

## TRENDS IN AGRICULTURAL GROWTH, FOOD SECURITY AND ECONOMIC POLICY UNCERTAINTY IN NIGERIA

Kotur, L.N<sup>\*</sup>, Aye, G.C., Ayoola, J.B and Ater, P.I.

Department of Agricultural Economics  
Joseph SarwuanTarka University Makurdi

### ABSTRACT

Trends in agricultural growth (AG), food security (FS) and economic policy uncertainty (EPU) in Nigeriawas analyzed using secondary data consisting of annual time series covering a period of 51 years (1970-2021). In 1983-1984, there was a decline in AG, with a growth rate dropping from 0.01% to -0.18%. Transitioning from a negative growth rate of -0.18% to a positive growth rate of 0.18% occurred from 1984-1985. AG decreased from 0.18% to -0.19% from 1985-1987 and reversed again in 1987-1988, moving from -0.19% to 0.1%. In 2001-2002, AG increased from 0.01% to 0.44%, followed by a slowdown in 2002-2003 (0.44% to 0.08%). From 2003-2020, AG fluctuated between 0.08% and 0.01%. The trends in food security in Nigeria show periods of stability and fluctuations. Increase from 1970 to 1974, 1979 to 1982, 1997 to 2015. Decrease from 1990 to 1997. Fluctuated from 1982 to 1984, 2003 and stability in 1974 to 1979, 1984 to 1989, 2015 to 2020. Trends in economic policy uncertainty (EPU) in Nigeria, measured by government expenditure in agriculture uncertainty (GEAU), interest rate uncertainty (INRU), and exchange rate uncertainty (EXRU), reveals dynamic trends. GEAU remained stable in 1970-1981 (0.0), followed by increase in uncertainty from 1981 to 1985 (0.0 to 0.3), 1987-1988, reaching 1.0 and continued to fluctuate in 1985-1987 (0.3 and 0.2), 1988-1995 (1.0 and 0.3), 2003-2008 (0.3, 0.4, and 0.6). 2008-2020 (0.5 and 0.2). The uncertainty stabilized at 0.3 in 1995-1998. 1998-1999 suggest a period of significant challenges in agricultural policy with increase from 0.3 to 1.9. For INRU, 1970-1974 increase sharply from 0 to 8 and decrease from 8 down to 0 in 1974-1978. 1978-1980 was stable at 0 followed by increase from 0 to 35 in 1980-1981. Notable decrease from 3 to 5 in 1983-1985 and stable economic conditions in 1985-1986 with decrease from 5 reaching 1. Fluctuation to 6 in 1989-1993 with 1993-1994 showing a notable decrease in dropping from 6 to 3. A sudden increase from 3 to 21 in 1994-1997 followed by a sharp decrease from 21 to 2 in 1997-1999. In 1999-2020 INRU fluctuated between 2, 10, and 1 during this period. EXRU in 1970-1984 is relatively low and stable, fluctuating between 0.0 and 0.1 and a significant increase to 0.7 in 1985-1987. EXRU dropped in the late 1980s (0.3) and further decreased 1991 (0.1) and subsequent increase in 1992-1993 (0.4). A notable increase occurred from 1998 to 2000 (0.0 to 0.8). From 2000 onwards, there was a general trend of decreasing EXRU, fluctuating between 0.0 and 0.2. The study recommend that government and policy maker should be mindful of the fluctuations in these series. They should also take into consideration in international markets, such as changes in commodity

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\*lydiakotur@gmail.com

prices or global economic conditions affect trend in food security, economic factors, policy decisions, and external events that occurred during each period.

**Keywords:** Trends, Agricultural Growth, Food security and Economic Policy Uncertainty.

## INTRODUCTION

In Nigeria, the development of agricultural policy for some years back has been based on the understanding that agriculture is the only panacea to the achievement of an inclusive growth due to its inward linkages. Hence, the focus of the agricultural development efforts has been to improve and sustain the sector with emphasis on the attainment of a sustainable level in the production of basic food (Olarinde and Abdullahi, 2014). The desire for the country to have minimal fluctuations in the economy is a function of the policies, its implementation by the government (Elumah, 2017).

Economic policy uncertainty has a significant impact on the behavior of a country's economy and other market bodies (Guo et al., 2020). Under uncertainty there exists an "option value" to delay an investment decision in order to await the arrival of new information about market conditions. Uncertainty has strong potential policy implications (Benassy-Quere et al., 2010). The Nigerian government periodically sets policies as corrective measures for the volatile economy. The Federal Government and the Central Bank of Nigeria are taxed with setting policies to fit all aspect of government (Elumah, 2017). Relevant economic policies formulated by governments have helped boost global economic recovery. However, while reducing the downward pressure on the economy, governments have also increased the uncertainty of economic policies (Guo et al., 2020; World Bank, 2018)

There are many growing literatures on the agricultural growth, food security and economic policy uncertainty. For instance, Dejuan-Bitriaet *al.* (2021) measured policy-related uncertainty by investigating the effect of economic policy uncertainty on firms' investment decisions. Paule-Vianezet *al.* (2021) analysed the numismatic assets investment under economic policy uncertainty. Regarding the focus of this study which is on the trends of agricultural growth, food security and economic policy uncertainty, few studies have also been identified. For instance, Kotur et al., (2020) found a negative effect of economic policy uncertainty on poverty. Aye (2019) examined the short and long run asymmetric effects of monetary and fiscal policy uncertainty on economic activity in the U.S. Aroriode and Ogunbadejo (2014) estimated the impact of macroeconomic policy on agricultural growth in Nigeria. Abo, (2015) examined the impact of fiscal policy on the growth of agricultural sector in Nigeria. Aye and Kotur (2022) analysed the long and short run effect of economic policy uncertainty on agricultural growth in Nigeria. (Ozili, 2022) identifies the sources of economic

policy uncertainty in Nigeria and draw implications for Africa.(Ufuoma&Ufuoma, 2022)explored the empirical relevance of macroeconomic instability and policyuncertainty for aggregateinvestment behaviour in Nigeria.(Akpaeti et al., 2014)examined the growth rates in agricultural investments and output in Nigeria from 1970-2009.

From the above, it is clear that several existing empirical studies have examined the nexus between economic policyuncertainty on different macroeconomic variables for several countries. Further, the few available studies on EPU, agriculture and food related variables largely ignore trends analysis. Therefore, this study intends to fill these gaps by examining the trends in agricultural growth, food security and economic policy uncertainty.

## **LITERATURE REVIEW**

The concept of sustainable economic growth is closely linked with the agricultural growth. Akbar and Jamil, (2012) examined the monetary and fiscal policies' effect on agricultural growth. Abid and Rault (2020) examined the exchange rate volatility response to the economic policy uncertainty shocks.De Silva et al. (2014) provided a quantitative assessment of the trade policy impacts on agricultural.Aroriode and Ogunbadejo (2014) examined the impact of macroeconomic policy on agricultural growth in Nigeria.Abo (2015) examined the impact of fiscal policy on the growth of agricultural.Aye and Kotur (2022)analysed the long and short run effect of economic policy uncertainty on agricultural growth in Nigeria

This section shows very scanty studies on economic policy uncertainty and agricultural growth though much has been done on overall economic growth and economic activities. Sectoral analysis of the trend of economic policy uncertainty is lacking.

Nigeria needs to come up with stable food policy to guarantee for security. What public policy makers pursue is merely an agricultural policy that still suffers enormously from a wide gap between intent and actual practices. Any system where food demand is not sufficiently marched by supply is no doubt one with looming food crisis. Despite pretensions to the contrary, Nigeria is far from being completely food secured (Ojo and Adebayo, 2012).Pangaribowa et al. (2013) highlighted that food related problems are influenced not only by food production and agricultural activities, but also by the structure and processes governing entire economies and societies (policy).Chavas (2017) investigated an economic evaluation of food and the cost of food insecurity. Abdulai and Kuhlitz (2012) reviewed the concept of food security and the various approaches developing countries have used to promote food security.Abdul and Ismail, (2019)examined the impact of food security on the economic growth of dry-land developing countries

Empirical studies on the effect of economic policy uncertainty food security is seriously lacking and the trends completely left out. At best, research has focused mainly on other drivers of food security thus necessitating more research in this area.

## **METHODOLOGY**

Secondary data consisting of annual time series covering a period of 51 years (1970-2021) were used for the study. Particularly, data on interest rate, exchange rate, government expenditure on agriculture, and agricultural GDP were obtained from Central Bank of Nigeria and World Development Indicators. Data on food security were obtained from Food and Agricultural Organization Statistical Database. The economic policy (monetary, fiscal and trade) uncertainty was measured using the volatility in interest rate, exchange rate, government expenditure in agriculture. Volatility was computed as a three year moving standard deviation of each economic policy variable. Agricultural growth was measured as growth rate of agricultural GDP (%). Food security was measured as dietary energy supply in kcal/capita/day.

Global economic uncertainty is proxied by world uncertainty index which is a composite measure of global political and economic uncertainty.

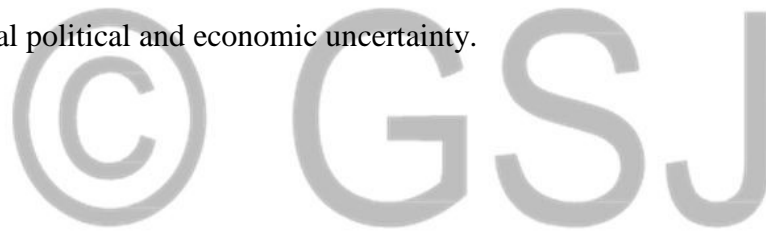




Figure 1: Map of Nigeria

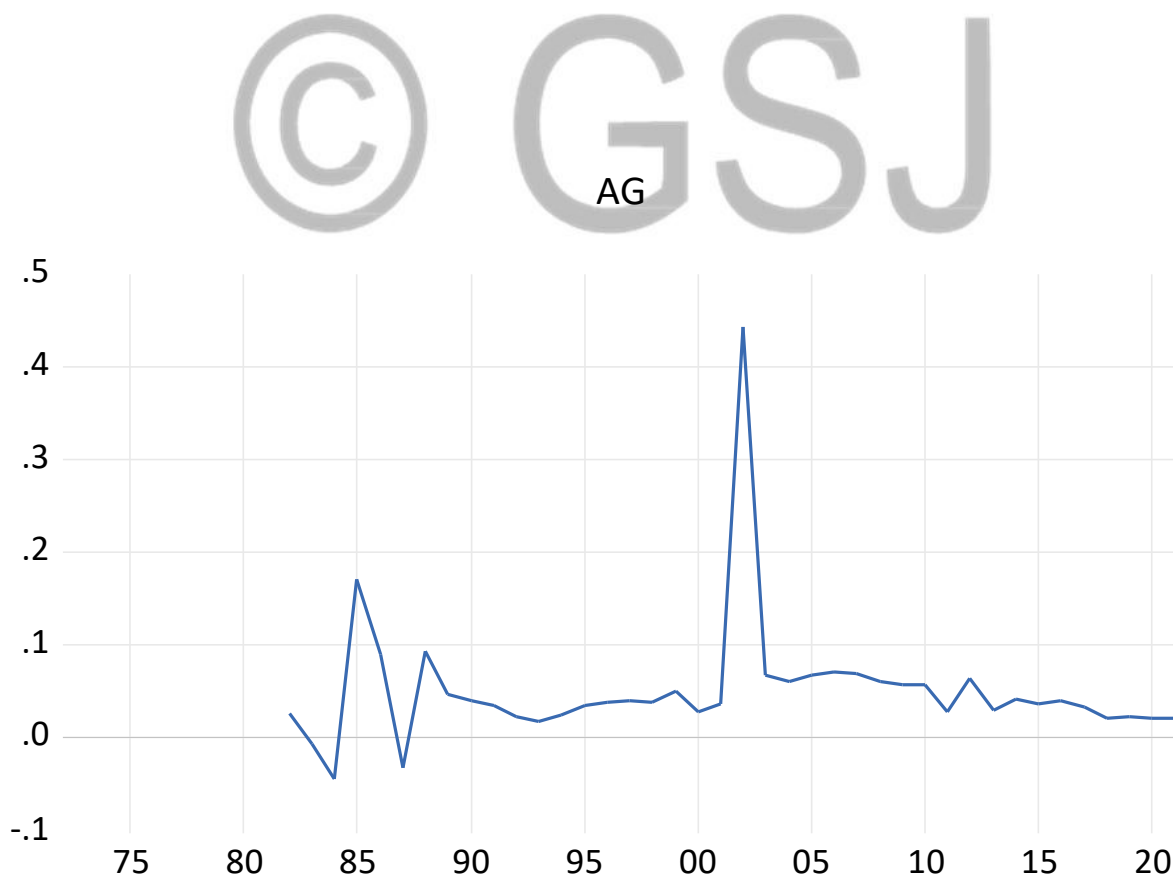
Source: World Atlas, 2022

## RESULTS

### The trends in agricultural growth in Nigeria

The trends in agricultural growth in Nigeria, as indicated by the graph in figure 1 suggests various phases of positive and negative growth rates. In 1983-1984 there was a decrease from 0.01 to -0.18 percent indicating a decline in agricultural growth and a contraction in the agricultural sector with a shift from a positive growth rate of 0.01 to a negative growth rate of -0.18. Agricultural growth rebounded, transitioning from a negative growth rate of -0.18 to a positive growth rate of 0.18 from 1984-1985 suggesting a recovery or expansion in the agricultural sector. Another decline occurred, with agricultural growth decreasing from 0.18 to -0.19 in 1985-1987. This period might have been characterized by challenges or adverse conditions affecting agricultural productivity. Agricultural growth reversed again in 1987-1988, moving from a negative growth rate of -0.19 to a positive growth rate of 0.1 indicating a recovery or improvement in line with the finding of Morgan et al, 2022 that productivity

growth also has started to decline, contributing to the slowdown in agricultural output growth. 1988-2001 revealed fluctuation between 0.10 and 0.01. Fluctuations might be influenced by various factors, including policy changes, weather conditions, or economic shifts as highlighted in the paper of (Adrian, 2021). There was a significant increase in agricultural growth from 2001-2002, rising from a growth rate of 0.01 to 0.44. This suggests a period of notable expansion in the agricultural sector after which a slowdown from 2002-2003 from 0.44 to 0.08. From 2003-2020, agricultural growth continued to fluctuate between 0.08 and 0.01 over the years. Fluctuations may be influenced by a range of factors, including economic conditions, climate variability, and policy dynamics. The trends in agricultural growth in Nigeria show periods of both expansion and contraction, with fluctuations reflecting the dynamic nature of the agricultural sector agreeing with the finding of (Shaibu, 2023) that the country experienced stagnated pattern of growth in the agriculture sector and an accelerating growth pattern during the policy stabilization era.



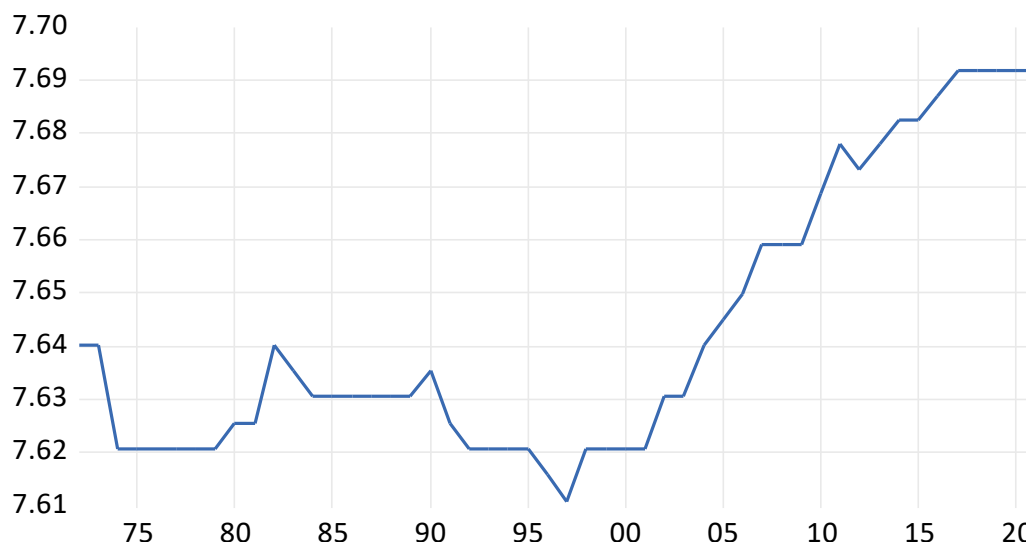
**Figure 2: Trends in Agricultural Growth in Nigeria**

## **Trends in food security in Nigeria**

The result in figure 3 revealed that there was a minor decrease in food security from 1970 to 1974, dropping from 7.64 to 7.62. This may indicate a small decline in overall food availability or access during this period. There seem to be a consistent level of food availability and access without significant fluctuations in food security from 1974 to 1979 as result remained stable at 7.62. Food security returned to the initial level of 7.64 from 1979 to 1982. This could indicate a recovery or improvement in food security during this period follow by a small decrease in food security from 7.64 to 7.63 in 1982-1984. Food security remained stable at 7.63 from 1984 to 1989. Follow by a slight decrease in food security from 1990-1997, dropping from 7.63 to 7.61. This could be indicative of challenges or changes affecting food availability or access. The result shown an upward fluctuation in food security from 1997 to 2015, increasing from 7.61 to 7.69 suggesting an improvement in overall food security during this period. Food security remained stable at 7.69 from 2015 to 2020. This indicates a sustained level of food security, with no significant fluctuations during these years.

In summary, the trends in food security in Nigeria show periods of stability and fluctuations. Increase in Food Security in 1970 to 1974, 1979 to 1982, 1997 to 2015. Decrease in Food Security in 1990 to 1997 which may be linked to economic challenges, such as recessions or periods of economic instability or environmental factors as revealed by the finding of (Idris et al., 2020). Fluctuations in Food Security occurred in 1982 to 1984, 2003 to 2008 which could be due to policy Changes and global market Dynamics: Fluctuations in international markets, such as changes in commodity prices or global economic conditions affect trend in food security agreeing with the update of (World Bank, 2023). Stability in Food Security occurred in 1974 to 1979, 1984 to 1989, 2015 to 2020.

FS



**Figure 3: Trends in Food Security in Nigeria**

**The trends in economic policy uncertainty in Nigeria**

Trends in economic policy uncertainty in Nigeria, as indicated by government expenditure on agriculture uncertainty (GEAU), interest rate uncertainty (INRU) and exchange rate uncertainty (EXRU) are shown in figure 4.

GEAU revealed that the year 1970-1981 suggests a consistent and predictable policy environment as government expenditure on agriculture uncertainty remained stable at 0.0. Follow by increase in uncertainty from 1981 to 1985, with government expenditure on agriculture fluctuating from 0.0 to 0.3. This could indicate changes in agricultural policy or economic conditions. The uncertainty continued to fluctuate in 1985-1987 between 0.3 and 0.2, indicating potential shifts in government priorities or economic factors influencing agricultural expenditure. There was a significant increase in uncertainty in 1987-1988, reaching 1.0. This suggests a period of major changes or challenges in the agricultural sector that impacted government spending. 1988-1995 fluctuation between 1.0 and 0.3 possibly reflecting ongoing adjustments in agricultural policies or economic conditions affecting government expenditure. The uncertainty stabilized at 0.3 in 1995-1998 indicating a relative steadiness in government expenditure on agriculture. 1998-1999 suggest a period of significant changes or challenges in agricultural policy and spending with a sharp increase in uncertainty from 0.3 to 1.9. The uncertainty fluctuated between high and relatively lower levels during 1999-2003 and 2003-2008 between 0.3, 0.4, and 0.6 indicating potential changes in government priorities or economic factors influencing agricultural expenditure. In 2008-2020, there was fluctuation between 0.5 and 0.2. The uncertainty continued to fluctuate,

but within a narrower range, suggesting a certain level of stability or consistency in government expenditure on agriculture.

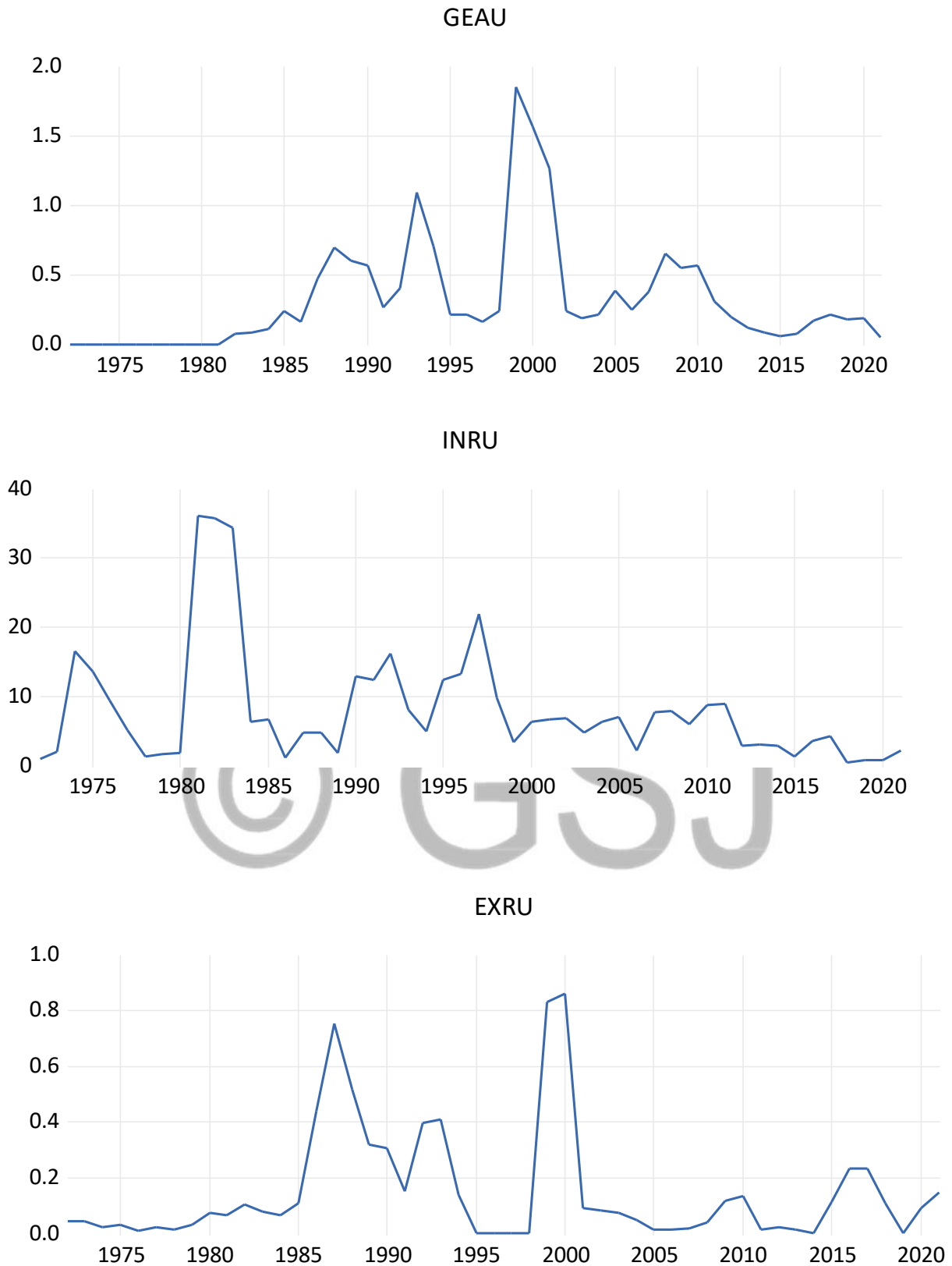
In summary, the trends in government expenditure on agriculture uncertainty in Nigeria indicate periods of stability, fluctuations, and significant changes. These trends may be influenced by various factors such as economic conditions, policy adjustments, and challenges in the agricultural sector in line with (Osuma & Ofure, 2019) who discovered that government expenditure on the economic sectors positively affected agricultural output.

The trends in economic policy uncertainty in Nigeria based on INRU revealed that 1970-1974 indicate a period of economic turbulence or policy changes impacting interest rates as significant sharp increase from 0 to 8 was seen. Follow by a sharp decrease in interest rate uncertainty, falling from 8 down to 0 in 1974-1978. 1978-1980 indicate a relatively calm economic environment or consistent policies related to interest rates as interest rate uncertainty remained stable at 0 during this period. Shortly after the calmness, there was a significant increase in interest rate uncertainty, rising from 0 to 35 in 1980-1981 suggesting a period of economic volatility or policy changes affecting interest rate while 1981-1983 fluctuation between 35 and 34 possibly indicating some stability or policy adjustments. There was a notable decrease in interest rate uncertainty, dropping from 34 to 5 in 1983-1985. This could be associated with more predictable economic conditions or specific policy interventions. There seem to be a trend toward more stable economic conditions in the year 1985-1986 as interest rate uncertainty continued to decrease during this period from 5 reaching 1. In 1986-1989 the uncertainty in interest rates fluctuated between 1 and 5 during these years, indicating a period of moderate uncertainty but with some degree of stability. 1993-1994 shown a notable decrease in interest rate uncertainty, dropping from 6 to 3, suggesting a period of increased stability or confidence in economic policies. A sudden increase from 3 to 21 in 1994-1997 indicated potential economic challenges or policy changes impacting interest rates. This is followed by a sharp decrease in interest rate uncertainty, dropping from 21 to 2 1997-1999. This suggests a period of economic stabilization or policy measures that reduced uncertainty. 1999-2020 interest rate uncertainty fluctuated between 2, 10, and 1 during this period. This suggests a mix of stability and fluctuations in economic conditions or policy changes affecting interest rates.

In summary, the graph reflects periods of both stability and uncertainty in Nigeria's economic policy related to interest rates. Economic policy has a significant effect on economic stability as found by (Elumah, 2017). The trends may be influenced by various economic factors, policy decisions, and external events that occurred during each period agreeing with (Ozili, 2022).

The trends in economic policy uncertainty in Nigeria based on the EXRU revealed that in 1970-1984 fluctuating between 0.0 and 0.1. There was a significant sharp increase in exchange rate uncertainty, jumping to 0.7 in 1985-1987 indicating economic instability or major policy changes that affected the exchange rate, leading to higher uncertainty among economic agents. The exchange rate uncertainty dropped in the late 1980s, reaching 0.3, and further decreased to 0.1 in 1991. This suggests a period of relative stability or possibly the implementation of policies that reassured economic agents. A subsequent increase is seen in exchange rate uncertainty in 1992-1993, reaching 0.4 which could be due to policy changes impacting the exchange rate to ensure stable economic environment or policies that reduced uncertainty to drop it to 0.0 in 1995-1998 similar to the finding of (Abid and Rault, 2020). A notable increase occurred from 1998 to 2000, with exchange rate uncertainty rising from 0.0 to 0.8. From 2000 onwards, there was a general trend of decreasing exchange rate uncertainty, fluctuating between 0.0 and 0.2. This suggests a period of relatively lower uncertainty and potentially more stable economic conditions compared to the late 1990s.

In summary, the graph reflects periods of both stability and uncertainty in Nigeria's economic policy, with notable spikes in uncertainty during specific years. In line with this the study of (Elumah, 2017) found that economic policy has a significant effect on economic stability. The result also affirms the finding of (Ufuoma and Ufuoma, 2022) that instability of macroeconomic fundamentals exacerbated by policy uncertainty.



**Figure 4: Trends in Economic Policy Uncertainty in Nigeria**

## CONCLUSION AND POLICY IMPLICATIONS

The trends in agricultural growth in Nigeria show periods of both expansion and contraction, with fluctuations reflecting the dynamic nature of the agricultural sector. The country experienced stagnated pattern of growth in the agriculture sector and an accelerating growth pattern during the policy stabilization era, evidence against the effect of uncertainty.

The trends in food security in Nigeria show periods of stability and fluctuations. Increase in Food Security in 1970 to 1974, 1979 to 1982, 1997 to 2015. Decrease in Food Security in 1990 to 1997. Fluctuations in Food Security occurred in 1982 to 1984, 2003 to 2008 which could be due to policy changes and global market Dynamics: Stability in Food Security occurred in 1974 to 1979, 1984 to 1989, 2015 to 2020.

The trends in EPU in Nigeria revealed that GEAU, INRU and EXRU indicate periods of stability, fluctuations (falling and raising) with significant changes as a result of uncertainty. These trends may be influenced by various factors such as economic conditions, policy adjustments, and challenges in the agricultural sector. The study recommend that government and policy maker should be mindful of the fluctuation trends. Taking consideration in international markets, such as changes in commodity prices or global economic conditions affect trend in food security, economic factors, policy decisions, and external events that occurred during each period.

Further study is recommended on the asymmetric and threshold effect of economic policy uncertainty on agricultural growth and food security in Nigeria.

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