

Food Price Inflation and Agricultural Sector Performance in Nigeria

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Abstract- Food price inflation is a very important macroeconomic variable because everyone in the economy is affected by the experience of a shock. Of particular importance therefore is the effect of food price inflation on the Nigerian agricultural sector. The study hinges on the endogenous growth theory, which emphasizes the need for an economy to grow from within. Data was sourced from Ha, et al. (2021) and World Development Indicators (2025). This study ascertained the nature and strength of the link between food price inflation and the Nigerian agricultural sector output and exports. Correlation analysis and the autoregressive distributed lag were used to analyze time series data from 1981 to 2025. The study found that food price inflation adversely affected agricultural output while credit to the private sector during the preceding year spurred agricultural output in the current year. However, the study also found that credit to the private sector was too low to sustain increased agricultural output in the long run. Also, current-year capital was found to be key to agricultural exports both in the short run and long run. So, the study concluded that financial credit to farmers spurs agricultural exports. Therefore, the study recommends that agricultural marketing boards be reintroduced to suppress the rising cost of agricultural produce and that the government should subsidize the cost of transportation of agricultural produce to the market. In addition, monetary policies should be directed at making more credits available to farmers and mechanized farming should be encouraged by the Nigerian government. This study contributes to the literature by revealing the negative effect of food price inflation on output and the need for an increase in the financial support of the Nigerian government for agriculture.

Keywords: Autoregressive distributed lag, Agricultural exports, Financial Credit, Food price inflation, Nigerian agricultural sector

I. INTRODUCTION

Inflation is the sustained increase in the general price level of commodities in an economy over a long period. Inflationary trends are precipitated in an economy via different channels. Inflation could be generated through food prices, the cost of energy products like fuels for transportation and powering

production plants, unbridled money supply, and so on. Inflation raises the cost of living; making life unbearable for the citizens and gives way to poverty when the price of essential commodities continues to escalate within a country. The purchasing power of citizens; especially the poor shrinks due to rising prices while income remains constant or increases at a reduced rate compared to the rise in prices. This is usually the experience of many in developing low-income countries, unlike developed countries where the inflation rate is controlled and the effect on citizens is cushioned by appropriate stabilization policies. As commodity prices rise in developing countries, which are characterized by poor living standards and low per-capita income, the ill effect is largely felt by citizens, whose consumption expenditure usually varies directly with income. Arikpo et al (2024) noted that food price inflation, energy inflation, and manufactured goods inflation significantly affect workers' productivity. Therefore, policymakers in the economy work assiduously to keep inflation as low as possible for the smooth running of the economy.

Food price inflation has been on the increase on a global level in recent times (Ha, et al. 2021). The increase in food prices has spurred inflation around the world since food is a key element of the Consumer Price Index (CPI), which is most commonly used as a measure of inflation. However, the effect of a rise in food prices on an economy can be in diverse ways. More so, inflation affects developing economies differently compared to developed ones. Developing economies have a GDP-weighted average of food price inflation of 4.2%, while that of developed economies is approximately 9.4% (World Bank's Global Database of Inflation, 2024). This shows that the share of food price inflation in the income level in developing countries is lesser than in developed countries. Therefore, lower-income countries are more affected by food price inflation compared to higher-income countries.

Food price inflation may be from the demand side if the increase in income of households is stimulating

demand and causing a rise in food prices. Usually, food prices are relatively flexible and an upward trend may be as a result of a general rise in demand for food items. In this case, an increase in food prices should be an early signal for policymakers to take precautions against severe inflationary trends. This is because the outcome of an uncontrolled food price rise can lead to the inability of citizens to afford and consume such food items (Adenuga, 2018).

From another perspective, it is crucial to note that food price shock is a transitory one; if it is coming from the supply side, it is expected that the economy will automatically adjust itself as households reduce consumption in reaction to a rise in food prices. Also, the decision of policymakers to eliminate the short-term effect of a rise in food prices on inflation might not be timely due to time lag. On the other hand, even if the food price shock is expected, a restrictive monetary policy reaction to swiftly revert prices to the previous level would most probably be excessive and is likely to cause a fall in output and employment. However, one should not ignore the possibility of second-round effects on salaries and inflation expectations. This is why policymakers in the economy should have all hands-on-deck to formulate and implement timely policies that will prevent further food price shocks and upward inflationary trends.

Determining the nature of a food price shock is not an easy task for policymakers. Whether transitory (supply) or permanent (demand), or whether food price shock is going to generate second-round effects on inflation is also a herculean task. Therefore, reducing food price inflation though desirable and

crucial to economic development and the well-being of citizens requires careful attention. This is especially important in developing countries like Nigeria where the effect of skyrocketing food prices on CPI is relatively high. Lowering food price volatility is not beneficial for farmers and consumers alone; but is essential for inflation targeting by policymakers as well.

Food price inflation has largely affected the well-being of Nigerian citizens as well as the productivity level in the country. Akanbi (2020) noted that food price inflation aggravates poverty. World Population Review (WPR, 2024) revealed that Nigeria ranks the highest in the poverty index, with most of her population living in poverty; exceeding the most populous nation, India. Also, the per-capita income level in Nigeria, which averaged US\$1411.20 in 1990 fell to US\$1342.98 in 2000; and rose again to US\$1787.72 and US\$2379.20 in 2010 and 2020 respectively (World Bank, 2023). However, a dwindling trend has been noticed in the last three years. In addition, food price inflation rose from an average index of 23 in 1990 to 28 in 2000. Thereafter, food price inflation nose-dived to approximately 14 in 2010 and further to 13 in 2020. Between 2021 and 2023, the index of food price inflation averaged 14 (Ha, et al. 2021). Figure 1 shows the trend of GDP per capita and the different types of inflation – food price inflation (FCPI), headline inflation (HCPI), and energy price inflation (ECPI). Over the years, there have been fluctuations in the different types of inflation. However, in recent times, food price inflation seems to be rising faster than other types of inflation.

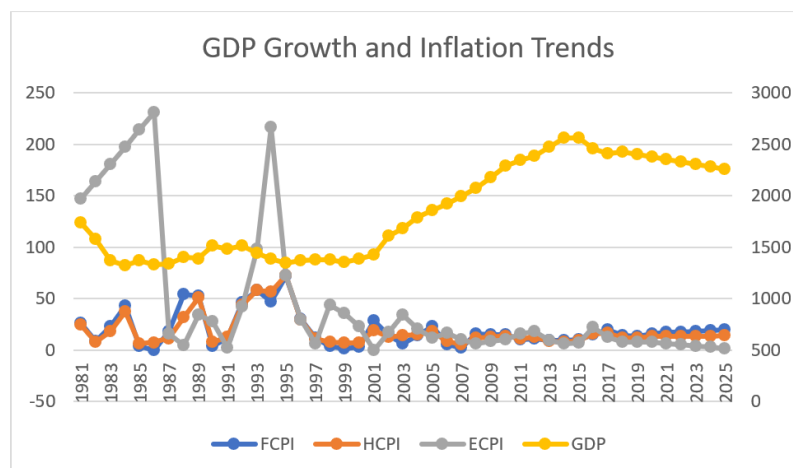


Figure 1: GDP Growth and Inflation Trends

Source: WDI (2024) and Ha, et al. (2021)

The Nigerian Economic Summit Group (NESG, 2024) noted that in January 2024, Nigeria's food price inflation rose from 33.9% in December 2023 to 35.4% in January 2024. Also, the number of food-insecure Nigerians increased significantly from 66.2 million in the first quarter of 2023 to 100 million in the first quarter of 2024 (WFP, 2024), with 18.6 million people facing acute hunger and 43.7 million Nigerians showing crisis-level hunger or above crisis-level hunger coping strategies as of March 2024.

Recently, Nigerians took to the streets for a protest titled 'End Bad Governance' due to the poor state of the economy and in particular, the hunger ravaging Nigerians due to food price inflation. This protest was not devoid of crime and destruction of properties by hoodlums, who seized the opportunity to cause further havoc to the economy. Despite the richness of Nigeria in natural resources, citizens of the country still wallow in poverty and the current food price inflation is more worrisome. Oyelola (2019) found that food price inflation adversely affects agricultural productivity. If the issue of food price inflation is not handled early enough, it might lead to low productivity of workers, further upshoot in the poverty index, increased criminal and illegal activities, and breakdown in law and order.

Governments in Nigeria have at various times in history embarked on programmes and policies to ensure food security, price stability, and reduced inflation. Many of these programmes failed to achieve the desired level of success due to inadequate funding, corruption, and poor implementation. These programmes include the National Accelerated Food Production Programme (NAFPP) in 1973 for effective food production activities. Operation Feed the Nation (OFN) in 1976, aimed at teaching farmers how to use modern farming techniques to encourage self-sufficiency in food production. Agricultural Credit Guarantee Schemes (1976-1980), established agricultural commodity marketing and pricing boards and promulgated the land use policy. During the same period, River Basin Development Authorities, Agricultural Co-operatives Policy, and Agricultural Mechanization Policy were also established. In addition, the Green Revolution was established in 1979 to check the importation of food items and encourage the production of food items locally. Several agricultural research institutes were established such as the National Cereal Research

Institute (NCRI), National Agricultural Extension and Research Liason Service (NAERLS), Veterinary Research Institute (VRI), Cocoa Research Institute of Nigeria (CRIN), Forestry Research Institute of Nigeria (FRIN), and Rubber Research Institute of Nigeria (RRIN) (Ha, et al. 2021).

Furthermore, in 1983, the Directorate of Food, Roads and Rural Infrastructure (DFRRI) was established to encourage commercial food production as against the common practice of subsistence farming. Land and farm inputs were provided to farmers at highly subsidized rates. In 1986, the Structural Adjustment Programme (SAP) was introduced to encourage commercial and large-scale production of agricultural products. It is noteworthy that Nigeria had its first National Agricultural Policy in 1988. This policy was reviewed in 2001 to aim at self-sufficiency and food security. Also, the National Policy on Food and Nutrition was introduced in 2001, and the National Poverty Eradication Programme (NAPEP) in 2001. Followed by the Youth Empowerment Scheme (YES) in 2003 and the National Economic Empowerment and Development Strategies (NEEDS) in 2004.

Around the early 2000s, the focus of the Nigerian government shifted from agriculture and food security to poverty reduction and empowerment strategies through other means apart from agriculture. Thereafter, the Nigerian Agricultural Transformation Agenda (ATA) was formulated in 2011 to revitalize agriculture and catapult Nigeria into a leading player in the global food market. From 2016 to 2020, the Agricultural Promotion Policy (Green Alternative) was introduced to spur the growth and development of the Nigerian agricultural sector. In addition, there was the School Feeding Programme in 2016 and the Social Welfare Service Scheme (SOWESS) in 2021. However, all these programmes have proven insufficient in transforming the Nigerian economy and giving the citizens better living standards.

Therefore, this study probes into the benefit (or otherwise) of food price inflation on agriculture output and exports in Nigeria; and determine the extent to which food price inflation affects the Nigerian economy.

Following the background issues discussed, the specific objectives of the study are to:

- i. determine the association between food price inflation and the Nigerian agricultural sector;
- ii. examine the effect of food price inflation on the Nigerian agricultural output;
- iii. investigate the effect of food price inflation on agricultural exports in Nigeria.

Previous studies have examined the effect of inflation on the aggregate economy (Liyanage, 2021, Piper & Lelis, 2020) as well as other macroeconomic variables such as poverty (John, 2019) and employment (Farahani, 2020). The current study is distinct from previous ones in that it uniquely singles out inflation generated by rising food prices to examine its effect on the Nigerian economy. Food price inflation is key to the Nigerian economy because agriculture is one of the alternative sectors to which the government is diversifying the economy. Food is also an essential commodity; which is consumed daily by all. Anything that affects food therefore is of major concern in the economy. In addition, the study examined the effect of food price inflation on key variables in the economy (agricultural output and agricultural exports). The share of agriculture in Nigerian output and employment is highly significant (World Development Indicators, 2025). Besides, agriculture contributes greatly to Nigerian exports and inflation generated from this sector is likely to significantly affect the aggregate economy and other macroeconomic variables such as interest rate and exchange rate, which are exogenously determined.

The study is therefore beneficial to stakeholders such as farmers, agricultural agencies and Nigerian citizens; in providing a clearer view on the effect of food price inflation so as to decide on how to adjust to the current challenges of food price inflation. Furthermore, the study provides direction to government and policymakers in strategizing on policies and programmes to tackle the skyrocketing food price shock.

The study covers a period of 45 years; from 1981 to 2025. The time span was carefully chosen to provide insight into the reason for policy somersaults experienced in Nigeria over the years. Nigeria, being an agrarian country is not expected to have food price crisis but in the face of current realities, there is need

for an investigation into this peculiar experience in the country.

II. LITERATURE REVIEW

Different schools of thought have associated inflation with factors they consider to affect demand and supply and that creates lags that manifest in higher prices of goods and services in an economy over some time. The Quantity Theory of Money is a very old economic theory, that states that the quantity of money in circulation is primarily responsible for the fluctuations in the general price level. This implies that the level of money supply determines the level of inflation in an economy. El-Rasheed et al. (2023) found that increased money supply significantly impacts food prices both in the short run and in the long run. Furthermore, monetary economists posit that inflation is a rapid increase in the quantity of money rather than an increase in the quantity of output. Monetary Theory of Inflation has Milton Friedman in the fore. Friedman is of the view that monetary instruments are more effective in price and economic stabilization than fiscal policy. Therefore, inflation occurs as a result of an excessive increase in money supply over the rate of growth of national income (Femi & Emmanuel, 2015).

Keynesian Theory of Inflation is another, which was propounded by John Maynard Keynes and his followers, who were of the view that an increase in the aggregate demand is the source of demand-pull inflation. Demand-pull inflation occurs when the aggregate demand for goods and services exceeds the aggregate supply of the same in an economy. When this happens at the full employment level, an inflationary gap arises. The larger the gap between aggregate demand and aggregate supply, the greater the level of inflation. To tackle this problem, any policy that will reduce any of the components of aggregate demand will be appropriate. This involves a reduction in government expenditure, tax increase, and regulation of money supply.

The Cost-Push Theory of Inflation is caused by wage increases enforced by unions and profit increases by employers. This type of inflation became popular in the 1950s and 1970s as the principal cause of inflation. It was known as 'New Inflation'. The basic cause is the rise in money wages more rapidly than the productivity of labour. When the labor unions demand more wages from the employers, if granted,

the employers in turn will increase the cost of their products which will result in cost-push inflation. The resultant price increase may affect some other companies that use the products whose prices have risen thereby pushing up their prices. The increase may be on a national scale and may be sustained over time (Totonchi, 2011).

Structural Inflation Theory explains inflation in developing countries in a slightly different way. It considers structural factors to be associated with more demand or less demand, supply increase or decrease. Structural improvement brings about rapid economic growth and when the less developed countries fail to change their deep-seated underdeveloped structure, they will find themselves in an inflationary situation. The structural theorists argue that an increase in investment expenditure and the expansion of the money supply to finance it are the only proximate and not the ultimate factors responsible for inflation in developing countries (Supriya, 2016). This theory is related to the case in Nigeria where the population of the country is growing while the economic and social structures remain unchanged. Hence, the difficulty in tackling inflation in the country. Fatukasi (2012) reported ten structural variables such as agricultural bottlenecks, industrial production, imports, exports, food import and production, trade union militancy, indirect taxation on companies, wage bill, government expenditure in the forms of deficit financing, and money supply to be responsible for inflation in Nigeria for the period between 1970 and 1980. Kohlscheen (2022) also examined the link between food price inflation and macroeconomic factors.

Rational Expectations economists such as Lucas (1972), McCallum (1987), and Sargent and Hasen (1980) assumed that economic agents form their major economic expectations rationally based on all current, and past relevant information available and not only on past information or adaptive price expectations. Their view was that if the monetary authority announces a monetary stimulus in advance, people expect that prices will rise. This will make the forward-looking rational expectation adjustments of economic agents to ensure that the policy prescription or pronouncement of the monetary authority fails. Also, if a policymaker announces an anti-inflationary policy in advance, the policy will not achieve its desired goal if people do not believe that the government will carry it out (Femi & Emmanuel,

2015). According to Totonchi (2011), the neoclassic synthesis of inflation is of the view that monetary and demand factors are key determinants of business cycles. The synthesis views expectations as critical to the inflation process but that expectation can be managed by a monetary policy rule.

Considering growth theories, Harrod-Domar's Growth theory presupposes that growth depends on a country's saving rate, capital-output ratio, and capital depreciation. The theory has however been criticized for centering on the assumption of exogeneity for all key parameters; for ignoring technical change and for not allowing for diminishing returns when one factor expands relative to another. On the other hand, the neoclassical theory of Solow argues that growth reflects technical progress and key inputs (labour and capital). Solow's theory allows for diminishing returns and perfect competition but not externalities. In the neoclassical growth process, savings are needed to increase capital stock. Capital accumulation has limits to ensure diminishing marginal returns, and capital per unit of labour is limited. The theory further holds that economic growth depended on the population growth rate, and the economic growth rate among countries was supposed to converge to a steady state in the long run. Despite modifications to the neoclassical theory, the basic limitation of the theory is that it hardly explains the source of technical change.

Endogenous Growth theory emphasizes that economic growth is an outcome of the domestic economic system and not a result of external forces. Endogenous growth theory posits that economic growth depends on the accumulation of knowledge and the accumulation of capital. Also, anything that enhances economic efficiency is good for growth. Therefore, Indigenous knowledge through 'learning by doing' or 'innovative processes' contributes to economic growth. The theory introduced human capital, governance, and institutions into the overall growth objectives. Furthermore, Schumpeterian Growth emphasized the importance of temporary monopoly power as a motivating force in the innovative process. Technological advancement originates from what people do and the existence of monopoly rent. Government should be seen as a critical agent that provides the right macroeconomic environment for growth and reduces uncertainty.

Empirical studies have shown that there exists a negative impact of food price inflation on economic growth (Quedraogo, 2018 in Africa; Owusu, 2017 in Ghana & Oladosu, 2024 in Nigeria). However, Ademola (2016) reported a positive effect of food price inflation on economic growth. Furthermore, Ugochuckwu, et al found a non-linear relationship between food price inflation and economic growth. Furthermore, studies have examined the effect of food price inflation on macroeconomic variables like household consumption, poverty, productivity, nutritional outcomes, and others. Adenuga (2018) using the Ordinary least square regression method found that food price inflation positively affects household expenditure. This implies that household consumption spending expands as the prices of food items increase. However, real consumption may likely have reduced due to a shrink in the purchasing power of households. Akanbi (2020) using the dynamic panel analytical technique, revealed the exacerbating effect of food price inflation on poverty, while Oyelola (2019) using the Vector autoregressive technique showed how food price inflation dampens agricultural productivity. Ukeje (2021) using the Ordinary least square regression technique noted that food price inflation adversely affects nutritional outcomes. An increase in food prices reduces household purchasing power and prevents people from getting all the food items that could supply them with the nutritional value needed for their well-being.

Kohlscheen (2022) using the Vector autoregressive technique found that Phillips' curve relation holds for food price inflation and that increased food production and lower food exports reduce food inflation. El-Rasheed, et al. (2023) using the autoregressive distributed lag technique found that increased money supply significantly impacts food price inflation both in the short-run and in the long-run. Bello & Sanusi (2023) examined the impact of monetary policy on food price inflation and output. The study showed that monetary policy intervention to regulate the consumer price index by increasing food supply could lead to a more than proportionate rise in food price inflation compared to the elasticity of domestic food output to increase in money supply. Moreover, Oladosu (2024), using the Ordinary least square regression technique found that food price inflation adversely affects economic growth.

Policies have been introduced to tackle the issue of food price inflation and agriculture in Nigeria. The

National Green Revolution Plan (NGRP) was launched in 1980 to handle food security in Nigeria. The aim of the programme was defeated due to high-level corruption. Directorate of Food, Roads and Rural Infrastructure was established in 1986 to provide rural roads and support food production. More feeder rural roads were constructed, implementation of a national water supply scheme commenced and rural markets and electrification programme was launched to enhance agricultural production. However, the programme failed due to a lack of funds and commitment and finally died in the face of massive corruption.

Moreover, Agricultural Development Projects (ADPs) were established in the different states in Nigeria to provide extension, technical support, and training for farmers. However, lack of funds has inhibited the achievement of the aims of these projects. Special Programme for Food Security (SPFS) was established by the Nigerian government and with the assistance of the Food and Agriculture Organisation (FAO), information was provided to farmers on accessible technologies to enhance food production and substantial increase in income levels of farmers. Also, the Food and Tuber Expansion Programme supported by the International Fund for Agricultural Development (IFAD) was created to make available necessary information on improved processing technology and expansion techniques for cassava and cassava products. Fadama Development Project was established to ensure all-season farming through large-scale irrigation systems or naturally flooded areas of arable crops, plants, fruits, and vegetables. Community-based agriculture and rural development schemes such as farm settlement or back-to-land programmes were also introduced to encourage men to engage in farming by providing them with material and financial support. Unfortunately, these projects were not sustained over time. In addition, the National Economic Empowerment Development Strategy (NEEDs) gave priority to agriculture and peasant farmers. NEEDs, a medium-term strategy by the federal, state, and local government encouraged private sector participation for the achievement of effective implementation of an export-driven agricultural sector. NEEDs also recorded little achievement. Several other policies and programmes thereafter recorded minimal success levels. Therefore, a need to unravel the root cause of the limited success record in the Nigerian agricultural sector.

Existing studies hold conflicting views on the effect of food price inflation on economic growth. For example, while some studies (Nnamdi et al, 2019, Oladosu, 2024) hold the view that food price inflation negatively impacts economic growth, Ademola (2016) supported a positive effect of food price inflation on economic growth. The inconclusive findings of previous authors on the link between food price inflation and the economy call for further studies to establish the link between the two variables. In addition, studies have examined the impact of food price inflation on household expenditure (Adenuga, 2018), nutritional outcomes (Ukeje, 2021), poverty (Akanbi, 2020), and agricultural productivity (Oyelola, 2019) but, there still exists the gap of the effect of food price inflation on food exports, which is one area this study delves into. Finally, in recent times Nigeria has experienced drastic rises in food prices despite policy initiatives, therefore the need to examine the extent to which this occurrence has affected the agricultural sector of the local economy.

III. THEORETICAL FRAMEWORK AND METHODOLOGY

The study hinges on the endogenous growth theory, which argues that a country should develop its economy internally. Long-run growth depends solely on internal forces rather than external trade so, a country should harness its internal resources for effective and efficient production. This could be achieved by developing new forms of technology and by improving the skills and productivity of human capital. Endogenous growth theory is a development of the neoclassical theory of exogenous growth. Neoclassical economists believe that to enhance the growth rate of output per capita in the long run, technological knowledge must advance. Solow (1956) and Swan (1956) demonstrated this using the neoclassical growth model and found that in the absence of technological progress, diminishing returns will set in and after some time, economic growth will cease.

Solow and Swan further assumed that if everyone saves part of their income, there will be capital accumulation. The capital stock if invested leads to an increase in output but as a result of depreciation, savings will not be able to grow at the same pace with output. Thus, savings will not have a long-run effect on economic growth. Also, with an increasing

population coupled with the effect of depreciation, the accumulated stock of capital will soon be eaten up. Therefore, the emergence of the Solow-Swan model, where a productivity parameter was introduced to represent technological change that continually offsets the dampening effect of diminishing returns.

Endogenous growth theory challenges the neoclassical view by positing that long-run economic growth is possible through technological progress and that growth can be influenced by economic factors within the economy. The theory further submits that technological progress take place through innovations resulting from the expenditures of profit-seeking firms like research and development, trade policies of government, competition, education, taxes and intellectual property.

The relevance of this theory to the current study is that the effect of escalating food price inflation has been largely felt by the common man in Nigeria. The prices of food items have more than doubled and poor Nigerians, who are worse hit cannot even afford three square meals per day. Skyrocketing commodity prices and the continuous depreciation in the value of naira remain a threat to the well-being of Nigerians. If these issues are not quickly addressed, the level of exports might be negatively affected. Endogenous growth theory therefore provides the platform for which the problem of inflation and its likely effect on the aggregate economy and its sectors can be tackled by looking inward.

Secondary data for the period of 45 years from 1981 to 2025 was obtained from Ha, et al. (2021) and World Development Indicators (2025). These sources provide World Bank data which are reliable and comprehensive data on food price inflation and other macroeconomic indicators.

Following Romer (1996), we have:

$$Y_t = K_t^\alpha [A_t L_t]^\beta \quad 1$$

Where Y represents output, K represents capital, A represents knowledge embodied in labour, L represents labour, α and β represent the elasticities of output with respect to capital and labour respectively, and t represents time.

The economic model can be specified as:

$$Y_t = f(L_t K_t) \quad 2$$

Where Y represents output, L represents labour, K represents capital, f shows functional relationship and

t represents time. Other variables such as inflation, exchange rate, and interest rate, which have a bearing on the price of labour and capital can be introduced into the model. High inflation indirectly influences labour wages and interest rates upwards. As commodity price rises and real wage falls, labour agitates for an increase in nominal wages. This leads to the price-wage spiral; putting more pressure on the cost of production.

$$Y_t = f(L_t, K_t, IF_t, ER_t, IR_t) \quad 3$$

Where IF represents food price inflation ER represents exchange rate, and IR represents interest rate. The model can be further adapted to the study by examining the effects of the explanatory variables on agricultural output and on agricultural exports.

$$AG_t = f(L_t, K_t, IF_t, ER_t, IR_t) \quad 4$$

Where AG represents the agricultural output.

$$X_t = f(L_t, K_t, IF_t, ER_t, IR_t) \quad 5$$

Where X represents agricultural exports.

The autoregressive form of the model capturing the effect of food price inflation on agricultural output is specified as:

$$\begin{aligned} \Delta \ln AG_t = & \alpha_0 + \alpha_1 \Delta \ln AG_{t-1} + \alpha_2 \Delta \ln L_t + \\ & \alpha_3 \Delta \ln K_t + \alpha_4 \Delta \ln IF_t + \alpha_5 \Delta \ln ER_t + \alpha_6 \Delta \ln IR_t + \\ & \gamma_1 \ln AG_{t-1} + \gamma_2 \ln L_t + \gamma_3 \ln K_t + \gamma_4 \ln IF_t + \\ & \gamma_5 \ln ER_t + \gamma_6 \ln IR_t + \mu_t \end{aligned} \quad 6$$

Equation 6 is the unrestricted version of the ARDL model, where α_1 – α_6 are the elasticities of the corresponding explanatory variables, Δ is the difference operator, γ_1 – γ_6 are the long-run multipliers of the explanatory variables and μ_t is the error term, which captures other factors affecting agricultural output that were not included in the model. Furthermore, the ARDL model for the effect of food price inflation on agricultural exports is specified as:

$$\begin{aligned} \Delta \ln X_t = & \beta_0 + \beta_1 \Delta \ln X_{t-1} + \beta_2 \Delta \ln L_t + \beta_3 \Delta \ln K_t + \\ & \beta_4 \Delta \ln IF_t + \beta_5 \Delta \ln ER_t + \beta_6 \Delta \ln IR_t + \vartheta_1 \ln X_{t-1} + \\ & \vartheta_2 \ln L_t + \vartheta_3 \ln K_t + \vartheta_4 \ln IF_t + \vartheta_5 \ln ER_t + \\ & \vartheta_6 \ln IR_t + \varepsilon_t \end{aligned} \quad 7$$

Equation 7 is the unrestricted version of the ARDL model, where β_1 – β_6 are the elasticities of the corresponding explanatory variables, Δ is the difference operator, ϑ_1 – ϑ_6 are the long-run multipliers of the explanatory variables and ε_t is the error term which captures other factors affecting agricultural exports that were not included in the model.

The descriptive properties of the variables were examined, then due to the non-stationarity of most macroeconomic variables at levels, the study examined the stationarity of the variables using

Augmented Dickey-Fuller and Phillips Perron Unit root tests. The study proceeded to determine the nature and strength of association between the variables using correlation analysis. Due to the combination of stationarity levels, the study proceeded to examine the effect of food price inflation on the Nigerian economy using the Autoregressive Distributed Lag technique (ARDL). First, the study used the ARDL Bounds test to determine the existence or non-existence of long-run association among the variables before proceeding to the ARDL regression analysis. Finally, diagnostic tests were carried out to validate the results.

A priori, it is expected that labour and capital would positively affect the agricultural sector of the economy and exports, while food price inflation and the interest rate would negatively affect the agricultural sector and exports.

IV. RESULTS AND DISCUSSION

Table 1 presents the descriptive analysis of the variables. The mean values are presented in the first column. The average value of agricultural value-added is US\$6.05e+10; average food exports as a percentage of merchandise exports is 1.7%. The implication is that most of the food items produced in Nigeria are consumed locally. Average employment in the agricultural sector as a percentage of total employment is approximately 45%. This means that the agricultural sector provides employment for many Nigerians. The average domestic credit available for investment as a percentage of gross domestic product is 17%. This represents less than one-fifth of the national output. The implication is that domestic credit provided by the financial sector for investment in agriculture is very minimal. The average index of food price inflation is 19. This value is quite low compared to the maximum value of 72. The implication is that for many of the periods considered in this study, food price inflation was low. The average index of the real effective exchange rate is approximately 143. This mean value of the exchange rate is very low compared to the maximum value of 541. The implication is that the real exchange rate was low for many of the years under review. The average interest rate is 0.2%; showing that the real interest rate was also very low during the period covered by the study. Standard deviation values show that the series for employment in agriculture, capital, and interest rate are widely

dispersed from the mean, while that of food exports, food price inflation, and exchange rate are closer to the mean values.

Table 1: Descriptive Analysis of Variables

Variable	Mean	Std. Dev.	Minimum	Maximum
Agricultural value-added	6.05e+10	4.13e+10	1.53e+10	1.39e+11
Agricultural exports	1.734812	1.499076	0.0156583	5.338675
Employment in agriculture	44.61219	5.640787	35.31740	50.17200
Capital	17.21342	6.933031	3.023980	29.60391
Food price inflation	19.27059	17.04147	0.100000	72.10000
Exchange rate	142.7371	115.7945	50.16845	541.4648
Interest rate	0.201223	13.88978	-65.85715	18.18000

Source: Author's Computation (2026)

The study proceeded to test the level of stationarity of the variables. The result of the unit-roots includes the Augmented Dickey-Fuller (ADF) test and the Phillip Perron test. The critical value for the tests is 2.94. The results of both tests show that the variables were found to be stationary at different levels. While

food price inflation and interest rate were stationary at level, other variables became stationary at first difference. This result implies that no other method of regression analysis will be suitable for this analysis other than the autoregressive distributed lag technique.

Table 2: Unit Roots Test

Variable	Augmented Dickey-Fuller			Phillip Perron		
	Level	First Diff	Remark	Level	First Diff	Remark
Agric value-added	0.283	6.209	1(1)	0.285	6.209	1(1)
Exchange rate	2.959	4.918	1(1)	2.445	4.777	1(1)
Food price inflation	5.519	7.604	1(0)	5.724	11.666	1(0)
Interest rate	11.267	13.573	1(0)	9.833	17.687	1(0)
Capital	2.134	5.868	1(1)	2.091	9.813	1(1)
Employment in Agric	1.694	4.445	1(1)	1.047	4.567	1(1)
Agricultural exports	2.218	9.273	1(1)	2.132	9.277	1(1)

Source: Author's Computation (2026)

Furthermore, the study examined the link between the variables. The result of correlation analysis provides evidence of the fact that the model is free from the problem of multicollinearity among independent variables. Also, the result shows that a strong association exists between employment in the agricultural sector and agriculture value-added. Agricultural exports (0.098) and food price inflation (-0.031) however show a weak association with agriculture value-added. The result aligns with Oladosu (2024) who upholds the view that food price inflation is inversely associated with economic growth. As prices of agricultural products rise, agricultural output falls. This might be attributed to the consequential decline in the demand for

agricultural products due to the hike in price. It is therefore expedient for policymakers and other stakeholders to check the inflationary trend in food prices. Capital was weakly but positively associated with agriculture value-added depicting the crude method of practicing agriculture instead of mechanized farming. Also, this result implies that the control variables move in opposite directions to agricultural output. Exchange rate and interest rate were weakly and negatively associated with agriculture value-added. The inverse relationship implies that agriculture value-added moves in an opposite direction to the exchange rate and interest rate.

Table 3: Correlation Matrix

	AG	L	X	IF	K	ER	IR
AG	1.000000						
L	-0.947711	1.000000					
X	0.098313	-0.312705	1.000000				
IF	-0.031372	0.005902	0.057441	1.000000			
K	0.367375	-0.537209	0.725502	0.158935	1.000000		
ER	-0.429455	0.269970	0.183866	-0.126300	-0.021660	1.000000	
IR	-0.282533	0.232108	0.031562	0.183630	-0.062472	0.246474	1.000000

Source: Author's Computation (2026)

ARDL Bounds test was conducted to ascertain the existence of long-run association among the variables. The result in Table 4 shows that a long-run relationship exists among the variables since the F-statistic is greater than the upper bounds at the

different levels of significance. Also, the Akaike information criteria (AIC) graph in Appendix 1 justifies the selection of the variables included in the model.

Table 4: ARDL Bounds Test Result

Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	5.771	10%	2.63	3.35
K	2	5%	3.10	3.87
		2.5%	3.55	4.38
		1%	4.13	5.00

Source: Author's Computation (2026)

The study proceeded to examine the effect of food price inflation on the Nigerian agricultural sector. The results are presented in Table 5. The regressors were captured at lag 3. The significance of the cointegrating equation and its negative coefficient shows that the speed of adjustment of agricultural output to changes in the explanatory variables is significant and less than one. The result implies that at least one cointegrating equation exists, and there is evidence to support the statistical significance of the result at the 1% significance level (lsf). This implies that the changes in the dependent variable, agricultural output can be significantly explained by the independent variables at the 99% confidence level.

In the short run, the previous year's agricultural output, food price inflation, and capital insignificantly affect the current year's agricultural output. Furthermore, the coefficients of the previous year's agricultural output, food price inflation, and capital (-0.004, -0.031, and -0.021) were negative; implying an inverse relationship with agricultural output. This result shows that dependence on the

previous year's agricultural output negatively affects the current year's production; although minimally. Similarly, lagged values of food price inflation and capital minimally affect current-year agricultural output. However, current year food price inflation negatively and significantly affects agricultural output at the 5% lsf. The result is in line with the findings of Nnamdi, et al (2019) and Oladosu (2024). Also, current-year capital and interest rates negatively but insignificantly affect agricultural output.

In the long run, food price inflation and capital negatively but insignificantly affect agricultural output. This implies that the long-term effect of food price inflation on agricultural output will be negative. Persistent rise in food prices will lead to reduced agricultural output. Also, capital accumulation will not lead to increased agricultural output. The result further shows that the constant value of agricultural output both in the short and long-run, positively but insignificantly affects current agricultural output. This implies a breakdown in the agricultural sector in terms of contribution to output.

Table 5: Effect of Food Price Inflation on the Nigerian Agricultural Sector

Short-run Result				
Variable	Coefficient	Standard Error	t-statistic	Probability
C	0.278	0.349	0.796	0.433
AG(-1)	-0.004	0.015	-0.244	0.809
IF(-1)	-0.031	0.019	-1.643	0.111
K(-1)	-0.021	0.028	-0.742	0.464
D(IF)	-0.025	0.009	-2.502	0.018
D(IF(-1))	0.035	0.012	2.999	0.006
D(IF(-2))	0.013	0.009	1.369	0.181
D(K)	-0.014	0.032	-0.437	0.666
D(K(-1))	0.060	0.033	1.835	0.077
D(K(-2))	-0.057	0.034	-1.699	0.100
IR	-0.000	0.002	-0.114	0.910
CointEQ(-1)	-0.004	0.001	-5.047	0.000
Long-run Result				
Variable	Coefficient	Standard Error	t-statistic	Probability
IF	-8.457	34.868	-0.243	0.810
K	-5.735	27.191	-0.211	0.834
C	76.663	220.596	0.348	0.731

Source: Author's Computation (2026)

Thereafter, the study examined the effect of food price inflation on agricultural exports in Nigeria. The results are presented in Table 6. The regressors were captured at lag 2. The significance of the cointegrating equation and its negative coefficient shows that the speed of adjustment of agricultural exports to changes in the explanatory variables is significant and less than one. The result implies that at least one cointegrating equation exists, and there is evidence to support the statistical significance of the result at the 1% significance level (lsf). This implies that the changes in the dependent variable, agricultural exports, can be explained by the explanatory variables at the 99% confidence level.

In the short run, the previous year's agricultural exports significantly but negatively impacted the current year's agricultural exports. This shows that although the previous year's agricultural exports influence that of the current year, the previous year's performance is not a guarantee for success in the current year. On the other hand, food price inflation and capital positively but insignificantly affected current-year agricultural exports. This is a pointer to the dampening effect of food price inflation on agricultural exports and the insignificant contribution of capital to agricultural exports. Furthermore, lagged values of food price inflation and capital positively but insignificantly affect current-year agricultural exports. Also, current year food price inflation

negatively but insignificantly affects agricultural exports. This result seems to contradict Kohlscheen (2022), who concluded that food price inflation is positively associated with food exports. The study supports the view that lower food exports mitigate food inflation. The current study on the contrary argues that food price inflation discourages the export of agricultural products which are not able to compete in the global market due to too high prices. In addition, the interest rate negatively but insignificantly affects agricultural exports, while the exchange rate positively but insignificantly affects agricultural exports. This implies that there is a need for policy intervention to enhance agricultural exports.

In the long run, food price inflation positively but insignificantly affects agricultural exports. This points to the fact that slight inflation might encourage agricultural exports. If agricultural products are priced high, investors may be attracted to agriculture. On the other hand, capital positively and significantly affects agricultural exports at the 5% lsf. This points to the importance of capital accumulation in enhancing agricultural exports. The constant value in the short run insignificantly and negatively affects agricultural exports, while in the long run, the same significantly but negatively affects agricultural exports at the 10% lsf. This reveals the inadequacy in the current level of agricultural exports and calls for

policy intervention to enhance exports of agricultural products for more revenue generation.

Table 6: Effect of Food Price Inflation on Agricultural Exports in Nigeria

Short-run Result				
Variable	Coefficient	Standard Error	t-statistic	Probability
C	-3.369	2.491	-1.352	0.186
X(-1)	-0.464	0.172	-2.697	0.011
IF(-1)	0.012	0.272	0.046	0.964
K(-1)	1.010	0.655	1.542	0.133
D(IF)	-0.173	0.179	-0.965	0.342
D(IF(-1))	0.059	0.174	0.340	0.736
D(K)	1.460	0.612	2.387	0.023
D(K(-1))	0.486	0.577	0.843	0.406
ER	0.165	0.333	0.494	0.625
IR	-0.020	0.031	-0.657	0.516
CointEQ(-1)	-0.464	0.155	-2.985	0.006
Long-run Result				
Variable	Coefficient	Standard Error	t-statistic	Probability
IF	0.027	0.586	0.046	0.964
K	2.177	0.943	2.310	0.028
C	-7.264	4.041	-1.798	0.082

Source: Author's Computation (2026)

Moreover, the ARDL results show that food price inflation only affects agricultural output in the short run. Increasing food prices negatively affects agricultural output. Therefore, the government should employ all means to prevent the escalation of food prices. In addition, food price inflation negatively affects agricultural exports. Skyrocketing food prices discourage the output and export of agricultural products. In addition, this study provides evidence of the importance of financial support for farmers in encouraging agricultural exports. Also, the crucial role of capital equipment like plows and tractors was revealed in the positive and significant effect of capital on agricultural exports.

V. CONCLUSION AND RECOMMENDATIONS

The study examined the effect of food inflation on the Nigerian agricultural sector. The study covered a period of years from 1981 to 2025. The ARDL technique was employed due to a combination of stationarity of variables at level and first difference. The study found that the speed of adjustment of agricultural output to changes in the explanatory variables was significant and negative. Output from the agricultural sector dwindled as the current year's

food price inflation rate rose; though the previous year's food price inflation was beneficial in the current year. Also, the previous year's capital boosted agricultural output in the short run. However, in the long run, credit to private investors became insignificant and negative. The insignificance of the constant in the short-run and long-run shows that agricultural output in Nigeria is still very low and insufficient. Besides, food price inflation significantly explained agricultural exports only in the long run. In the short-run, the explanatory variables were not statistically significant in explaining agricultural exports except for capital which positively and significantly affected agricultural exports. The study concluded that current-year food price inflation adversely affects agricultural output in that year. However, in the following year, food price inflation served as a booster for output because farmers increased production to take advantage of rising prices of goods. Also, credit to the private sector during the preceding year spurs agricultural output in the current year. This finding agrees with the theoretical underpinning that capital accumulation stimulates economic growth although, credit to the private sector appears to be too low to sustain increased agricultural output in the long-run. This is further supported by the poor effect of fixed agricultural

output. Also, current-year capital was found to be key to agricultural exports both in the short run and long run. Therefore, the study concludes that financial credit to farmers spurs agricultural exports. This finding clearly shows the direct effect of capital on agricultural output and calls for prompt policy intervention to rescue the dwindling performance in the Nigerian agricultural sector.

Based on the findings, the study recommends that:

- i. Monetary authorities should curb the influence of food inflation on the agricultural sector by instituting policies that will suppress and reduce rising food prices. For example, reintroducing agricultural marketing boards and subsidizing the cost of transporting agricultural produce to the market.
- ii. Government policy should be geared towards making more credit available to farmers to boost agricultural output.
- iii. The government should encourage mechanized farming by providing agricultural machinery and equipment for the production and processing of agricultural products at reduced costs.

Apart from agricultural output, further studies could examine the effect of food inflation on output from other sectors like manufacturing, health, education and so on. Also, the effect of other kinds of inflation such as energy inflation on agricultural output could be examined.

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