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Is Naira Depreciation Having any Effect on Agricultural Productivity in Nigeria? Evidence From 1972-2020

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Abstract

The study specifically evaluates the trend and growth rate of naira depreciation and determines the effect of naira depreciation on agricultural productivity for the period under review (1972-2020). Using secondary data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin, Food and Agricultural Organization (FAO), and Nation Bureau of Statistics (NBS), the data were analyzed using Augmented Dickey-Fuller (ADF) unit root test, Johansen Co-integration test, Error Correction Model (ECM) and Ordinary Least Square (OLS) regression in time series analysis. The result showed a negative trend variable (-0.0407), a negative growth rate (-3.98 %) of the depreciation of the naira, and a decrease in the growth of naira depreciation which indicates that a decrease in the rate at which Naira loses it value positively affect Nigerian agriculture as It would increase exports while decreasing imports. The ECM result shows a positive effect of Government Expenditure and a negative effect of weather on Agricultural productivity. Naira depreciation has led to discouraging investment and increasing the price of agricultural production resources. It has also led to a decrease in export prices, making agricultural products less competitive in both domestic and global markets. The Federal Government alongside the Central Bank of Nigeria should put in place monetary policies that will aid in curtailing the rate at which the country's currency loses its value.

Keywords: Naira depreciation, Agricultural productivity, Nigeria, Co-integration, Error correction model

1.0 Introduction

Currency depreciation, according to Tim (2019), is a decline in a nation's currency's value to other currencies under a floating exchange rate regime. A currency may decline due to a variety of reasons, such as inflation, interest rates, and economic expansion. A depreciating currency can increase a nation's export competitiveness, but it can also raise the cost of imported goods, having both positive and negative effects on the economy. Agriculture had a major role in Nigeria's economy before the country gained independence in 1960, providing the country's population with jobs, food, and raw materials for industry. These have, however, drastically decreased as a result of the ongoing Naira depreciation, which has several negative effects on Nigeria's economy (Ikpesu and Okpe, 2019). Numerous negative

effects on the country's economy have resulted from the naira's volatility and persistent devaluation, including a drop in the population's standard of living, higher manufacturing costs, cost-push inflation, and more. A primary factor contributing to the devaluation of the naira is the imbalance of payments. Nigeria imports more than it exports, which harms the currency due to a decline in external reserves (Research Clue, 2020). The fact that Nigeria was self-sufficient in food production and even a net exporter of food to other parts of the continent in the 1950s and 1960s makes these issues of extreme concern (Ibok *et al*., 2014).
According to Olumoroti (2023), depreciation increases inflationary trends, and imported goods and raw materials become more expensive when the value of Naira declines. The effects of naira declines result in higher costs of production, and producers raise the prices that consumers pay to cover these high costs. For nations that depend largely on imports, like Nigeria, this effect could be particularly dire. The Central Bank of Nigeria [CBN] (2010) reports that a market-driven exchange rate policy is crucial for deciding both the export of agricultural goods and the import of inputs for agricultural output by impacting prices. A researcher (Obadan, 2004) warns that the depreciation policy of the central bank could have dire consequences for Nigeria's import-dependent economy, and was therefore critical of the policy.

However, because it has an impact on agricultural financing, the naira's depreciation adds to the agricultural sector's poor performance. The Nigerian Central Bank (CBN) raised interest rates to fight inflation because the cost of credit has also unexpectedly increased since the devaluation of the naira (Ogho and Alhabib, 2017). Due to the difficulty in obtaining credit to expand their operations, has reduced the number of agricultural industry stakeholders, leading to Nigerian agriculture becoming more subsistence-based, with farmers producing small amounts of food for their families. Farmers are also having financial difficulties as a result of the country's naira depreciation. The cost of imported inputs, such as machinery and fertilizers, has increased dramatically, and farmers are having a difficult time getting their hands on these products locally due to insufficient production capacity.

The government is not providing farmers with the necessary resources to enable them to improve production in the agricultural sector and operate on a large scale, thereby becoming significant contributors to the nation's economy (Obiageli, 2020). Also, for the fear of losing money on their investments, foreign investors are less inclined to make investments in nations where the value of their money is declining, which has led to a decline in Foreign Direct Investment (FDI) in the agricultural sector because of the depreciation of the naira.

The unfavourable outcomes faced by Nigerian farmers as a result of the naira depreciation in Nigeria have provided the ambient ground for this research to assist in informing policy choices that will support the agricultural industry and lessen the negative effects of depreciation. Furthermore, since smallholder farmers are essential to the agricultural sector but frequently face external shocks like the depreciation of the naira amongst others (Antia-Obong *et al.*, 2021). This study will offer insightful information regarding the correlation between agricultural productivity and exchange rate depreciation as well as details on policy interventions to support smallholder farmers in the face of declining currency. Against this backdrop, the study seeks to provide answers to the following research questions:

- What is the trend and growth rate of naira depreciation over the study period?
- Is naira depreciation having any effect on agricultural productivity in Nigeria?

Based on the above research questions, the study specifically evaluates the trend and growth rate of naira depreciation and determines the effect of naira depreciation on agricultural productivity for the period under review (1972-2020).

2.0 Review of Relevant Literature

The effect of naira depreciation on agricultural productivity in Nigeria has been studied by several researchers including Oye *et al*. (2018), Ikpesu and Okpe (2019), Okorontah and Odoemena (2016), and Azu *et al.* (2015). These studies provide a comprehensive analysis of the various ways that changes in exchange rates affect the agriculture industry.
Oye *et al.* (2018) utilize a 30-year time series dataset and employ econometric techniques such as the Augmented Dickey-Fuller (ADF) test, Philip Perron's unit root tests, and Johansen's cointegration test to establish the relationship between the Real Effective Exchange Rate (REER) and agricultural output. The study's use of the Vector Error Correction Model (VECM) reveals a negative response of gross agricultural output to a per cent increase in REER, indicating that devaluation of the naira is detrimental to the sector's productivity. Ikpesu and Okpe (2019) extended the analysis by examining the role of capital inflows alongside the exchange rate. Applying the autoregressive distributed lag (ARDL) technique, their findings highlighted a positive influence of both private and public capital inflows on agricultural output in the short and long term. However, the study also confirms the adverse effects of exchange rate depreciation on agricultural productivity, aligning with the findings of Oyo *et al.* (2018).

Okorontah and Odoemena (2016) focus on the broader economic implications of naira depreciation, using the ordinary least square (OLS) technique, Johansson cointegration test, and error correction mechanism (ECM). Their results suggested a lack of a strong relationship between persistent depreciation of the naira and economic growth, implying that the agricultural sector's challenges due to currency fluctuations might not significantly impact the overall economic growth.

The study by Azu *et al.* (2015) provides a nuanced perspective on the relationship between the persistent depreciation of the naira and economic growth in Nigeria, particularly focusing on the period from 2004 to 2014. The researchers employ the Vector Autoregression (VAR) technique to analyze the interplay among various economic variables, including the Real Exchange Rate (RER), Gross Domestic Product (GDP), exports (EXP), imports (IMP), foreign exchange reserves (FER), and Foreign Direct Investment (FDI). The findings of Azu *et al*. (2015) suggest that while the depreciation of the naira has complex effects on different economic sectors, it may have had a stimulatory effect on economic growth during the specified period. This could be due to the potential benefits of a weaker currency for exports and the attraction of FDI seeking to capitalize on lower costs of investment. However, the negative relationship between RER fluctuation and real GDP indicates that there are limits to the benefits of currency depreciation, particularly concerning domestic consumer spending power and agricultural industry investment. The study's emphasis on the interrelatedness of RER, GDP, and other economic variables highlights the importance of a holistic approach to economic policy. It implies that measures to stabilize the naira must consider the broader economic context, including trade balances, investment flows, and reserve levels. In the context of agricultural productivity, the findings imply that while a weaker naira may boost export competitiveness, it could also increase the cost of imported inputs, thereby negatively affecting agricultural output. This underscores the need for policies that support the agricultural sector's capacity to adapt to exchange rate fluctuations, such as investment in local input production and value addition.

In summary, the critical literature underscores the complexity of exchange rate dynamics and their influence on agricultural productivity. While capital inflows have a bolstering effect, naira depreciation appears to consistently undermine agricultural output. This suggests a need for policies that stabilize the exchange rate and enhance the sector's resilience to currency fluctuations. Additionally, the recommendation by Okorontah and Odoemena (2016) for Nigeria to diversify its exports and improve competitive capacity could serve as a strategic approach to mitigate the negative impacts of exchange rate volatility on agriculture and the broader economy. The critical literature on how Nigeria's agricultural production is affected by the depreciation of the naira points to a delicate balance between the benefits and drawbacks of a fluctuating currency. Policymakers must navigate these complexities to foster a conducive environment for sustainable agricultural growth and broader economic development.

3.0 Methodology

3.1 Description of Study Area

Nigeria is situated between longitude 30E and 150E of the Greenwich meridian and latitude 40N and 140N of the equator. Nigeria therefore has a latitudinal extent of roughly 100 (140N–40N) and a longitudinal extent of 120 (150E–30E). Nigeria is a country in central Africa, namely in West Africa. Her neighbours, except for the Atlantic Ocean to the south, are francophone (French-speaking) nations. She has the Republic of Benin to the west, the Republic of Niger to the north, the Republic of Cameroun to the east, the Republic of Chad to the northeast, and the Atlantic Ocean to the south (ClassHall.com, nd). After Niger, Mali, and Mauritania, Nigeria is the fourth-largest nation in West Africa by land area. Nigeria's land area is roughly 923,768 square kilometres. The longest stretch is roughly 1,300 km from east to west and 1,100 km from north to south. With a population of over 200 million people, according to a recent estimate from the United Nations, Nigeria is the most populous nation in Africa and the seventh largest nation worldwide. The favourable soil and weather condition of Nigeria makes it possible for about 70 % of the total population to engage in agriculture (Country Reports, 2021).

3.2 Method of Data Collection

The use of secondary data was employed for this study. These data were obtained from the; Food and Agricultural Organization (FAO) statistical database, The Central Bank of Nigeria (CBN) statistical bulletin, and the National Bureau of Statistics (NBS). Time series data from macroeconomic variables were collected from these sources spanning from 1972-2020.

3.3 Analytical Technique and Estimated Procedure

It was essential to determine whether the variables' unit roots existed to obtain a valid regression using the time series data, due to the necessity for stationary variables in the analysis to infer meaningful relationships from the regression, and the unit root test provides the order of integration at which the variables can be stationary. The study utilizes the Augmented Dicker-Fuller (ADF) regressions to perform the unit root tests for the variables: Agriculture Real Gross Domestic Product as a proxy for Agricultural Productivity (ARGDP), Government Expenditure in Agriculture (GEA), Weather (WK), Official Exchange Rate (OER), Inflation Rate (INFL), Interest Rate (INT), Naira depreciation rate (ND).

The unit root test was carried out using the following equation:

$$\Delta Y_t = \alpha + \varphi Y_{t-1} + \sum_{t-1}^{j} Y \Delta Y_{t-j} + U_t \quad (1)$$

Where $\alpha + \varphi$are parameters to be estimated, while $U_t$is the error term which was assumed to be normally and identically distributed. After achieving variable stationarity at levels and first difference, Johansen's (1988) Co-integration test was performed to determine whether there exists a long-run relationship amongst the variables over the period under review. To also examine the short-run relationship amongst the variables, an investigation using Error Correction Modeling (ECM) was carried out. The fundamental goal of ECM is to accurately represent the short-term dynamics of Nigerian agricultural productivity by measuring how quickly deviations from the short-term equilibrium are adjusted for.

Objective one evaluates the trend and growth rate of naira depreciation. A time series analysis was conducted utilizing Ordinary Least Square (OLS). Fitting the exponential function to the time series data allowed for the calculation of the growth rate following Akpaeti *et al.* (2018a), and Akpaeti *et al.* (2014a). The function is specified as follows:

$$Q = b_0 e^{bt} \quad (2)$$

Linearizing the equation in logarithms, it becomes

$$lnQ = b_0 + b_1 t \quad (3)$$

Where,
Q = Naira depreciation
b_0 = Intercept
b_1 = Slope (regression parameters estimated)
t = Time trend variable (years in number)
This metric is more realistic in calculating growth rates since it considers the full observation, unlike other alternative approaches that tend to overlook important information by using data from the start and end of a period.

The value of Naira depreciation was fitted to equation (3). The growth rate was derived using the equation's coefficients. as specified by Akpaeti et al., (2014a); Akpaeti et al., (2018b); Akpaeti et al., (2019).

$$r = (e^b - 1) \times \frac{100}{1} \quad (4)$$

Where e is Euler’s exponential constant (2.71828) and r is the growth rate.

The data for the periods were fitted with a quadratic equation in time variables to examine whether the growth rate of naira depreciation was accelerating, decelerating, or stagnating following (Onyenweaku and Okoye, 2005; Akpaeti *et. al.,* 2013; Akpaeti et al., 2014b) as follows:

$$lnQ = a + b_t + ct^2 \quad (5)$$

The dependent variable (Q) in the preceding specification has a secular path provided by both the linear and quadratic time factors. Growth can potentially accelerate, decelerate, or stagnate throughout the research period because of the quadratic time term. A significant positive coefficient indicates a noteworthy acceleration in growth, a significant negative coefficient indicates a deceleration and a non-significant coefficient suggests neither acceleration nor deceleration in the growth process over the two periods.

Objective two determines the effect of Naira depreciation on agricultural productivity utilising a co-integration approach together with an Error Correction Model (ECM) as specified below:

$$\Delta LNARGDP_t = \alpha_0 + \alpha_1 \Delta OER_{t-1} + \alpha_2 \Delta LNWK_{t-1} + \alpha_3 \Delta LNGEA_{t-1} + \alpha_4 \Delta INT_{t-1}$$

$$\alpha_5 \Delta INFL_{t-1} + \alpha_6 \Delta ND_{t-1} + \alpha_7 ECM_{t-1} + U_t \qquad (6)$$

Where:

$LNARGDP_t$ = Log of Agriculture Real Gross Domestic (As a proxy for Agricultural Productivity); OER_{t-1} = Official Exchange Rate (%); LNWK = Log of weather (mm); $LNGEA_t$ = Log of Government Expenditure in Agriculture (₦); INT_{t-1} = Interest Rate (%); $INFLA_{t-1}$ = Inflation Rate (%); ND_{t-1} = Naira depreciation rate (%); ECM_{t-1} = Error Correction; U_t=Stochastic Error term; α_0 = Intercept term $\alpha_1 .... \alpha_6$ are parameters to be estimated.

To obtain the values for the Naira depreciation rate (ND), the values of the official exchange rate of the Nigerian naira to the U.S. dollar for the period under review was fitted into the Equation below to determine the percentage change of the quote currency (Naira) relative to the base currency (Dollar). Where a positive change indicates appreciation and a negative change indicates depreciation (Edward, 2006) as follows:

$$\frac{(V_1 - V_2)}{(V_2)} \text{ X } \frac{100}{1} \qquad (7)$$

Where: V_1 is starting rate and V_2 is proceeding rate.

4.0 Result

In this section, we present the result of the trend equation for naira depreciation, the growth rate of naira depreciation, the quadratic equation for naira depreciation, the unit root test, cointegration and error correction model.

4.1 Trend analysis of the naira depreciation rate

Table 4.1 displays the findings of the trend analysis of the depreciation rate of the naira in Nigeria, which indicates a downward tendency over the examined period (1972-2020). As can be seen from the result, the trend variable's coefficient is negative (-0.0407) and highly significant at 1%, and the F-ratio (3.03267) is also significant at 1%. Table 4.2 displays the Naira depreciation growth rate for the period under review, which is negative (-3.98%).

Table 4.1: Estimated Trend Equation for Naira Depreciation

Dependent Variable/ Period	**B_0 (Constant)**	**β_1 (Slope)**	**R^2**	**R^{-2}**	**F-Ratio**
Naira Depreciation	**1.59854**	**-0.040717**	**0.27488**	**0.18424**	**3.03267*****
	(2.65947)***	**(1.74146)**			

Source: computed by author, 2022

Table 4.2: Growth Rate of Naira Depreciation

Dependent variable/Period	Growth Rate (%)
Naira Depreciation	**-3.98**

Source: Computed Author, 2022

A quadratic equation is estimated in the time variable to ascertain whether the growth rate of Naira depreciation is accelerating, decelerating, or stagnating during the review period. The result in Table 4.3 shows that the coefficient of the time variable is negative, confirming a deceleration in the growth of Naira depreciation.

Table 4.3: Quadratic Equations in Time Variables for Naira Depreciation

Dependent Variable/ Period	B_0 (Constant)	β_1	β_2	R^2	R^{-2}	F-Ratio
Naira Depreciation	0.27792	0.2537	-0.00713	0.5190	0.3816	3.7765***
	(0.31780)	(1.6106)	(-1.8849)*			

Source: computed by author, 2022

4.2 Result of Unit Root Test for Variables Used for the Analysis

The unit root test is performed using constant and linear trend functional forms based on justification. The test is carried out on all variables in the real form as shown in Table 4.4 below. The ADF unit root test Lag criteria are determined using the Akaike information criterion (AIC). So the max lag strength used for the unit root test as specified by AIC is 3. The ADF test presented in Table 4.4 reveals that at level only Government Expenditure on Agriculture (GEA), Inflation Rate (INFL), Weather (Wk) and Naira Depreciation rate (ND) are stationary, all other variables like Agricultural Productivity (ARGDP), Interest Rate (INTL), Official Exchange Rate (OER), are not stationary at level but at first difference.

4.3 Johansen Co-integration Result

The estimated Johansen co-integration result in Tables 4.5 and 4.6 shows that both the trace and maximum Eigenvalues test reveal that there are four and three co-integration equations at a 5% level of significance. This suggests that there is a long-run relationship between these variables in Nigeria. As a result, the Error Correction Model (ECM) needs to be used to track this relationship and connect it to any short-run deviations.

4.4 Error Correction Model for Agricultural Productivity

As shown in Table 4.7, the inflation rate (INFL) and Weather (LNWK) in ECM result of Agricultural productivity have negative coefficients of (-0.0721) and (-0.0011) respectively. However, only Weather (LNWK) is significant at 10%. The empirical result also reveals that the past and present value of Government expenditure on agriculture (LNGEA) are positively significant at 1% and 5% levels respectively while the past value of Naira depreciation is positively but not significant at 5% level. Table 4.7 also reveals that the coefficient of determination R^2 stood at 0.58, signifying 58% variation, which implies that 58% variation in Agricultural productivity is explained by government expenditure on agriculture (LNGEA), weather (LNWK), inflation rate (INFL), interest rate (INT), naira depreciation rate (ND) and official exchange rate (OER). The coefficient of the ECM (-0.0935) is correctly signed (negative) but not statistically significant indicating a different adjustment speeds to long-run equilibrium.

Table 4.4: Result of Augmented Dickey-Fuller (ADF) Unit Root Test

Variables	Deterministic Component	Level	Lags	First Difference	Lags
ARGDP	Constant and linear trend	0.8758	0	0.0005***	0
GEA	Constant and linear trend	0.0052*	0		
INFLA	Constant	0.0023**	1		
INT	Constant	0.0773	3	0.0037**	3
ND	Constant	0.0060**	0		
OER	Constant and linear trend	1.000	2	0.0005***	1
WK	Constant	0.0000***	0		

Source: *Data from Central Bank of Nigeria (CBN) Food and Agricultural Organization FAO, climate knowledge, computed by author, 2022. Notes ***, ** and * indicates 1%,5% and 10% significant level respectively*. Variables are as defined previously.

Table 4.5: Johansen Co-Integration Trace Test for Agricultural Productivity

Hypothesized No. CE(s)	Eigenvalue	Trace Statistic	0.05 Critical value	Prob. **
None*	0.8287	218.0504	125.6154	0.0000
At most 1*	0.6591	138.6497	95.7537	0.0000
At most 2 *	0.5463	90.2113	69.8189	0.0005
At most 3 *	0.4256	54.6446	47.8561	0.0101
At most 4	0.3096	29.6975	29.7971	0.0513
At most 5	0.1853	13.0196	15.4947	0.1141
At most 6	0.0808	3.7958	3.8415	0.0514

*Trace test indicates 4 co-integrating equations at the 0.05 level *denotes rejection of the hypothesis is at the 0.05 level **Mackinnon-Haug-Michelis (1999) p-values*

Source: computed by author, 2022

Table 4.6: Johansen Co-Integration Maximum Eigen Value Test for Agricultural Productivity

Hypothesized No. CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical value	Prob.
None*	0.8287	79.4007	46.23142	0.0000
At most 1 *	0.6591	48.4383	40.0775	0.0046
At most 2 *	0.5463	35.5667	33.8768	0.0312
At most 3	0.4255	24.9471	27.5843	0.1049
At most 4	0.3096	16.6778	21.1316	0.1877
At most 5	0.1853	9.2239	14.2646	0.2680
At most 6	0.0808	3.7957	3.8415	0.0514

Maximum Eigen Value test indicates 3 co-integrating equations at the 0.05 level
**denotes rejection of the hypothesis is at the 0.05 level **Mackinnon-Haug-Michelis (1999) p-values.*
Source: Computed by author, **2022**

Thus, it will not correct any deviations from the long-run equilibrium. The result of -0.0935 indicates that a short-run distortion in the long-run connection will be fully restored to equilibrium after 10 years and 7 months, with a correction rate of 9.35% per year. Therefore, reversing any departures from the long-term equilibrium. This implies that naira depreciation did not impact agriculture productivity in the short-run while the coefficient of the F-statistics (6.36 ($p>0.05$)) indicates that they are strongly jointly significant, and the Durbin Watson statistics value of 1.65 implies that the model does not suffer from autocorrelation problem but has a very good fit.

Table 4.7: Error Correction Model (ECM) Result for Agricultural Productivity

Variables	Coefficient	Std. Error	t- statistics	Prob.
C	-0.0099	0.0209	-0.4742	0.6382
D(LNGEA)	0.0506	0.0207	2.4315**	0.0200
D(LNGEA(-1))	0.1117	0.0203	4.7735***	0.0000
D(LNWK)	-0.0721	0.0391	-1.841*	0.0737
D(INFL)	-0.0011	0.0014	-0.7905	0.4343
D(INTR(-1))	0.0109	0.0065	1.6642	0.1000
D(ND(-1))	0.0013	0.0014	0.9186	0.0200
D(LNOER)	0.0013	0.0013	1.0402	0.3050
ECM2(-1)	-0.0935	0.0747	-1.2520	0.0000

R-squared	0.5827	Mean dependent var	0.0175
Adjusted r-squared	0.4924	S.D dependent var	0.1744
S.E. of regression	0.1243	Akaike info criterion	-1.1587
Sum squared resid	0.5716	Schwaz criterion	-0.8010
Log-likelihood	35.6515	Hannan-Quinn criteria.	-1.0247
F-statistics	6.3579	Durbin-Watson stat	1.6541
Prob(F-Statistic)	0.0000		

****, **, * indicate 1%, 5% and 10% significant revel respectively*
Source: Computed by author, **2022**

5.0 Discussion

In this section, we discussed the insight and implication of the result discussed in section 4.0. The trend variable's coefficient is negative (-0.0407) and highly significant at 1%, meaning that 1% of the total amount of Naira depreciation was accounted for by the time trend. This implies a declining relationship between time and the rate of Naira depreciation. The fact that the F-ratio is significant at 1% suggests that the estimated parameters have a strong bearing on the dependent variable. The negative growth rate (-3.98 %) of the depreciation of naira implies that there exists a significant negative relationship between the growth rate of naira depreciation and agricultural production. Naira depreciation has contributed to rising inflation thereby increasing the price of agricultural production resources; it has also led to a decrease in export prices, making agricultural products less competitive in both domestic and global markets (Ogho and Alhabib, 2017).

The negative coefficient of the time variable in Table 4.3 confirms a deceleration in the growth of naira depreciation, this implies that a decrease in the rate at which Naira loses its value positively affects Nigerian agriculture as it would expand export and discourage import. This result aligns with that of Aliyu and Elijah (2011), who assert that appreciation of persistent depreciation of the naira currency results in increased imports and reduced exports while depreciation would expand exports and discourage imports. He further went ahead to state that depreciation of persistent depreciation of naira currency tends to cause a shift from foreign goods to domestic goods. The present findings contradict the assertions made by Valdes *et al.* (2020), who suggest that a faster depreciation of the Brazilian real will boost agricultural output and exports from Brazil and lower global commodity prices. They also point out that rising costs offset the expected revenue increase when the Brazilian real depreciates.

The result of the ADF unit root test implies that the analysis of specific variables at the level can result in spurious regression estimates. Due to this, a second test was required to determine whether the non-stationary variables had a co-integrating relationship to derive significant associations from the regression. The ECM result for Agricultural productivity indicates only the weather variable is negatively significant at 10%. This implies that an increase in adverse weather will result in a decrease in Agricultural Productivity since adverse conditions are unfavourable conditions for agricultural production. An adverse weather condition such as drought, heat waves and flooding can harm agriculture, resulting in lower crop yields and nutritional qualities, as well as an increase in pest and plant diseases thereby reducing its productivity. To stem this problem, the government can provide subsidies or other financial support to farmers, to help them offset the costs of production. Also, farmers can try to diversify their operations, by growing different crops or expanding into other markets (Adetola, 2023).

The empirical result also reveals that an increase in Government expenditure on agriculture increased Agricultural Productivity. Provisions of financial support to farmers, such as subsidies or tax breaks that encourage them to increase production, all of these can lead to an increase in agricultural output (Edeh *et al.,* 2020). This result supports the findings made by Iganiga and Unemhilin (2011), who reveal that Federal Government capital expenditure on agriculture is positively related to agricultural productivity.

6.0 Conclusion and Recommendations

The study specifically evaluates the trend and growth rate of naira depreciation and determines the effect of naira depreciation on agricultural productivity for the period under review (1972-2020). The analysis's conclusion revealed that the trend variable's coefficient is negative (-0.0407) and highly significant at 1%, meaning that 1% of the aggregate level of Naira depreciation was explained by the temporal trend, suggesting a negative trend and decreasing relationship between time and naira depreciation rate. The negative growth rate (-3.98 %) of the depreciation of naira implies that there exists a significant negative relationship between the growth rate of naira depreciation and agricultural production. The negative coefficient of the time variable confirms a deceleration in the growth of naira depreciation, implying that a decrease in the rate at which Naira loses its value positively affects Nigerian agriculture as it would expand exports and discourage imports. The ECM result for Agricultural productivity shows that weather is negatively significant at 10% implying that an increase in adverse weather will result in a decrease in Agricultural Productivity since adverse weather is an unfavourable condition for agricultural production. The empirical result also reveals that an increase in Government expenditure on agriculture will increase Agricultural Productivity. On this note, the Federal Government alongside the Central Bank of Nigeria should put in place monetary policies that will aid in curtailing the rate at which the country's currency loses its value. The Federal Government should also enhance financial disbursement on agriculture and enlighten investors in the agricultural sector on the positive impact of the Naira depreciation on agricultural productivity in Nigeria to avoid the nullification of productivity gain due to slackening agricultural innovation and investment.

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