

IMPACT OF INFLATION ON POVERTY RATE IN NIGERIA

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ABSTRACT

The study investigates the impact of inflation on poverty rate in Nigeria. It uses secondary data from CBN bulletins and world development indicator (WDI) bulletins from 2000-2023. The data was analyzed with the Autoregressive distribution lag (ARDL) method capturing by Multiple Linear Regression model. From the analysis, the ARDL result reveals that there is a positive significant relationship between National Poverty Level (NPI) and Inflation Rate (INF) in Nigeria. From the Augmented Dickey Fuller (ADF) test, only National Poverty Index, NPI was stationary at level while Inflation Rate, INF and Basic School Enrollment, BSE were stationary at first difference. The Granger Causality test showcased bidirectional causalities between the NPI and INF. However, there is no causality between NPI and BSE over the period of study. The ARDL Bounds test showed that there exists a long-run relationship between Inflation and National Poverty rate in Nigeria. The study concludes that the cause to poverty lies with the inflation in the country. The study recommends that families should be encouraged to enroll their children to basic schools as this has been found to be beneficial in poverty reduction. Moreover, policies and structures that will reduce inflation must be put in place if the government must be taken seriously when it comes to fighting poverty.

1. INTRODUCTION

Inflation is an inevitable property of any economy in the world. It influences every country, negatively as well as positively, whether it is developed or developing country as well. Anyanwu (2022) stated that inflation is an important factor leading to social and economic instability and disorder. That, it is one of the most largely observed and tested economic variables both theoretically and empirically. Its causes, impacts on other economic variables like poverty, and cost to the overall economy are well known and understood.

Poverty is a multidimensional and multifaceted phenomenon and one of the major problems against development of any nation (Ogunniyi et al., 2017-2022; Oluwatayo, 2021). Omobowale (2020) described poverty as a state where the people

are deprived of good things of life and the ability to achieve the desired state of wellbeing and socially acceptable standard of living. Incidentally, the poverty prevalence globally is generally intense in rural areas of which close to 80% or huge proportion of the population lives below the poverty line, with constricted social and infrastructural amenities (Ogundipe et al., 2019; Aderounmu, 2018).

The global indices showed that, the number of people living in extreme poverty as at 2015 were 767 million (UNDP, 2016) which reduced to less than 600 million people in 2019 (Kharas et al., 2020). Billions of people across the globe live in dehumanizing unclean conditions enriched with hunger, disease, desperation, and degradation. Despite all the amazing development in eradicating poverty over the past 25 years, 766 million people of which 385 million of them are children lived on less than US\$ 1.90 a day in 2013 (World Bank, 2017; World Food Programme, 2016). No doubt, the problem of poverty is not only a plague of developing countries only, it is also on the increase in advanced countries, as estimates in 2012 revealed that over 300 million people lived in poverty (UNDP, 2016; ILO, 2012).

However, there is prevalence of poverty in developing countries than developed countries and inflation is one the determinants. Poverty and inflation is of course dreaded global phenomenon that affects people in various depths and levels at different times and phases of existence particularly in Africa. As epidemic, poverty and inflation state is one of the most serious social and economic issues impeding economic progress in African nations of which Nigeria is one (Todaro & Smith, 2007-2022).

Nigeria is the most populous country in Africa with a population of 223,804,632 in 2023, a 2.41% increase from 2022 associated with high level of poverty and inflation (Macro trends, 2023). And that, its per capita income is \$2,184 in 2022 and as a result of this it was classified as the largest economy in Africa. Despite having the huge human and natural resources, the largest economy in Africa and 26th in the world, poverty rate has been rising in Nigeria and the economy remained largely underdeveloped (World Bank, 2023). According to Sienaert (2023), that, rising inflation in Nigeria causes increase in poverty from 40 percent (79 million) in 2018 with inflation rate 12.10 percent to 46 percent (104 million) in 2023 with inflation rate 20.13 percent, pushing an additional 25 million people below the national poverty line. This means all the while, poverty level in Nigeria is high as inflation rate is high

with many socio-economic challenges. This poverty situation is disturbing and the various macroeconomic policies by the Nigerian government have been unable to achieve sustained price stability, not to reduced unemployment and sustained growth (National Bureau of Statistics, 2023).

These macroeconomic policies have been rigorously adopted by the Nigerian government such as exchange rate policy, trade policy, monetary and fiscal policy but these policies have not yielded desirable results. The fundamental roles of fiscal policy, monetary policy and trade policy cannot be over-emphasized in any open economy, especially in terms of economic management (Adeeb, 2013). Notably, the quests to achieve and sustain macroeconomic objectives explain the vital roles played by fiscal, monetary and trade policies in both developed and developing economies, which Nigeria is inclusive. This means, the persistent high level of inflation and poverty in Nigeria is traced down to policy error which is largely caused by the failure of government to modify and fine tune the received macroeconomic doctrine to suite the Nigerian context and complexity. Therefore, fluctuations in the economy have confirmed the need to manage the economy effectively. The essence of macroeconomic management underlines the rationale of the government as a vital economic agent. However, it appears that government intervention has not been able to cure the ills in the economy as for several decades economic performance has not been impressive (Amoo, 2018; Amoo et al., 2019). This make continued economic crisis of poverty, with the associated problems of high inflation ary pressure, high exchange rate, and debt overhang, adverse balance of payment and high inflation rates is difficult to explain (Ajayi 2020).

Since mid-1960s, inflation has been a serious problem in Nigeria. The Udoji committee which doubled the basic minimum wage in the public sector in 1975 represented a climax in inflationary tendencies that led to the widespread strikes and unrest in the private sector on which the Udoji recommendations were not binding (Amaechi, 2018; Benyin & Ugochukwu, 2015).

Inflation has prolonged unchanged a serious dilemma for Nigerian economy for some stretch. This is characterized by a rapid and permanent upsurge in the general price level over a period of time. This is not new and not so bad in the global economy. However, The Nigeria case is devastating to the entire economy, unless extreme and proper checks are undertaken as Ivanic and Martin (2008-2020); Aiyedogbon and

Ohwofasa (2019) contend this view in their respective works. Therefore, it is observed that poverty rate and inflation are two intricately linked economic concepts for which inflation causes low productivity due to high cost of factors of production, low aggregate supply, high cost of living with low standard of living resulting to poverty in the nation (Onwe & Okoro, 2015). But Romer (1998) found no any connection amid inflation and poverty.

Despite argument by Romer (1998), inflationary pressure in Nigeria has been experienced worst impact reflecting to poverty. Mahmood, Hafeez and Rasheed (2023) concluded that inflation in Nigeria causes poverty. Nouvedan and wooden (2008-2022); Chani, et al. (2022); Talukdar (2021); Yolanda (2020); Omoniyi (2018-2020) also found in their separate work a positive correlation between inflation and poverty. Meanwhile Muoghalu, et.al. (2018) observed that day to day increase in prices of commodities such as non-food items like oil and gas, snatch money from savings of consumers and uncertainty of prices of goods and food items result to inflation which causes poverty. They conclude that inflation brings negative impact on Nigerian economy and positive to poverty. National Bureau of Statistics of Nigeria, NBS, (2023) also observes that rise in Nigerian inflation was caused by increased in prices of oil and fat, bread and cereals, fish, fruit, meat, vegetables and potatoes, yam and other tubers, vegetable, milk, cheese, and eggs. This high margin of prices pushes for inflation that results to a drive of Nigerian into poverty with much consequences.

These consequences can be seen when window of opportunity is closed to the poor public, which makes Nigerian less active in the society. In turn they are vulnerable to illness, violence and power due to insecurity. Similarly, United Nations (2018) affirmed that: In Nigeria, poverty rejects elections and opportunities and violates human dignity. It entails lack of basic competence for actual involvement in the society. It means that the family does not have enough food and clothing or visiting a school or clinic. They have no land to live, no food and credit. This means there are instability, frustration and exclusion of individuals, families and society. It equally means that they are vulnerable to violence and often involve living in an unusual or unstable environment without using clean water or sanitation (World Bank, 2021).

This enrooted poverty problem triggered Nigerian government to engage in easing programs initiation since past governments till date without yielding positive result.

This attracted the research work to investigate the empirical analysis of the impact of inflation on poverty rate in Nigeria. The specific objectives include, to examine if inflation affect poverty rate in Nigeria; to examine the long-run relationship between inflation and poverty rate in Nigeria, to determine the causality relationship between inflation and poverty rate in Nigeria. While the following sections consist of literature review, discussion and inferences as well conclusion and policy recommendations.

2. LITERATURE REVIEW

Conceptual Clarification

Poverty refers to a condition in which individuals lack sufficient financial resources or material possessions to meet socially acceptable standards of living. It exists when people are unable to satisfy their basic needs. Identifying who is poor therefore requires a clear understanding of what constitutes "basic needs." These needs may be defined narrowly as those essential for survival, or more broadly as those consistent with the prevailing living standards within a society. A narrow definition captures individuals at the brink of starvation or death from exposure, while a broader definition includes those whose food, housing, and clothing are adequate for survival but fall below societal norms (Britannica, 2019).

Sen (1983) conceptualizes poverty in terms of entitlements, defined as the various combinations of goods and services that individuals can command. These entitlements depend not only on income but also on the means through which goods are acquired—such as money, coupons, or other resources—and the availability of those goods in the economy. Similarly, Aliyu (2000) emphasizes that poverty is characterized by the inability to meet basic needs and by possession of income or resources below socially acceptable levels. Basic needs may be understood either as survival necessities or as requirements aligned with community living standards.

Poverty has been widely associated with poor health outcomes, low educational attainment, limited income, lack of specialization, unemployment or underemployment, and general economic vulnerability. Inadequate income, in particular, strongly predisposes individuals to a deprived standard of living (Sen, 1999). While poverty may be difficult to define with precision, its effects are unmistakable for those who experience it. Poor individuals are typically unable to

afford adequate nutrition, healthcare, housing, clothing, recreation, and participation in community life.

Inflation, on the other hand, refers to the rate at which prices increase over a given period of time. It is usually measured broadly, reflecting changes in the overall price level or cost of living in an economy, though it can also be calculated for specific goods or services. Regardless of context, inflation indicates how much more expensive a given set of goods and services has become, most commonly on an annual basis (IMF, 2023).

Inflation can also be understood as a sustained rise in prices that leads to a decline in purchasing power over time. As prices rise, each unit of currency purchases fewer goods and services than before. Inflation contrasts with deflation, where prices fall and purchasing power increases. When an economy operates at full employment, increases in government spending, private consumption, or investment can raise aggregate demand, thereby exerting upward pressure on the general price level (Investopedia, 2023).

Two essential characteristics define inflation. First, it must involve a general or aggregate rise in prices across the economy, rather than an isolated increase in the price of a single commodity. Changes in individual prices do not constitute inflation unless they trigger widespread increases in the overall price level. For example, increases in petroleum prices in Nigeria may raise production costs and influence other prices, but inflation occurs only if such changes result in a sustained rise in the aggregate price level. Second, inflation must be continuous and persistent over time; a one-time increase in prices does not qualify as inflation (World Bank, 2021).

Balami (2006) defines inflation as a prolonged rise in the general price level of a wide range of goods and services, measured as the rate of change over a specified period. Similarly, Blanchard (2000) describes inflation as a persistent increase in the general price level, while Hamilton (2001) links inflation to situations where money supply grows faster than output. Inflation rates are commonly measured using price indices such as the Consumer Price Index (CPI), Wholesale Price Index, and Producer Price Index.

The CPI, which tracks the cost of a representative basket of goods and services consumed by households, is the most widely used measure of inflation. However, it

has limitations: it excludes goods purchased by firms and government, does not fully capture quality changes, ignores substitution effects, and updates its basket infrequently (Essien, 2005). Despite these shortcomings, CPI remains the preferred indicator because it reflects cost-of-living changes and is widely used for wage indexation. The GDP deflator is another measure of inflation, though it is less frequently used due to its annual availability and limited relevance for welfare analysis.

Inflation can have both positive and negative effects on an economy. Iyoya, Oyefusi, and Oriakhi (2003) note that inflation redistributes income and wealth, creating both winners and losers. Owners of real assets, debtors, and individuals who anticipate rising prices may benefit, as asset values increase and debt burdens decline in real terms (Ajayi & Akinshohun, 2021).

Several schools of thought explain the causes of inflation. The neo-classical or monetarist view attributes inflation primarily to excessive growth in money supply (Okowori & Abu, 2017). However, empirical evidence has challenged this perspective, particularly in the United States, where money supply growth has often exceeded price growth due to increased global demand for the U.S. dollar (Hamilton, 2001; Colander, 1995).

Neo-Keynesians associate inflation with diminishing returns in production, rising velocity of money, and excess consumption relative to investment. Structuralists, by contrast, argue that inflation in less developed countries stems from structural rigidities such as inadequate infrastructure, weak institutions, agricultural bottlenecks, labour market inefficiencies, and fiscal imbalances (Okowori & Abu, 2017).

Theoretical Review

Irving Fisher (1911) formalized the Quantity Theory of Money, which posits a direct proportional relationship between money supply and price level, expressed as $MV = PT$. Under the assumption that velocity (V) and output (T) remain constant, increases in money supply lead directly to higher prices. Despite its influence, the theory has been criticized for its static assumptions, failure to explain transmission mechanisms, and neglect of factors such as idle money balances and institutional dynamics (Nitisha, 2015).

The structural theory of inflation, advanced by Myrdal (1968) and later refined by other economists, argues that inflation arises from structural imbalances in developing economies. These include food shortages, foreign exchange constraints, infrastructure deficits, and reliance on deficit financing. Structuralists view inflation as a symptom of systemic rigidity rather than purely monetary expansion.

Friedman's (1967) monetary theory of inflation reinforces the Quantity Theory of Money, asserting that inflation is fundamentally a monetary phenomenon. Dornbusch (1996) later refined the theory by linking monetary variables to real economic activity through the equation $MV = PY$. Monetarists argue that changes in money supply affect prices rather than real output in the long run.

Cost-push inflation theory, associated with A.W. Phillips, explains inflation as arising from rising production costs, particularly wages. The resulting price-wage spiral occurs when wage increases raise costs, prompting firms to raise prices, which in turn reduces real wages and leads to further wage demands. Although the Phillips Curve initially suggested a trade-off between inflation and unemployment, later empirical evidence weakened this relationship.

Modern monetarists, including Friedman and Schwartz (1965), maintain that inflation results from money supply growth exceeding output growth. Increased money supply raises nominal income, boosts demand for labour, increases wages, and ultimately leads to higher prices. This study aligns with the monetary theory of inflation and the Quantity Theory of Money, emphasizing money supply as the primary determinant of price levels.

In poverty analysis, the minority group theory—originating from Rowntree's early empirical studies—focuses on identifying vulnerable population groups. Rowntree (1992) identified key causes of primary poverty, including unemployment, illness, old age, low wages, and large family size. He also described a poverty cycle affecting children, young families, and the elderly. This framework influenced social policy by shifting attention toward guaranteed minimum incomes for vulnerable groups.

Theoretical Framework

This study adopts the framework of Friedman and Schwartz (1965) of modern quantity theory of money/wealth because it provides a comprehensive analysis of the relationship between inflation and poverty rate in Nigeria. Modern Quantity Theory

of Money predicts that the demand for money should depend not only on the risk and return offered by money but also on the various assets which the households can hold instead of money. The money demand should depend on the total wealth; the reason being wealth measures the size of the portfolio to be allocated among money and the alternative assets. Thus, Money demand function is essentially a function of wealth (W):

Two alternative forms in which wealth can be held are Bonds and Equity (Shares).
 $(M/P)^d = L(r_s, r_b, \pi^e, W) \dots\dots\dots 3$

Where r_s is the expected real return on stock r_b is the expected real return on bonds

π^e is the expected rate of inflation

W is real wealth.

M → nominal money demand

P → Price level

$(M/P)^d$ → demand for money or money value proxy for poverty

Equation (3) shows that Demand for money depends on return on bonds and equity as well inflation rate. Therefore, M^d depends on return on bonds and equity. Inflation affects the amount of wealth held. If r_s or r_b increases, money demand reduces, because other assets become more attractive. If π^e increases, money demand reduces because money becomes less attractive. If W increases money demand increases because higher wealth means a larger portfolio. For simplicity, equation 1 can be written as:

$(M/P)^d = L(Y, i) \dots\dots\dots 4$

Real income (Y) is used instead of W, i is the interest rate. It is the return variable which includes nominal interest rate.

$(M/P)^d = r_b + \pi^e \dots\dots\dots 5$

This demand function of money equation (4) is very similar to that derived from the Keynesian approach. The utility of portfolio theory in studying the demand for money depends on which measure of money supply is used. The portfolio theories of money demand are plausible only if we adopt a broad measure of money supply (M_2): M_1 is the Narrow Measure of money as it includes only coins and currency with people and demand deposits which earn very low or no interest rate.

$M_1 = \text{Currency} + \text{Demand Deposits}$

Thus, portfolio theories are useful only when we take (M_2) measure of money supply because $M_2 = M_1 + \text{Saving accounts} + \text{money market mutual funds}$.

Empirical Review

Empirical studies on the inflation-poverty relationship have produced mixed findings. Using Nigerian data (1980-2020), Siyan et al. (2022) and Danlami et al. (2020) found bidirectional causality between inflation and poverty, suggesting mutual reinforcement. Other studies, including Yusoff et al. (2023) and Cardoso (2020), identified unidirectional causality from inflation to poverty, emphasizing the erosion of real wages. Conversely, Nwadike et al. (2020) found causality running from poverty to inflation in Nigeria.

Some studies report no causal relationship between inflation and poverty, including Vinayagathan and Ramesh (2022) for South Asia and Sehwat and Giri (2020) for India. Omar and Inaba (2020) found that poverty, corruption, debt, and unemployment negatively affect economic growth in Nigeria, recommending stronger institutions and targeted poverty alleviation. Similarly, Loewald and Makrelov (2020) established a strong link between food inflation and poverty, emphasizing the importance of long-term monetary and structural policies.

Safia, (2020) studied the effects of inflation on Somaliland's low-income families between 2008 and 2017. The study found that inflation effected Hargeisa low-income families in the areas of food and education. The low-income families reduced either the quality or the quantity of their food in order to cope with inflation. Poor families also removed their children from schools as they were not able to pay the fees.

Danlami et al., (2020) examine the implication of unemployment and inflation on poverty level in Nigeria from 1980-2019. They subject their work to unit root test. Also, using the Johansen test, the variables were found to be co-integrated at 5% level of significance. Vector Auto Regressive (VAR) Model was also used to determine the short-run relationship between the variables and the fourth lag was selected based on the lag selection criterion. The result obtained showed the proportion of the variations in Poverty, inflation and unemployment rate attributed to their respective lag values. Granger causality test was carried out from the VAR model, and the result indicated that there is a bi-causality between inflation and

poverty. There is two-way causality between unemployment rate and poverty. There is one-way causality between unemployment rate and inflation rate. They recommended that since unemployment causes poverty in Nigeria, government should review the education curriculum which will include practical skill acquisition programme in the educational system so as to produce graduates that are employers of labour rather than employment seekers. The government should also give incentives to producers to enable them increase domestic production which will bring down price level.

Easterly and Fischer (2021) examined the effects of inflation on the standard of living of underprivileged single mothers in Githurai, Kenya, over the period 2019-2020. Using a sample of 135 female-headed households, the study revealed that most respondents possessed low levels of education and were engaged in poorly paid employment. The majority could not consistently afford basic necessities and often purchased goods in very small quantities due to limited disposable income. As a result, many households struggled to meet essential needs and lived in extreme poverty. The authors recommended that both the Kenyan government and the Central Bank adopt targeted interventions to cushion vulnerable single mothers from the adverse effects of inflation. Emphasis was placed on implementing effective inflation-control policies and strengthening the national currency to improve living standards among underclass households.

Similarly, Kweku and Naatu (2020) investigated the impact of inflation on living standards in Ghana, focusing on household expenditures, income, savings, loans, and recreation between 2012 and 2019. The study sampled 100 household heads from the Navrongo community using stratified sampling techniques. Data were collected through structured questionnaires and interviews and analyzed using descriptive statistics and multiple regression models. The findings showed that inflation significantly eroded living standards, forcing households to rely on loans and overtime work to meet basic expenses. Living conditions deteriorated progressively over the years, with 2019 recording the lowest standard of living due to heightened inflation. The authors recommended increased government investment in agriculture to boost the supply of essential goods and advocated the use of projected inflation rates in determining and adjusting minimum wage levels to sustain acceptable living standards.

Shrestha and Chaudhary (2022) explored the relationship between economic growth and poverty in Nigeria and found that increases in economic growth failed to translate into poverty reduction. Their findings challenge the validity of the trickle-down hypothesis in the Nigerian context. Consequently, they advised policymakers to reassess public expenditure patterns to ensure a more equitable distribution of national income.

Appiah, Frowne, and Tetteh (2020) analyzed poverty and youth unemployment in Nigeria using data from 1987 to 2019 and employing the Ordinary Least Squares (OLS) method. The results indicated that unemployment, population growth, and sectoral contributions from agriculture and services positively influenced poverty levels, although agriculture was statistically insignificant. Inflation, however, showed a negative relationship with poverty. The study recommended comprehensive job creation strategies, population control policies, and strengthening of the real sector to effectively address poverty in Nigeria.

Amin et al. (2020) examined the relationship between inflation and poverty in developing countries using panel data from 115 nations spanning 1981-2018. The study found a positive and statistically significant relationship between inflation and poverty across most income groups. However, in low-income countries, the relationship was negative but statistically insignificant, suggesting that inflation affects poverty differently depending on income classification.

Artuc et al. (2022) investigated the inflation-poverty nexus in Sharpeville by analyzing the effects of rising prices on poor households. Using regression analysis and assuming a uniform inflation rate across households, the study found that larger household sizes were associated with deeper poverty gaps. The findings confirmed that inflation worsens poverty conditions. The authors recommended expanded employment opportunities and government-supported business funding for unemployed individuals to promote self-employment and job creation. They also suggested evaluating the effects of inflation on households benefiting from feeding programs.

In the context of Pakistan, Vijayaraghavan and Ramesh (2022) assessed the impact of macroeconomic variables on growth and poverty using time-series data from 1972 to 2018. Their results showed a positive relationship between inflation and poverty, estimating that a one percentage-point increase in the Consumer Price Index raises

the poverty headcount ratio by 0.38 percent in the following year. The study emphasized the need for sustained economic growth, increased investment, and strict inflation control to reduce poverty levels. Asongu, Soumtang, and Edoh (2021) examined the economic, social, and psychological effects of inflation on poor households in Malakand District using data from 300 respondents. Their findings revealed that inflation severely affects the poor by reducing economic stability, increasing social stress, and exacerbating psychological hardship. The study concluded that rising prices not only diminish productivity but may also contribute to higher crime rates among economically marginalized groups.

Bello and Roslan (2021) analyzed poverty dynamics in Nigeria using economic growth and Millennium Development Goals (MDGs) expenditure data within a panel data framework. Their findings revealed that increases in per capita GDP and MDG spending were paradoxically associated with higher poverty levels. The study concluded that economic growth and development spending had not translated into poverty reduction over the study period. Hassan et al. (2020) investigated the effects of inflation on poverty at national, urban, and rural levels in Indonesia. Employing consumer demand theory and constructing a Price Index for the Poor (PIP), the study found that rural households were more vulnerable to inflationary shocks, particularly food price inflation. The results showed that inflation disproportionately affected poor households relative to non-poor households, with food price volatility exerting the strongest influence. Phillips (1958) examined the relationship between inflation and unemployment in Nigeria using a trade-off model and found no evidence of the conventional Phillips Curve. Instead, the results revealed a nonlinear upward-sloping relationship, indicating that attempts to reduce inflation may worsen unemployment and vice versa.

Yolanda (2021) tested the Phillips Curve using U.S. data from 1980 to 2018 and found a significant negative relationship between inflation and unemployment, although inflation was often over-predicted. Folarin and Adeniyi (2020), using panel data from 21 OECD countries, provided strong empirical support for a common Phillips Curve using Seemingly Unrelated Regression Estimation. Similarly, Sani and Yahaya (2021) confirmed a significant relationship between unemployment and inflation in Latvia. Beegle et al. (2020) analyzed the New Keynesian Phillips Curve using panel data and found a significant relationship between unemployment and non-

tradable inflation. In contrast, Arruda, Ferreira, and Castelar (2021) failed to establish a significant relationship using dynamic panel methods.

Gyeke-Dako et al. (2022) examined U.S. economic data from 1990 to 2019 and found weak long-run cointegration between inflation and unemployment but maintained that stabilization policies could still exploit the short-run trade-off. Fabayo and Ajilore (2021), using threshold regression analysis for Nigeria (1985-2020), identified a 6 percent inflation threshold beyond which inflation adversely affects economic growth. Chimobi (2023) analyzed the inflation-growth relationship in Nigeria using data from 2000 to 2020 and employed Johansen cointegration and Granger causality tests. The findings revealed a unidirectional causality running from inflation to economic growth, indicating that inflation significantly influences growth outcomes.

Adeleye et al. (2020) examined the relationship between money supply, prices, and output in Nigeria from 1970 to 2019 using an inflationary gap model. The results showed that inflation is primarily driven by money supply, although the study did not specify optimal thresholds.

Chaudhary (2021) similarly found bidirectional causality between money supply, inflation, and output in Nigeria between 1990 and 2020. Sari and Rofiuddin (2022) demonstrated that budget deficits contribute to inflation through increased money circulation, thereby negatively affecting real output.

Finally, Rizki and Solihati (2022) identified money supply, domestic food prices, exchange rate movements, and industrial output as key determinants of inflation in Nigeria. Inegbedion and Obadiaru (2021) also confirmed that inflation has a significant impact on the Nigerian economy, although the magnitude of this effect was not explicitly quantified.

In the empirical review, several studies have been conducted by scholars in this regard to explore the impact of inflation on poverty rate of different countries, but not in Nigeria, and, it is the gap this work intend cover. For instance, the work of Nazima (2018) for inflation and poverty was done in Pakistan; that of Maluleke (2012) was done in Sharpeville and that of Sugema, et al (2010) was done in Indonesia. The remaining scholars who did their work based in Nigeria where not on inflation and poverty rate. More so, this study covered the period of 2000 to 2023 of which none of studies did.

Methodology

Data Source

The data used in this research work were secondary in nature. This consists of data that has been in existence before the start of this research work. They were obtained from the World Development Indicator and Central Bank of Nigeria Statistical Bulletin, 2023. The data was collected on annual basis and consist of National Poverty Index (NPI), Inflation Rate (INF) and Basic School Enrolment (BSE) from 2000 to 2023.

The model used in this research work was adapted from the framework of Friedman and Schwartz (1965) of modern quantity theory of money as stated in theoretical framework. Their model restated thus:

$$(M/P)^d = L(r_s, r_b, \pi^e, W)$$

Where

$(M/P)^d$ is demand for money or money value proxy for poverty

M is nominal money demand; P is Price level; r_s is the expected real return on stock; r_b is the expected real return on bonds; π^e is the expected rate of inflation and W is real wealth.

Adapting this pattern, the present study specified the following econometric model with modification. Thus, the model:

Functional Model

$$NPI_t = f(INF_t, BSE_t) \dots\dots\dots 6$$

The econometric estimation form of the functional specification of models above is presented as follow:

$$NPI_t = \beta_0 + \beta_1 INF_t + \beta_2 BSE_t + \mu_t \dots\dots\dots 7$$

The Log Form:

$$\ln NPI_t = \beta_0 + \beta_1 \ln INF_t + \beta_2 \ln BSE_t + \mu_t \dots\dots\dots 8$$

Aprior expectation = $\beta_0 < \text{or} > 0$, $\beta_1 > 0$, $\beta_2 < 0$

Where:

NPI_t = National Poverty Index at Current Time; INF_t = Inflation Rate at Current Time; BSE_t = Basic School Enrolment at Current Time; μ_t = Stochastic Term at Current Time.

Model Estimation Autoregressive Distributive Lag (ARDL) econometric technique was adopted for this study. The ARDL is estimated when a mixed order of integration is evident among the time series in the model. The ARDL model is an ordinary least square (OLS) based model, which is applicable for both non-stationary time series as well as for times series with mixed order of integration.

The long-run equation of the selected Autoregressive Distributed Lag (ARDL (k)) model is specified as follows, where $X_{it}(X_{1t}, X_{2t}, \dots, X_{nt})$ and Y_t represent the explanatory or long-run forcing variables, and k denotes the optimal lag length.

Prior to estimation, several diagnostic tests were conducted to ascertain the suitability of the data for the analysis. These include tests of stationarity using the Augmented Dickey-Fuller (ADF) approach and the bounds test for cointegration. The stationarity test determines whether the time series variables are stationary at levels or require differencing, while the cointegration test examines the existence of a long-run equilibrium relationship among the variables. The choice of the ARDL estimation technique is therefore informed by the outcomes of both the stationarity and cointegration tests.

The preliminary analysis also involved an assessment of the descriptive statistics of the variables. Descriptive statistics provide information on measures of central tendency and dispersion, thereby offering insights into the distributional properties of the data and supporting valid statistical inference. The Jarque-Bera (J-B) test was employed to assess whether the regression residuals follow a normal distribution. A normal distribution is characterized by a skewness of zero and a kurtosis of three. The Jarque-Bera test is particularly efficient as it is based on the Lagrange Multiplier principle and exhibits maximum asymptotic power. The associated p-values indicate that most variables—foreign direct investment, gross domestic product, exchange rate, inflation, and population size deviate from normality, with the exception of employment. In addition, kurtosis values for all variables should be less than three, suggesting non-normal and non-stationary distributions (Stock & Watson, 2006). The positive skewness observed across the variables should indicate the presence of long-tailed distributions.

Unit Root Test

The unit root test is a statistical procedure used to examine whether a time series is stationary. A series is considered stationary if its mean and variance remain constant over time and if the covariance between periods depends only on the lag length rather than the specific time at which it is measured (Gujarati, 2005). Non-stationary series have undefined variances and covariances, which may lead to misleading regression results. Unit root tests therefore serve as a benchmark for selecting appropriate econometric techniques (Odo et al., 2016).

In this study, all variables should be tested at levels using both the Augmented Dickey-Fuller (ADF) and Phillips-Perron tests. The ADF test, developed by Dickey and Fuller in 1979, evaluates the presence of a unit root in a time series. The null hypothesis states that the series has a unit root ($H_0: \mu = 0$), while the alternative hypothesis suggests stationarity ($H_1: \mu < 0$). Under the null hypothesis, the series is non-stationary, whereas rejection of the null implies stationarity. The ADF statistic is obtained from the ordinary least squares (OLS) tau-test on the coefficient of the lagged dependent variable.

Where stationarity around a deterministic trend is assumed, a time trend is incorporated into the ADF regression. In this specification, t denotes the time index, β_0 is the intercept (drift term), α represents the coefficient of the time trend, δ_i are coefficients of the lagged difference terms, p is the lag length, and u_t is a white-noise error term.

Cointegration

Regressing one non-stationary variable on another often produces misleadingly high statistical results, a phenomenon known as spurious regression (Mukherjee et al., 1998). However, when two or more variables are non-stationary at levels but become stationary after first differencing, they are said to be integrated of order one, $I(1)$. If a linear combination of such variables is stationary, the variables are considered cointegrated, indicating the existence of a long-run equilibrium relationship.

Cointegrated variables require the inclusion of an error correction mechanism in the ARDL framework. Evidence of cointegration between variables such as poverty and inflation implies a stable long-term relationship. Consequently, an Error Correction Model (ECM) is estimated to capture the short-run dynamics while maintaining consistency with long-run equilibrium conditions. The ECM provides valuable insights into short-term adjustments following deviations from equilibrium.

The ECM expresses the short-run change in the dependent variable (Δy_t) as a function of short-run changes in the explanatory variables and an error correction term, which reflects the speed of adjustment toward long-run equilibrium. The coefficients of the differenced explanatory variables represent the immediate or impact effects, while the error correction term links short-run fluctuations to long-run behavior through a feedback mechanism.

Post-Estimation Diagnostics

Following estimation, several residual diagnostic tests were conducted to assess the robustness and reliability of the model. These include tests for serial autocorrelation, heteroscedasticity, and parameter stability using the CUSUM test. The autocorrelation test examines whether residuals are correlated over time, while the heteroscedasticity test evaluates whether the variance of the error term remains constant. Non-constant variance may result in inflated standard errors and weaken the reliability of statistical inference. Additionally, the Granger causality test was employed to determine the direction of causal relationships among the variables.

Results and Discussion

Table1: Descriptive Statistics Results

	InNPI	InINF	InBSE
Mean	3.968631	12.46488	3.854477
Median	3.981549	12.37879	3.815204
Maximum	4.203199	12.86190	3.985069
Minimum	3.666122	12.20126	3.793352
Std. Dev.	0.137826	0.241162	0.065262
Skewness	-0.439180	0.448455	0.764628
Kurtosis	2.564374	1.564488	2.006427
Jarque-Bera	1.562092	4.655858	5.404447
Probability	0.457927	0.097497	0.067056
Observations	24	24	24

Author's Computation, 2024

The table1 shows that NPI which is the dependent variable to have a mean value of 3.968631 percent. Also, the independent variables which include: Inflation Rate and Basic School Enrollment have mean values of 12.46488 and 3.854477 respectively.

The maximum and minimum values of NPI are 4.203199 and 3.666122 percent respectively. Also, the analysis was forfeited by the value of skewness and kurtosis of all variables in the model. The skewness is a measure of dispersion away from the value, while the kurtosis is a measure of symmetry of the histogram. The bench mark or decision rule for symmetrical distribution, for instance for skewness is how close the variable is to zero, while in case of kurtosis it is when the value is at 3.0 which is called mesokurtic. If the value is higher than 3.0 it is called leptokurtic and values lower than 3.0 are described as platykurtic. Hence, the value of skewness shows that some variables such as NPI and INF with values -0.439180 and 0.448455 are approximately zero, meaning the variables are normally distributed. But the variable, BSE with the value 0.764628 is highly skewed to the right as it is not approximately zero. Likewise, the variable, NPI with the value 2.564374 approximately 3 under Kurtosis is normally distributed except for INF and BSE with values 1.564488 and 2.006427 not approximately 3. Meaning that, the values of INF and BSE are described as platykurtic because their respective values are less than 3.0. The above description variables according to their respective bench marks (skewness and kurtosis) explain their asymmetric and symmetric distributive nature. Furthermore, the Jarque-Bera statistics is used to measure the normality of the variable used in estimation, it is used to verify whether the series error term is normally distributed. The statistics in table 1 also shows the Jarque-Bera probability values for NPI, INF and BSE are 0.457927, 0.097497 and 0.067056 respectively and all the variables indicating not normally distributed as their value all less than 5%. Based on the results of the JB, all variables are normally distributed as shown by their respective JB probability ratios ($\text{Prob} > 0.05$).

Table 2: Unit Root Results

Test at levels	Variables	P -Value	Order of Integration
	InNPI	0.0027	I(1)
	InINF	0.8608	I(0)
	InBSE	0.9609	I(0)
Test at First Difference	Variables	P-Value	Order of Integration
	InINF	0.0052	I(1)
	InBSE	0.0238	I(1)

Source: Author's computation, 2024

The unit root test results are shown in the table 2 indicating that the variables are stationary at various levels. However, InNPI is stationary at level, while InINF and InBSE are stationary at first difference. The mixture of the variables in the ADF analysis satisfies for the use of ARDL model in the regression analysis.

Table 3: Bounds Test for Cointegration

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.475508			
K	5	5%	3.12	4.25

Source: Author's computation, 2024

Drawing from the result of the stationarity test, it is clear that the order of integration for the variables in each of the three specified model is not the same. A mixed order of integration was evident in the model. By this, the test of cointegration adopted for the model is the ARDL Bounds Cointegration test. This is used to test if there is a long-term relationship between the variables used. Since at 5% (3.12) t-tabulated value in lower bound and upper (4.25) is less than t-calculated value (4.475508), it means the variables in the study have long-run equilibrium.

Table 4: ARDL Short-Run Estimation

Dependent Variable: InNPI

Variable	Coefficient		Std. Error	Prob.
t-Statistic				
InINF	0.016594	0.006962	0.0254	
2.383321				
InNPI (-1)*	-0.578051	0.203848	-2.835691	0.0091
InBSE**	-0.065679	0.128858	-0.509702	0.6149

Long-Run Estimation Result

InINF	3.312601	1.321256	2.507160	0.0009
InBSE	-0.265679	0.128858	-2.061797	0.0009
CointEq(-1)*	-0.578051	0.136447	-4.236441	0.0003
D-W = 2.191892				
R-Squared = 0.805644				
F-Stat = 9.896152 ,				
Prob(F-stat) 0.000529				

Source: Author's Computation, 2024

The results in table 4 represent both the short-run and long-run tests results of the ARDL model. The coefficient of determination, which tests the goodness-of-fit, shows that the independent variables explain the variations in the dependent variable at 80.1%. The F-test, which tests for the overall significance of the model, is also statistically significant while the speed of adjustment between the short-run and the long-run is 0.57 (57%). Finally, the result shows that there is a positive relationship between NPI and INF as expected from the apriori expectations. As INF increases by a unit holding other factor fixed, NPI increased by 3.312601 and vice versa. Again, INF is statistically significant at 5% level of significance INF probability is 0.0009 less than 5%, hence the alternative hypothesis is accepted, that there is a significant relationship between NPI and INF over the period.

Table5: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.023391	Prob. F(2,22)	0.4875
Obs*R-squared	0.742489	Prob. Chi-Square(2)	0.3636

Source: Author's computation, 2024

The serial autocorrelation helps to determine if the variables are serially autocorrelated or not. As the result shows using the Prob of F-stat (0.4875), there is no presence of serial autocorrelation.

Table 6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	8.770465	Prob. F(7,24)	0.4670
Obs*R-squared	23.00632	Prob. Chi-Square (7)	0.3317
Scaled explained SS	32.55961	Prob. Chi-Square (7)	0.5770

Source: Author's computation, 2024

The result is free from heteroskedasticity, which means the error variance is constant which is homoscedastic, as indicated by the probability value of 0.46 which is greater than 0.05.

Table 7: Granger Causality Test

Null Hypothesis Prob.	Obs	F-Statistic	
In_INF_ does not Granger Cause In_NPI_	22	2.0831	0.0106
In_NPI_ does not Granger Cause In_INF_		2.83243	0.0442
In_BSE_ does not Granger Cause In_NPI_	22	0.31193	0.7351
In_NPI_ does not Granger Cause In_BSE_		0.16574	0.8483

Source: Author's computation, 2024

The pair-wise granger causality test shows the direction of causality between the dependent and the independent variables. This does not necessarily co note a relationship between the variables. As shown table 7, there are bidirectional causalities between the NPI and INF. However, there is no causality between NPI and BSE over the period.

The results in Table 4 have shown the extent to which the independent variables affect the dependent variable over the period. Any increase in the independent variables will lead to an increase in the dependent variable and vice versa. It is evident that the inflation can actually causes poverty as the masses unable to afford what the need in the country as a result of high prices there by making them poor. The results in table 5 is contrary with the works of Uwatt (2012) and Ndiyo (2012) who looked at the relationship between HDI and economic growth and concluded that there is a positive and significant relationship with the variables in their studies. But the results agrees with the works of Gylfason and Zoega (2013) who examined the impact of gross secondary-school enrolment, public expenditure on education relative to national income and expected years of schooling for girls to the distribution of income as measured by the Gini coefficient as well as to economic growth across countries and found a significant relationship between the variables. Finally, the findings agree with the works of Bakare (2016) who investigated the growth implications of human capital investment in Nigeria using vector autoregressive error corrections mechanism.

CONCLUSION AND RECOMMENDATIONS

From the findings, the study concludes that the cause to poverty lies with the inflation in the country. The BSE and INF have significant impact on the NPI. With

the governments interventions in such areas as basic education, job creation and better health care for the people, there will be a declining poverty trajectory over the years.

The also concludes that, there is a bidirectional causalities between the NPI and INF. However, there is no causality between NPI and BSE over the period.

The study recommends that:

1. Families should be encouraged to enroll their children to basic schools as this has been found to be beneficial in poverty reduction.
2. Moreover, policies and structures that will reduce inflation must be put in place if the government must be taken seriously when it comes to fighting poverty.
3. Finally, it is therefore recommended that public and private investment in education, health care and job creation should be increased significantly yearly in effort to achieve significant reduction in poverty level in the country. As the saying goes "Health is Wealth". A healthy population will contribute significantly to wealth creation and poverty reduction.

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