposed costs by undermining coordinative properties of the price system. The author also argued that the costs of inflation were both larger and more widespread than standard treatments suggested. Zidek and Chribik (2015) investigated the impact of currency redenomination on inflation in Turkey using the Chow and vector autoregressive model to detect if redenomination created a fracture in inflation development. The authors opined that redenomination had a direct impact on inflation in Turkey which adversely affected daily living of the population. Mbongo, Mutasa and Msigwa (2014) studied the effect of money supply on inflation in Tanzania using secondary data which were obtained from National Bureau of Statistics and the Central bank of Tanzania. They applied the OLS, VAR, and ECM techniques in their analysis and results from the ECM and OLS techniques provided evidence that money supply and exchange rate significantly impacted inflation. The authors recommended that the government of Tanzania should put in place stringent monetary policies. Doguwa (2015) examined inflation and economic growth in Nigeria to detect its threshold level using three approaches which were Sarel's approach, the technique of Khan and Senhadji and Drukker's approach. Results suggested the threshold level of inflation above which inflation was inimical to growth was estimated at 10.5% to 12% using the estimated two threshold point model results also suggested that there is a threshold level of inflation above which money is not super-neutral Slyan, Adegoriola and Adolphus (2016) examined the implications of unemployment and inflation on poverty level in Nigeria between 1980 and 2014 with poverty level, unemployment rate and inflation rate as variables used. Johansen test showed that the variables were found to co-integrate at 5% significance level, Vector autoregressive (VAR) model used also determined short-run relationship between the variables, forecast error variance decomposition was obtained using Cholesky decomposition of VAR residual. Results indicated a bi-causality between inflation and poverty. There was also a two-way causality between unemployment and poverty, a one-way causality was observed between inflation rate and unemployment rate. The authors recommended a review of the education curriculum to include practical skills acquisition programs in the educational system so as to produce graduates that are employers of labour and not employment seekers since the result showed a correlation between unemployment and poverty in Nigeria. Gagarawa and Mehrotra (2017) investigated the effect of inflation on standard of living of public primary school teachers in Gagarawa local government area of Jigawa State, Nigeria (2014-2016). Survey design was adopted and data were collected using structured questionnaire. Findings showed that inflation had a significant and adverse effect on standard of living

with the following effects on the respondents: eroding their income, increase in their daily expenditure, and taking on extra income generating jobs to maintain a barely average standard of living.

3. Methodology

This study made use of *ex-post-facto* design to investigate the effect of inflation on standard of living in Nigeria from 1998 to 2017. Data sourced from statistical bulletins of World Data Atlas, Bureau of Statistics, Nigeria and Central Bank of Nigeria (CBN) covered the period: 1998 – 2017. The model adopted was specified:

$$\Delta\text{HDI} = \alpha_0 + \sum \alpha_{1i} \Delta\text{HDI}_{t-i} + \sum \alpha_{2i} \Delta\text{IR}_{t-1} + \beta_1 \text{IR}_{t-1} + \varepsilon_t$$

Where: HDI = Human Development Index IR = Inflation Rate

The Augmented Dickey-Fuller unit root test was used to determine stationarity of data. The Auto Regressive Distributed Lagged (ARDL) model was used to determine the long-run relationship between the independent variables and standard of living in Nigeria. The error correction model (ECM) was also used to test the speed at which present and past values of our variables help the model to return back to equilibrium. Data obtained was analyzed using E-View to be able to obtain accurate results for proper recommendations. Given the estimated model for this research, we expected that inflation rate proxied by CPI has a negative effect on standard of living proxied by HDI

4. Result/ Findings

The result as contained in Table 1 shows that there are 19 observations for each of the series. The maximum and minimum values of the Human Development Index (HDI; measure of standard of living) are 0.532 and 0.401 respectively with a standard deviation of 0.040. These indicate that the series varies significantly during the period. From the table, the average value of standard of living (HDI) is 0.479. The Inflation Rate (IR) during the period takes its values between 5.38% and 18.87% with an average value of 11.76%. GDP growth rate (GDPGR) figures recorded during the period of this study ranges from -1.62% and 15.33%. The standard deviation value of 3.64 with the lowest and highest figure ever recorded indicating that the figures actually vary significantly during the period of study. However, the average is 5.77%. Generally, the shape statistics especially reveals that the distributions of the series are normal since the computed values of skewness, kurtosis and Jarque bera. The Durbin-Watson value of approximately 2 also indicated that a long run relationship existed between the variables as such validating our model.

Table 1. Descriptive analysis

variable	mean and median values		max.	min.	std.	Skew	kurt	J-Bera
HDI	Mean	0.479	0.532	0.401	0.040	-0.382	2.150	1.034 [0.596]
	Median	0.484						
IR	Mean	11.761	18.874	5.382	3.962	0.138	1.966	0.907 [0.635]
	Median	11.578						

SOURCE: Author's Computation 2019, with data from World Bank Database and CBN Statistical Bulletin. NOTE: HDI represents Human Development Index (measures standard of living), IR represents Inflation Rate

To tests the order of integration of the series, the study conducted unit root tests using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) unit root tests and the result is presented in Table 2. The Table reports the ADF and PP unit root tests results for the series in their level and different forms under both intercept and intercept and trend options. The results shows that the Human Development Index (HDI; measure of standard of living), is not stationary at level using ADF (intercept and trend options) and PP (intercept and trend option) and for this series to be stationary, it is differenced once. This suggest that the series is integration of order I(0) and I(1) for both ADF and PP tests. Conversely, the result largely shows Inflation Rate (IR) has stationarity at level under different options. Consequently, they are integration of order I(0) and I(1). Bounds testing approach of ARDL is used to examine the short and long run relationships between the series. To achieve the objective of the study, the ARDL is used to test for the effect of inflation on standard of living in Nigeria.

Table 2: Stationarity Test

Variable	Options	Constant		order	constant and trend		Order
		stat.	prob.		stat.	prob.	
Augmented Dickey-Fuller test statistic							
HDI	Level	-2.204	0.212	I(1)	-2.263	0.431	I(1)
	1 st Diff.	-3.709*	0.014		-4.288*	0.018	
IR	Level	-3.215*	0.036	I(0)	-2.716	0.245	I(1)
	1 st Diff.	-4.959*	0.001		-4.792*	0.007	
Phillips-Perron test statistic							
HDI	Level	-3.397*	0.025	I(0)	-2.168	0.478	I(1)
	1 st Diff.	-3.681*	0.015		-4.346*	0.016	
IR	Level	-3.173*	0.039	I(0)	-3.071	0.142	I(1)
	1 st Diff.	-5.273*	0.001		-5.060*	0.005	

SOURCE: Author's Computation 2019, with data from World Bank Database and CBN Statistical Bulletin. NOTE: HDI represents Human Development Index (measures standard of living), IR represents Inflation Rate

Lag Length Selection Criteria for Standard of living and Inflation Rate

The result of lag order selection criteria for the model that establishes the effect of Inflation Rate on Standard of living is presented in Table 3. The lag length selection criteria start with the maximum lag of 4 as a specification. An asterisk shows the lag order selected by the criterion statistic. However, the study considers the lag length 1 as the optimal lag length for this study.

Table 3: Lag Length Selection Criteria for Standard of living and Inflation Rate

Lag	Logl	Lr	Fpe	aic	Sc	Hq
0	-41.47237	NA	1.128578	5.796316	5.890723	5.795310
1	-17.32746	38.63186*	0.077731*	3.110327*	3.393548*	3.107311*
2	-15.92912	1.864444	0.114684	3.457216	3.929250	3.452188
3	-9.479226	6.879889	0.091753	3.130564	3.791410	3.123524
4	-8.251570	0.982125	0.164811	3.500209	4.349870	3.491159

NOTE: * indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final Prediction Error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion Bounds Co-Integration Test for Standard of Living and Inflation Rate.

The bounds co-integration test is conducted on the variables considered in this study. The tests result suggests rejection of the null hypothesis of no cointegration at 5% level since the computed F-statistic value of 5.933 is above the upper bound value of 5.73. Therefore, the study concludes that there is a long run relationship among the variables.

Table 4: Bounds Co-Integration Test Standard of living and Inflation Rate

critical value bounds			test Statistic: f-statistic
Significance	I0 bound	I1 bound	
10%	4.04	4.78	5.933*
5%	4.94	5.73	
2.5%	5.77	6.68	
1%	6.84	7.84	

SOURCE: Author's Computation 2019, with data from World Bank Database and CBN Statistical Bulletin * represents 5% alpha level.

To examine the long-run effect of inflation rate on standard of living in Nigeria, the study used the Autoregressive distributed lag (ARDL) approach. The choice of this model is influenced by the fact that all the variables are not integrated of the same order. In this model, the dependent variable is standard of living proxied by Human Development Index (HDI) while the independent variables are lags of HDI and current Inflation Rate (IR) and its lag (IR(-1)). The final ARDL model selected is ARDL (1, 0).

Error Correction Model (ECM) for Standard of living and Inflation Rate

Table 5.

cointegrating form

Variable	coeff.	std. error	t-statistic	prob.
D(IR)	-0.060600	0.002769	-2.188321	0.0449
CointEq(-1)	-0.180648	0.026422	-6.837039	0.0000

$$\text{Cointeq} = \text{HDI} - (-0.0335 * \text{IR} - 0.0593)$$

long run coefficients

Variable	coeff.	std. error	t-statistic	prob.
IR	-0.033547	0.017691	-1.896299	0.0173
C	-0.059257	0.666596	-0.088895	0.9303

SOURCE: Author's Computation 2019, with data from World Bank Database and CBN Statistical Bulletin. NOTE: the dependent variable is HDI (Human Development Index measuring standard of living), IR represents Inflation Rate (Independent variable), * represents 5% alpha level.

From the results in Table 5, the short-run dynamic model estimated in this study shows that ECT (-1) value is -0.181 (P – value = 0.000). The negative value of the coefficient is significant at 5% level. This is in line with *a priori* expectation and it indicates that the variables are co-integrated and moves towards long run equilibrium. The coefficients of the explanatory variables show that in the short run; the coefficient of current inflation rate (IR) appears negative and significant at 5% level [coeff. = -0.060; p – value = 0.045]. This means that the effect of IR on Standard of living proxied by Human Development Index (HDI) is negative and significant in the short-run. Alternatively, it implies that a unit increase in IR leads to 0.06 units decrease in HDI during the period of this study. Furthermore, the result obtained suggests that IR has dampened the standard of living in Nigeria during the period of this study.

Long Run Coefficient for Standard of living and Inflation Rate The result in Table 9 also shows the long-run dynamics of the effect of Inflation Rate on Standard of Living proxied by Human Development Index (HDI). As can be seen from the Table, current Inflation Rate (IR) exhibits negative and significant relationship with standard of living (HDI) at 5% level [coeff. = -0.034; p – value = 0.017]. This indicates that IR has a negative and significant effect on standard of living (HDI) in the long-run during the period of this study. This means that a unit increase in inflation rate will brings about 0.034 unit decrease in HDI

Descriptive Analysis Model for Standard of living and Inflation Rate

Table 6.

Variable	coef.	std. error	t-statistic	prob.*
HDI(-1)	0.919102	0.026422	34.78552	0.0000
IR	0.000834	0.002769	0.301019	0.7675
C	0.447987	0.118892	3.768020	0.0019
R-squared	0.974547	Mean dependent var		4.835301
Adjusted R-squared	0.971153	S.D. dependent var		0.365833
S.E. of regression	0.062135	Akaike info criterion		-2.568009
Sum squared resid	0.057911	Schwarz criterion		-2.419614
Log likelihood	26.11209	Hannan-Quinn criter.		-2.547548
F-statistic	287.1560	Durbin-Watson stat		2.270874
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

5. Discussion

The R² (co-efficient of determination) is 0.975 implying that about 97.5 percent of the variations in current HDI is explained by the lags of HDI and current Inflation Rate (IR). The F-statistics (287.16; p = 0.000) is significant at 5% level. Durbin Watson value is approximately 2 (DW = 2.27). This supports the study of Slyan, P. A., Adegoriola, O. O. and Adolphus, N. (2016). The study opined that inflation rate had a one directional causality on unemployment which is the cause of poverty in Nigeria. Inflation Rate (IR) exhibited a negative and significant effect on standard of living (HDI) at 5% level [coeff. = -0.034; p – value = 0.017]. This means that a unit increase in inflation rate brings about 0.034 unit decrease in HDI

6. Implication of Research and Practice

The negative effect inflation rate exhibited on standard of living implies that increase in inflation engenders decrease in the standard of living. This finding is in line with our *a priori* expectations. Our findings on inflation is also in line with theory in literature and findings of other researchers like Doguwa (2015) who found that inflation at a high level is inimical to economic growth in Nigeria.

7. Conclusion

Based on findings we can support the study of Doguwa (2015) which opined that at a certain level inflation becomes inimical to economic growth. By implication we can hereby conclude that inflation rate has effect on standard of living in Nigeria. The study also supports the work of Chimobi, O. P. (2010) who also opined that high inflation had a negative and significant effect on economic growth. The study hereby recommended that the government adopt a blend of fiscal and monetary policies to curb the high inflation and elevate the standard of living of Nigerians. The reason for this is based on the fact that the inflation challenge faced by Nigeria cannot be combatted by strictly adopting fiscal policies or otherwise.

8. Future research

During the course of this study we have found that inflation is not the only factor responsible for the poor standard of living in Nigeria, therefore future researchers can adopt other factors in relation to standard of living in Nigeria

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