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Inter-Sectoral Linkages in Nigeria: Evidence from Agriculture and Manufacturing Sectors

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Abstract

This paper examined the essence of inter-sectoral linkages in the agricultural and manufacturing sectors of Nigeria's economy using data obtained from the Central Bank of Nigeria (CBN) which covers from 1981 to 2020. The study employed impulse response and variance decomposition functions. The main findings have shown that there is an important bidirectional relationship between the agricultural and manufacturing sectors, intuitively showing that the two sectors in Nigeria have a forward and backward connection. Secondly, agricultural development is a credible input engine for the manufacturing sector, but it has been discovered that the route of impulse from the manufacturing sector to the agricultural sector is inconsistent, which implies that the manufacturing sector can only support the agricultural sector in the short-run. The variance decomposition which shows the shock effect of the linkage clearly showed that a shock in the agricultural sector only results in an 8 percent variation in the manufacturing sector while a shock in the manufacturing sector only explained 9.5 percent variation in agricultural sector. Finally, there is a feedback impact between the agricultural sector and the other sectors in Nigeria which suggests that the agricultural sector is the primary engine of the Nigerian economy. The results lead to an important recommendation that government policies to support agriculture should be encouraged as the dynamic results revealed that agriculture has a significant positive multiplier effect in the economy. Hence, government should encourage the production of more agricultural products that could be used as raw materials in the manufacturing sector.

Keywords: Backward Linkages, Forward Linkages, Key sectors, Granger Causality, Impulse Response Function, Variance Decomposition.

JEL Classification Code: C22, L60, O1, O14, O47.

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1. Introduction

Agriculture and the manufacturing sectors stand as twin pillars of economic growth and development (Tonuchi & Onyebuchi, 2019). However, it is essential to recognise that agricultural development, without concurrent industrialisation, can provide only transient relief to the multifaceted challenges associated with underdevelopment (Eze, 2016). Against the backdrop of the economic history of Nigeria, the imperative lies in the transformation of its agricultural and agro-based industries to achieve both diversification and sustainability (Nwankpa, 2017). The success of the agricultural sector hinges not only on its immediate contributions to the domestic economy but also on its potential to stimulate the development of other sectors within the economic landscape of the country. The discovery of crude oil in the late 1950s triggered a pivotal shift, diverting attention from agriculture to the mining and exportation of oil (Afolayan, 2020). Unfortunately, this transition contributed to the neglect and underdevelopment of the agricultural sector (Anyaehie & Areji, 2015). While the main processing sectors forged critical connections with providers of agricultural raw materials, the subsequent implications for links between agriculture and the wider economy were not fully realised.

Olajide *et al.* (2012) underline the fourfold contributions of the agricultural sector—provision of food, factor input, market engagement, and foreign exchange earnings—that are pivotal for overall economic growth. In contrast, the manufacturing sector, aptly characterised as the dynamic process of transforming raw materials, holds a pivotal role within the broader industrial landscape. This includes activities like food processing and textile production, which not only serve as integral aspects of the manufacturing sector but also emerge as extensions of the agricultural sector itself. Oyelaran-Oyeyinka (2004) emphasises that industrial development is

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indispensable for achieving rapid growth and progress. Thus, the transformation of agriculture can indeed be construed as a strategy to catalyse industrialisation within an economy (Siddiqui, 2018). Additionally, the interplay between agriculture and manufacturing is exemplified by the expectation that industrial enterprises would naturally evolve from agricultural foundations, utilising raw material transformation through human resources and capital goods (Degu, 2019).

The interconnectedness between traditional agricultural pursuits and modern industrial development is intrinsic to the holistic economic progress of any nation. The symbiotic relationship between the growth of agriculture and the demand for agricultural commodities within the industrial sphere reinforces the significance of agriculture for industrial development (Sikhosana *et al.*, 2015). However, Nigeria's manufacturing sector faces significant challenges, ranging from high import reliance and declining capacity utilisation to escalating production costs and insufficient linkages with other economic sectors (Obioma & Ozughalu, 2005; Adeyemi & Olufemi, 2016; Ekpo, 2018). Despite the critical potential of the sector, its contribution to Gross Domestic Product (GDP) has declined over the years, indicating the rudimentary state of Nigeria's industrialisation (Central Bank of Nigeria (CBN), 2020). Given the recent turmoil in the international oil market and Nigeria's present economic predicament, rectifying this perceived negligence in the manufacturing sector becomes paramount to avert potential economic hardships.

Although, claims persist that agriculture complements manufacturing through forward and backward linkages for comprehensive economic growth, Nigeria's manufacturing sector remains underdeveloped (Kelikume & Nwani, 2020). Hirschman (1958) even highlighted the underwhelming forward and backward inter-industry linkages of agriculture that are crucial for development. The uneven patterns of contributions to GDP prompt an inquiry into the intricate relationship between these sectors. Common among developing economies is the focus on bolstering the agricultural sector itself, with the expectation of spillover effects across other economic spheres (Awan & Khan, 2015). Consequently, strategic sectors that generate forward and backward linkages to other industries are selected for concentrated attention. Recently, Anwar *et al.* (2021) have shed light on the primacy of forward linkages in agricultural sector contributions to development, suggesting a need for higher agricultural sector production to reap benefits across sectors. This underscores the idea that fostering growth in agricultural production could amplify its self-contained advantages while also extending mild spillover effects. Hence, this paper seeks to unravel the inter-sectoral linkages between Nigeria's agriculture and manufacturing sectors, shedding light on their combined potential for driving comprehensive economic growth and development. The data utilised for the study spanned from 1981 to 2020 and was obtained from CBN statistical bulletin as well as its annual report.

Following the introductory segment, this study is organised into six sections; Section Two presents the nature of agriculture-manufacturing inter-sectoral linkages. Section Three provides a review of related studies on agricultural and manufacturing inter-sectoral linkages. Section Four presents the theoretical framework of the study while Section Five is devoted to the model specification for the study. The results and the discussion are presented in Section Six. The policy implications of the study are presented in Section Seven.

2. Nature of Agriculture-Manufacturing Inter-Sectoral Linkages

The concept of sectoral linkage refers to the connection between a specific sector and the broader economy, encompassing both direct and indirect interactions and revenues (Gemmell, 2006; Rogerson, 2012; Degu, 2019). This notion stems from Hirschman's unbalanced growth hypothesis, which asserts that sectors with strong linkages can catalyse faster development in terms of output, income, and employment compared to alternative capital allocations (Hirschman, 1958; Polenske & Sivitanides, 1990; Holz, 2011; Jiang *et al.*, 2020). Understanding these linkages is crucial for formulating effective policies that promote future economic growth. In the realm of developing economies, the intricate interdependence and symbiotic relationship between the agriculture and manufacturing sectors are well-established (Diao *et al.*, 2007; Salami & Kelikume, 2011; Singh, 2016). The nature and degree of this interdependence, however, can fluctuate over time. This interplay has been a subject of theoretical and empirical exploration, yielding various channels of interaction. Firstly, agriculture supplies essential food grains to bolster labour absorption within the manufacturing sector. Secondly, it furnishes raw materials like cotton, jute, tea, and coffee to agro-based industries. Thirdly, industries reciprocate by providing inputs such as fertilisers, machinery, and pesticides to agriculture. Fourthly, agriculture's demand for industrial consumer goods influences the industry. Fifth, surplus savings generated by agriculture can fuel investment in manufacturing and other sectors. Lastly, fluctuations in agricultural production can sway private investment decisions through impacts on trade terms and profitability.

The role of the agricultural sector extends beyond provision of food for and raw materials; it also serves as a crucial market for industrial products (Mehrara & Baghbanpour, 2016; Degu, 2019). This dual economic relationship entails mutual benefits, where industries modernise traditional methods by introducing contemporary inputs, equipment, and organisational expertise. Consequently, both sectors grow, and the nation reaps efficiency gains. The two primary categories of linkages between these sectors are backward and forward linkages (Andreosso-O'Callaghan & Yue, 2004; Saari *et al.*, 2013; Degu, 2019). Backward linkage illustrates how one industry relies on another for essential goods, while forward linkage depicts how an industry channels its outputs to downstream sectors. These linkages reflect the economic grasp and flow of industries, indicating their potential to drive and influence each other. If the disparity between agricultural and manufactured product prices is extensive, it can limit demand and subsequently impede economic development (Singariya & Naval, 2016). The economic connection between agriculture and manufacturing is a significant driver of growth in developing economies. Evaluating the strength and direction of this relationship defines a sector's relevance within an economy (Andreosso-O'Callaghan & Yue, 2004). Recent attention has homed in on inter-sectoral linkage theory, emerging as a central topic in economic development. Hirschman's theory advocates for prioritising the acceleration of growth in key sectors, triggering a shift in development from these sectors to others (Hirschman, 1958). As leading sectors expand, their far-reaching impact on economic activities, employment rates, and per capita income stems from the clear forward and backward linkages these sectors establish within the broader economy.

3. Empirical Review

Numerous studies have delved into the intricate relationship between the agricultural and manufacturing sectors, shedding light on their connection and impact on economic development. These investigations provide valuable insights into the dynamics of sectoral interdependence. For instance, Vogel (1994) examined the potency of the contribution of the agriculture sector to industrialisation in emerging nations through a social accounting matrix (SAM). The study contrasted agricultural production multipliers of different stages of growth (forward and backward connections). The findings of the study revealed that agriculture has powerful backward links at reduced rates of growth as it dominated the forward links with non-agricultural production processes. Bathla (2003) conducted a comprehensive econometric study on inter-sectoral linkages in the Indian economy. The study showed that a unidirectional causation was identified in the primary sector, and a robust long-term balanced relationship was discovered among the primary, secondary, and specialised service sectors. Shombe (2008) explored Tanzania's economic landscape and uncovered a two-way causality between agricultural GDP and total exports, alongside one-way causality links between growth, export, and agricultural GDP. Hye (2009) stressed the role of agriculture in propelling contemporary industry's economic development, highlighting both short- and long-term bidirectional connections. However, the industrial output only had long-term effects on the agricultural sector.

Seka (2009) highlighted a unidirectional Granger causality, indicating that agriculture tends to propel industrial development in Western African states. Saikia (2012) examined inter-sectoral linkages in India using an input-output framework. The study focused on trends in interconnections between the sectors, observing a decline in interconnections between agriculture and industry over time. Notably, during the pre-reform era, the relationship shifted from agriculture to industry in the post-reform period. The main interaction between production and demand shifted to revolve around industry and agriculture. Saari *et al.* (2013) conducted a study on the significance of the agricultural sector in the inter-industry linkages of the Malaysian economy. The study employed the input-output model to analyse sector relationships. The findings of the study showed that the agricultural sector primarily contributed through forward linkages, which implied that other sectors, particularly manufacturing, depended on the output of the agricultural sector as an essential input in the production process.

In the context of Nigeria, scholars have extensively explored the relationship between agriculture and manufacturing. Onakoya (2013) examined the impact of sectoral interactions on economic growth, uncovering the predominant flow of capital from agriculture to manufacturing, oil and gas, and services. Also, Egbulonu & Nwokoro (2016) analysed the impact of the agricultural and manufacturing sectors on the economic development of Nigeria, highlighting their favourable contributions. Additionally, Eze (2016) employed a vector error correction approach to study long-term impacts, revealing an adverse connection between agricultural output and industrial sector development. Waniko (2016) investigated the effects of agricultural and industrial linkages on sustainable development in Nigeria. The study revealed a long-term causal relationship between the two sectors. Furthermore, Antai *et al.* (2016) analysed sectoral linkages and growth prospects in the Nigerian economy, emphasizing the crucial role of the service sector in promoting economic growth and connecting

various sectors. Osuagwu (2020) employed time series data to explore the relationship between Nigeria's agricultural and manufacturing output, concluding that a two-way relationship exists between the sectors.

4. Theoretical Framework

The foundation of this study rests upon Hirschman's theory of unbalanced growth, which provides a conceptual framework for understanding the intricate dynamics of inter-sectoral linkages between agriculture and manufacturing. This theory finds its roots in the recognition of both forward and backward linkages inherent in the relationship between these two sectors (Hirschman, 1958). This perspective is closely intertwined with the unbalanced growth hypothesis advanced by economists like Hirschman and Nurske, offering a counterpoint to the doctrine of balanced growth. Hirschman's theory posits that investment should be strategically concentrated in selected industries rather than uniformly distributed across all sectors of the economy (Hirschman, 1958). He argued that fostering economic growth in underdeveloped countries requires a deliberate approach of intentionally unbalancing the economy according to a preconceived plan. This strategy entails channelling development efforts into strategically chosen economic sectors, which in turn stimulate new markets and create a foundation for sustained economic advancement.

Applying Hirschman's theory to the context of Nigeria, it becomes evident that a focused allocation of resources based on comparative advantage, potential returns, and contribution to national income is a prudent approach. Notably, the agricultural sector possesses the potential to generate increasing levels of productivity and revenue, which can then be directed towards nurturing the growth of the manufacturing sector. Hirschman's theory aligns with the idea that sectors can develop synergistically through linkage effects, highlighting the significance of both backward and forward linkages. In line with this theory, the interdependence between the agricultural and manufacturing sectors takes on a pivotal role. The agricultural sector's output expansion hinges on the presence of a backward linkage with the manufacturing sector. This linkage entails the provision of inputs and technologies by the manufacturing sector, fostering increased productivity in agriculture. Simultaneously, the agricultural sector maintains a forward linkage with manufacturing, serving as a crucial supplier of raw materials for manufacturing and processing industries.

5. Model Specification

The model employed in the study draws on the interdependence between agricultural and manufacturing sectors. Feder (1983) developed a neo-classical path of production model integrating disequilibrium in the form of differentials in productivity and spillovers between sectors to explore the ties among sectors of a growing economy. Many subsequent studies were focused on the growth impact of agricultural-manufacturing differences based on this template (Feder, 1986; Hwa, 1988; and Dowrick & Gemmell, 1991). This analysis fits Feder's model and was updated as a starting point. The following output functions were specified by Feder for two sectors:

$$A = F\{K_a, L_a, M\} \quad \text{..... (1)}$$

$$M = G\{K_m, L_m\} \quad \text{..... (2)}$$

Where A and M present agricultural and manufacturing production functions, respectively. K_i (L_i) is capital (labour) in the sector i (= a, m corresponding respectively to agriculture and manufacture). The term in M in (1) may be considered to catch externalities from agricultural production activity as they are not expressed in Feder's (1982) market prices.

In analysing inter-sectoral linkages, this study focuses on whether the sectors of agriculture, and manufacturing are interdependently evolving. The following endogenous model was constructed to identify inter-sectoral linkages:

$$G_j = F\ (Agric, Manuf) \quad \text{..... (3)}$$

Where G_j represents log growth of the economy.

Agric represents the log of agricultural share to RGDP.

Manu represents the log of manufacturing share to RGDP.

6. Analysis and Discussion

Descriptive Statistics

Table 1 below shows that the mean AGR is approximately 7693.5, while the mean MANUF is around 2715.2, reflecting the typical levels of production in the agricultural and manufacturing sectors. Also, positive skewness was observed in both AGR and MANUF as seen in Table 1 below, suggesting that the data distributions are skewed towards higher values, implying that the majority of observations tend to be on the lower end of the distribution, while the right tail stretches out (Mills, 1990). Balanda & MacGillivray (1998) posit that a value of 3 indicates a mesokurtic distribution, which is neither too peaked nor too flat. In this case, agricultural output is found to exhibit a platykurtic distribution as shown in Table 1, implying that more of its values are concentrated in the lower range of the distribution. On the other hand, manufacturing sector output displays a leptokurtic distribution, suggesting that its distribution has heavier tails, and more values are clustered in the higher range.

Table 1: Descriptive Statistics

	AGR	MANUF
Mean	7693.524	2715.218
Median	4772.307	1761.750
Maximum	17544.15	6684.218
Minimum	2303.505	1018.907
Std. Dev.	5159.287	1793.441
Skewness	0.610525	1.274875
Kurtosis	1.837096	3.100299
Jarque-Bera	4.501903	10.30954
Probability	0.105299	0.005772

Source: Author's computation using Eviews 10.

Unit Root Test Result

The results of the unit root test are presented in Table 2 below. The Augmented Dickey-Fuller (ADF) test statistic showed that all the variables were not stationary at level I(0) but were all found to be stationary at first difference I(1). This was also consistent with Phillip Perron's (PP) test statistic results as AGR and MANUF passed the test of significance at the one percent level.

Table 2: Summary of Unit Root Test

Variables	ADF		PP	
	Level	***First difference***	***Level***	***First difference***
AGR	-0.2733 (0.9200)	-5.9627 (0.0000)*	-0.2693 (0.9205)	-5.9636 (0.0000)*
MANUF	-1.3737 (0.5854)	-4.7438 (0.0004)*	-1.1885 (0.6697)	-4.7436 (0.0004)*

The probability of the t-statistic was reported in the bracket.
Note: *, **, ***, denotes significant level at 1%, 5%, and 10% respectively.
Source: Author's computation using E-views10.

Causality Test

The pair-wise Granger causality test results presented in Table 3 show a significant bidirectional linkage between these two sectors, indicating that they are interdependent and contribute to each other's growth. This finding is in line with the notion of forward and backward linkages, suggesting that changes or shocks in one sector have the ability to impact the other sector, and vice versa. More specifically, the significant bidirectional linkage implies that both the agricultural and manufacturing sectors play a role in each other's development. Table 3 indicates that the forward linkage of agriculture to the manufacturing sector is stronger relative to the manufacturing sector's impact on agriculture. This suggests that developments or improvements in the agricultural sector are more likely to lead to growth in the manufacturing sector. Conversely, Table 3 suggests that the manufacturing sector's backward linkage to agriculture is not as strong as the forward linkage from agriculture to manufacturing. This implies that the manufacturing sector's growth is somewhat reliant on the development and productivity of

the agricultural sector, particularly as a source of raw materials or markets for its products.

Table 3: Granger Causality Results

Null Hypothesis:	F-Statistic	Prob.	Decision
LOG(MANUF_) does not lead LOG(AGR)	2.71042	0.0414**	Reject
LOG(AGR) does not lead LOG(MANUF_)	3.58188	0.0391**	Reject

Significance Levels: 1% (*); 5% (**), 10% (***)

Source: Author's Computation Using E-Views10.

Impulse Response Functions

To comprehensively estimate the overall effects of one sector on the other, an impulse response function (IRF) was employed, which enables tracking the response of each sector to shocks in the other sector over a specified period. The impulse response was carried out for a forecasting horizon of 10 years, providing insights into both short-term and long-term effects as shown in Figure 1 below. When examining the response of the agricultural sector to a one-standard-deviation shock in the manufacturing sector, intriguing patterns emerge. In the initial period (period 1), the effect is positive, indicating that a shock in manufacturing leads to a positive response in agriculture. As we move into period 2, this positive effect starts to decrease, turning negative in period 3. Subsequently, from period 3 to period 5, the effect starts to rise again. Beyond period 5, the response stabilizes and remains relatively constant until the end of the forecasting horizon (period 10).

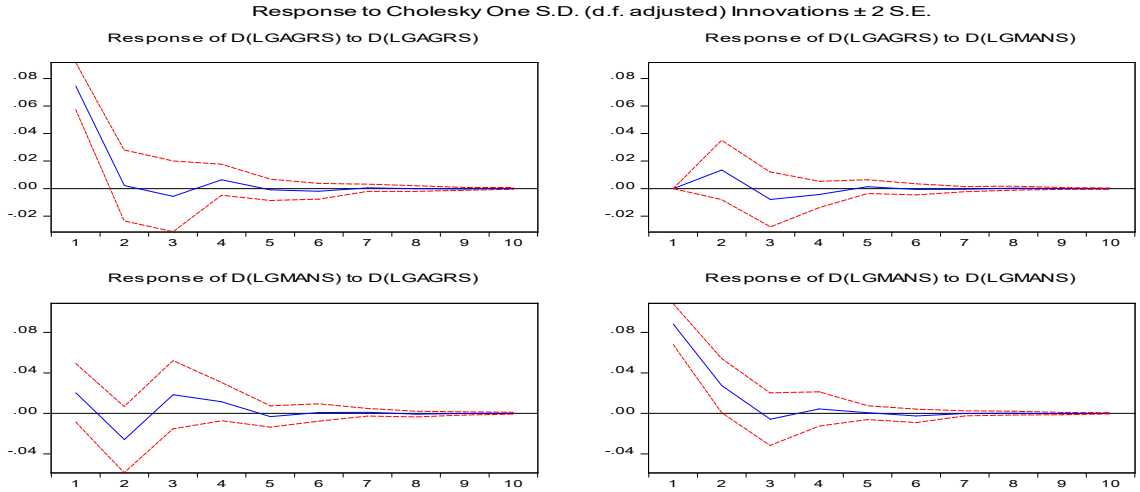

Figure 1: Impulse Response Functions

Source: Authors computation using E-views10

The dynamic response suggests that shocks have asymmetric impacts on the agricultural sector in both the short-run and long-run periods. Initially, a shock in the manufacturing sector appears to stimulate the agricultural sector, but this effect diminishes over time, turning negative in the short-run before gradually recovering. The response then stabilises, indicating that the initial impact of the shock fades and the agricultural sector settles into a new equilibrium. Conversely, when exploring the response of the manufacturing sector to a one-standard-deviation shock in the agricultural sector, a different pattern emerges. At the outset (period 1), the response is declining, indicating that a shock in agriculture leads to a negative effect on manufacturing. This negative response persists up to period 2. Starting from period 2 and extending to period 4, the response begins to rise, though it remains positive. Subsequently, from period 5 to period 6, the response turns negative again. From period 6 onward, the effect stabilises and maintains a relatively steady level until the end of the forecast (period 10). The fluctuating response of the manufacturing sector to shocks in agriculture implies that these shocks also have asymmetric impacts on manufacturing, both in the short-term and long-term periods. The sector initially experiences a negative response, which later reverses into a positive effect before stabilising. This suggests that while an initial shock in agriculture can have a dampening impact on manufacturing, the sector ultimately adjusts and stabilizes as the shock's effects clear.

Variance Decomposition

Table 4A presents the variance decomposition for the variable D(LGAGRS), which corresponds to the forecast error shock effect in the agricultural sector. In period 1, the shock in the agricultural sector itself accounted for 100 percent of the variation in its own forecast error. However, as we progress to subsequent periods, this percentage gradually decreases. This diminishing effect indicates that over time, the shock in the agricultural sector has a decreasing influence on explaining its own variation. Notably, in period 1, the shock in agriculture does not explain any variation in the manufacturing sector. However, this changes as we move forward in time. For period 2, about 3.2 percent of the variation in the manufacturing sector is explained by the shock in the agricultural sector. This suggests that while the initial shock in agriculture has a limited impact on manufacturing, there is a slight increase in its explanatory power in the manufacturing sector. As we reach the long run (period 5 and beyond), approximately 4.5 percent of the variation in the manufacturing sector is attributed to the forecast error shock in the agricultural sector. This implies that, in the long run, there is a moderate influence of shocks in the agricultural sector on the manufacturing sector's variation. This observation aligns with the fact that Nigeria's manufacturing sector has limited dependence on the agricultural sector, as much of its raw materials are imported.

Table 4A: Variance Decomposition of D(LGAGRS)

Period	S.E.	D(LGAGRS)	D(LGMANUF)
1	0.074414	100.0000	0.000000
2	0.075664	96.80890	3.191100
3	0.076287	95.78359	4.216409
4	0.076678	95.51072	4.489277
5	0.076695	95.48055	4.519454
6	0.076722	95.47816	4.521839
7	0.076726	95.47521	4.524788
8	0.076726	95.47345	4.526548
9	0.076727	95.47349	4.526510
10	0.076727	95.47344	4.526562

Cholesky Ordering: D(LAGR)

Source: Author's computation using E-views 10

Turning attention to Table 4B, it presents the variance decomposition for the variable D(LGMANS), representing the forecast error shock effect in the manufacturing sector. In period 1, the shock in the manufacturing sector explained about 5.06 percent of the variation in the agricultural sector. As we progress to subsequent periods, this percentage increases. In periods 2 and 3, the shock in the manufacturing sector explains approximately 11.23 and 14.21 percent of the variation in the agricultural sector, respectively. From period 4 to period 10, this effect stabilizes around 15.39 percent, indicating that the shock in the manufacturing sector has a relatively consistent influence on explaining the variation in the agricultural sector. These results underscore the dynamic relationships and interdependencies between the agricultural and manufacturing sectors. While the shock effects in the agricultural sector may not have a substantial initial impact on manufacturing, their influence increases over time, particularly in the long run. Conversely, shocks in the manufacturing sector have a more consistent and increasing impact on explaining the variation in the agricultural sector, suggesting a stronger connection between the manufacturing sector and agriculture.

Table 4B: Variance Decomposition of D(LGMANUF)

Period	S.E.	D(LAGR)	D(LMANUF)
1	0.037055	5.594974	94.40503
2	0.038254	5.569382	94.43062
3	0.039834	8.875296	91.12470
4	0.039956	9.299791	90.70021
5	0.040008	9.533134	90.46687
6	0.040017	9.541205	90.45880
7	0.040018	9.542218	90.45778
8	0.040020	9.543197	90.45680
9	0.040020	9.543208	90.45679
10	0.040020	9.543590	90.45641

Cholesky Ordering: D(LMANUF)
Source: Author's computation using E-views 10

Model Diagnostics

The null hypothesis for serial correlation and heteroscedasticity testing indicated that in the model there is no serial correlation and homoscedasticity. Therefore, since the probability values are all significantly higher than 0.05 as presented in Table 5 below, the null hypothesis is accepted and suggests that no form of serial correlation and heteroscedasticity affects the model for this study.

Table 5: Summary of Diagnostics

Test Type	F-Statistics	Probability Value
VAR Serial Correlation LM Test	1.7770	0.1469
VAR Heteroscedasticity Test	47.457	0.2600

Source: Author's computation using E-views 10

7. Policy Implications

The outcomes of this study carry substantial policy implications that underscore the significance of inter-sectoral connections in fostering comprehensive economic growth. To steer Nigeria toward rapid and sustainable economic advancement, it is imperative for policymakers to institute strategies aimed at diversifying the economy. Emphasis should be placed on channelling investments into the agricultural sector and creating an environment that allows the manufacturing sector to capitalise on the opportunities inherent in these sectors. In the context of a multifaceted web of interactions, particularly between the agricultural and manufacturing sectors, prudent policy formulation becomes crucial. For instance, if the government were to enact a policy targeting industrial production, like an environmental tax, it could inadvertently affect the manufacturing sector negatively. Given the positive linkages between agriculture and manufacturing, such a policy might also have a detrimental impact on the agricultural sector. Therefore, policymakers must thoroughly assess the magnitude and direction of these inter-sectoral ties before introducing new policies.

Moreover, fostering the growth of Nigeria's manufacturing sector necessitates the adoption of enticing incentives that attract private entrepreneurs. Government policies should align with the manufacturing sector's potential and promote its development for the greater good of the Nigerian economy. A holistic approach is essential for the sustained growth of both the agricultural and manufacturing sectors. Policies aimed at ensuring their sustainable development must be carefully crafted, fostering both forward and backward linkages between these sectors. The findings of this study, which highlight the relatively low contribution of agricultural shocks to the manufacturing sector, emphasise the need to reduce reliance on imported raw materials. Encouraging local farmers to increase agricultural output would establish a robust forward linkage to the manufacturing sector. Ultimately, the government holds a pivotal role in orchestrating the expansion of agricultural output, which, in turn, can cater for the needs of the manufacturing sector.

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