

External Sector and the Performance of the Manufacturing Sector in Nigeria

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 DOI: <https://doi.org/10.36348/sjef.2026.v10i09.003>

| Received: 16.07.2026 | Accepted: 09.09.2026 | Published: 21.09.2026

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Abstract

This study examined how the external sector affects the performance of the manufacturing sector in Nigeria from 1981 and 2023. The investigator used data on how much the manufacturing sector contributes to the country's total economic output, the exchange rate, foreign direct investments, the country's debt to other countries, how open the country is to international trade, official development aid, and money sent back by people living abroad – migrant remittances inflow. All these data came from reports by Nigeria's central bank and the World Bank's World Development Indicators. The study used a specific method called Autoregressive Distributed Lag Bounds testing to analyze the data. The results showed that there is a long-term link between the different factors studied. In the long run, the exchange rate and trade openness have a negative and strong effect on manufacturing sector performance. On the other hand, foreign direct investments, the country's external debt, development aid from other countries, and money sent back by migrants all have a positive and strong effect on the manufacturing sector. In the short term, foreign direct investments, development aid, and migrant remittances inflow have a negative and strong effect on manufacturing sector. Meanwhile, the exchange rate, external debt, and trade openness have a positive and strong effect in the short term. Based on these results, the study concluded that opening up the economy, managing the exchange rate carefully, using external debt and aid in a productive way, and effectively using remittances inflow can help improve the performance of the manufacturing sector in Nigeria. The study also suggested that the government should create a clear policy that balances openness with building local capabilities and ensures that external resources are used well for developing manufacturing sector in Nigeria.

Keywords: Manufacturing sector, External Sector, FDI, exchange rate, trade openness, external debt, ARDL.

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I. INTRODUCTION

The manufacturing industry plays an important role in the growth of both developed and developing countries. It helps change the economy by creating jobs, improving technology, adding value to products, encouraging exports, and making the economy more diverse. A strong manufacturing sector increases productivity, encourages new ideas, decreases reliance on foreign goods, and greatly contributes to the country's total economic output, known as gross domestic product (GDP). Because of this, how well the manufacturing sector performs is often seen as a major sign of how advanced and successful an economy is (Gbosi, 2015; Kaldor, 1967).

Furthermore, how the external sector performs has a big effect on domestic production, especially in developing countries like Nigeria where manufacturing industries rely a lot on imported machinery, equipment, intermediate goods, and capital from abroad. The external sector is an important part of any economy, showing how it interacts with the rest of the world

through trade, capital movements, and exchange rates. For developing countries like Nigeria, factors in the external sector such as exchange rates, foreign direct investment, trade openness, external debt, and balance of payments are key in influencing local production and industrial performance. The external sector affects manufacturing in several connected ways, including trade, exchange rate changes, capital inflows, technology transfer, and external shocks. These factors determine how much manufacturing companies can get the materials they need, how well they can compete in global markets, and how much they can grow their production. According to the World Bank (2020), being open to the external sector can help boost industrial growth, but it can also make domestic industries more vulnerable if not handled carefully.

One important way manufacturing sector grows is through international trade, which includes exporting and importing goods. The international part of the economy influences manufacturing by providing access to raw materials, intermediate goods, and machinery that

Citation: George-Anokwuru, C. C. (2026). External Sector and the Performance of the Manufacturing Sector in Nigeria.

Saudi J Econ Fin, 10(9), 294-311. <https://doi.org/10.36348/sjef.2026.v10i09.003>

are needed for production. In Nigeria, many manufacturing companies depend a lot on imported goods because their local supply chains are not strong enough. While importing can help make production more efficient, relying too much on imports makes businesses more at risk when things like global prices change or when there are problems with getting supplies. On the other hand, selling products abroad helps manufacturers increase their production and earn money from other countries. However, Nigeria's manufacturing exports are still not very high because the products face difficulties in competing with those from other countries (CBN, 2022).

Another important way that the external sector affects the manufacturing sector is through the exchange rate. Changes in the exchange rate directly influence the cost of imported goods and the competitiveness of manufactured products in the global market. When the naira loses value, imported machines and raw materials become more expensive, raising production costs for manufacturers. At the same time, locally made goods become cheaper for foreign buyers, which could help increase exports. However, the Central Bank of Nigeria (CBN, 2022) points out that ongoing exchange rate fluctuations create uncertainty, make investors hesitant, and negatively affect manufacturing performance. Foreign direct investment (FDI) is another major way the external sector connects with the manufacturing sector. FDI brings in money, technology, management skills, and access to international markets. When it goes into manufacturing, it can improve productivity and expand industrial capabilities. But in Nigeria, most FDI has largely concentrated in the oil sector, which limits its support for manufacturing growth. The United Nations Conference on Trade and Development (UNCTAD, 2021) says that bringing more FDI into manufacturing sector is key for advancing industrialization and economic diversity.

The external sector also affects manufacturing sector through the transfer of technology and knowledge. When a country imports machinery and works with foreign companies, local producers get exposed to new ways of making things and new ideas. This can help them work more efficiently and make better products. However, in Nigeria, these benefits are limited because the country doesn't have strong technology skills and there isn't much connection between foreign and local businesses. This makes it hard for new ideas and knowledge to spread throughout the manufacturing industry (World Bank, 2020). Another important factor is foreign demand, which can drive up manufacturing output. When international markets want more goods, it encourages companies to produce more, invest more, and operate more efficiently. But in Nigeria, because exports are not varied, manufacturing companies haven't really benefited from global demand. Instead, the country still relies mostly on selling oil, and manufacturing contributes very little to the country's export income.

External shocks also help connect the external sector with the manufacturing sector. These shocks include changes in global commodity prices, financial problems, and shifts in trade rules. For instance, when global oil prices drop, Nigeria earns less foreign money, which makes the local currency weaker and makes it harder to bring in important materials needed for making goods. These shocks can stop production and lower the amount of goods made (IMF, 2019).

Another way the external sector affects manufacturing is through the balance of payments. If there's a deficit in the balance of payments, there might not be enough foreign currency, which makes it hard for factories to buy raw materials and equipment. In Nigeria, a lack of foreign currency has often slowed down manufacturing activities and reduced how much production capacity is used (CBN, 2022). Trade policies and liberalization also play a role in how manufacturing works. Things like tariffs, import limits, and export rewards affect the environment for manufacturers. Trade liberalization can bring more competition from foreign companies, which might push local industries to work better or make them struggle. In Nigeria, changing trade policies have created confusion and slowed the growth of the manufacturing industry (World Bank, 2020). Even though Nigeria has tried many policies to help the manufacturing sector grow, it has not met expectations. Manufacturing sector contributes less to the country's total economic output than it does in other developing countries. At the same time, the sector still faces big challenges in terms of how much it can produce, how efficiently it works, and how well it can compete.

One of the main factors that affect how well the manufacturing sector performs is the condition of the external sector. Over the years, Nigeria has had a lot of ups and downs in important external sector variables, including instability in exchange rate, unpredictable foreign direct investments, growing external debt, changing levels of trade openness, inconsistent aid from other countries, and varying amounts of money sent back by people living abroad. These changes have made it hard for manufacturing companies, which often rely on imported tools, technology, and intermediate inputs. The naira has been losing value, which has made imported machines, equipment, and materials more expensive. This has made production more costly and less competitive for locally made products (Obadan, 2012). Also, while foreign direct investment is supposed to help industry grow by bringing in new technology and money, most of it goes into the oil sector, not manufacturing, which limits how much it helps the manufacturing sector (Ayanwale, 2007).

Nigeria's debt to other countries has gone up a lot in recent years. For instance, in 2020, 2021, 2022, 2023 external debt was ₦12705.62 million, ₦15855.23 million, ₦18702.25 million, ₦38219.85 million (CBN, 2023). Additionally, a report from the Debt Management

Office (DMO) revealed that by June, 2025, the external debt outstanding had reached ₦71,847,585.07 million (DMO, 2025). Even though borrowing money from abroad is meant to help with development projects and fix infrastructure problems, there are worries about whether this money is being used effectively and how much it will cost to pay it back over time (Ajayi & Oke, 2012). Also, as Nigeria has become more open to trade, local manufacturers now face strong competition from imported goods, which can make it harder for domestic industries to survive and grow. In addition, both official help from other countries and money sent back by migrants have increased. For instance, Nigeria's total direct remittances increased from \$139 million in January 2024 to \$365 million in May 2024 (Okonko, 2024). The Central Bank of Nigeria (CBN) also reported a significant increase in remittance inflows, reaching \$553 million in July 2024, a 130 per cent increase from the corresponding period in 2023 (Punch Newspaper of 20th August, 2024). While these money flows could help boost investment and economic activity, it's not clear how much they actually help the manufacturing sector. Often, the money sent back by migrants is used for daily living expenses instead of for investments that can create jobs or grow businesses. The success of development aid also depends a lot on how good the local institutions are and how well the government follows through on its plans (World Bank, 2023).

Studies on how external sector variables affect the performance of the manufacturing sector have given mixed and unclear results. Some research shows that variables like foreign direct investments, openness of trade, exchange rates, borrowed money from abroad, and money sent back by people living overseas can help boost manufacturing output (Chidi & Tonye, 2023; Cookey & Oladosu, 2023; Wosu & Aturuchi, 2024). However, other studies say these variables can have a negative impact (Effiong *et al.*, 2025; Hassan & Abdul-Ganiyu, 2024; Imoagwu *et al.*, 2024). The different results might be because researchers used different methods, models, ways of measuring variables, techniques for analysis, or time frames for their studies. Because there's no clear agreement in the research, more studies are needed to better understand how these external factors influence the manufacturing sector in Nigeria.

The foregoing issues create a gap in the literature and bring up important questions about how changes in the external sector affect the manufacturing sector in Nigeria. Because of this, there is a need for a detailed study that looks at how external sector variables - exchange rate, foreign investment, external debt, trade openness, aid from other countries, and money sent back by migrants impact the performance of the manufacturing sector in Nigeria. This research filled this gap and offer practical advice to support better industrial growth and a more varied economy. The rest of the paper was organized into sections that included a review of

related literature, methodology, results and discussion, conclusion, and recommendations.

II. LITERATURE REVIEW

Conceptual Clarification

External Sector

The external sector is part of an economy that looks at how a country interacts with the rest of the world. These interactions include buying and selling goods and services, investing in other countries, sending and receiving money, and transferring funds. According to Gbosi (2015), the external sector helps in providing external financial resources to complement domestic resources when they are in short supply or fall below investment outlay. The International Monetary Fund (IMF, 2009) says the external sector helps explain how a country's economy connects with global markets. In Nigeria, the external sector is especially important because the country is open to trade and depends a lot on selling crude oil to get foreign money.

A key part of the external sector is international trade, which is when countries buy and sell goods and services with each other. According to the World Bank (2020), when a country's exports grow, it earns more foreign money and the economy can grow. But if a country depends too much on imports, it can harm its own industries. Nigeria's exports are mainly crude oil, which makes the economy sensitive to changes in global oil prices (CBN, 2021).

Closely related to international trade is the Balance of Payments (BOPs), which keeps track of all the money transactions between people in a country and the rest of the world during a certain time. According to Umo (2012), the BOPs account can conceptually be structured into three categories: the current account, the capital and monetary account. The current account includes the buying and selling of goods and services, income from abroad, and money transfers. Put differently, the current account is made up of visible and invisible trade items as well as receipts of transfer payments. The major items in the capital account include long-term and short-term capital movements of both private and official origins. The monetary account summarises changes in a country's foreign exchange reserves, official financing liabilities as well as transactions with the International Monetary Fund (IMF) (Umo 2012). According to the International Monetary Fund (IMF) in 2009, a continuous deficit in the current account might show deeper problems in the economy, while a surplus could mean the country is exporting a lot or not buying much from other countries.

Another important idea in the external sector is the exchange rate, which is the value of one currency compared to another. The exchange rate affects how competitive a country's products are in world markets. If a country's currency becomes weaker, its exports become cheaper and imports become more expensive,

which can help improve the trade balance. However, the Central Bank of Nigeria (CBN) pointed out in 2022 that unstable exchange rates in Nigeria often lead to higher inflation and make it harder for businesses, especially those that rely on imports, to plan and operate.

The external sector also includes capital flows, especially foreign direct investment (FDI) and portfolio investment. FDI happens when an investor or company from one country acquires an asset in another country with the intent to control or manage that asset. This can be done by a single investor or by an already existing firm. Portfolio investment is when people buy financial assets like stocks and bonds from other countries. According to UNCTAD (2021), FDI is very important for industrial growth, especially in countries like Nigeria. However, portfolio investments can be unstable and may cause sudden changes in money flow, which can affect the economy. One more important part is external reserves, also called foreign exchange reserves. These are money held by the country's central bank in foreign currencies. They are used to pay for international trade, keep the local currency stable, and protect the economy from sudden financial shocks. In Nigeria, these reserves mainly come from oil exports. As stated by the Central Bank of Nigeria (2022), having enough reserves is key to keeping investors confident and ensuring the currency remains stable.

External debt is also central to the external sector. It means borrowing money from foreign creditors, including international financial institutions, foreign governments, and private lenders. While taking loans can help to support infrastructure projects and develop a country, too much debt can cause problems with keeping up with payments. The World Bank (2021) says that when developing countries borrow a lot from abroad, they become more at risk from falling currency value and sudden changes in the global economy. The external sector also includes money sent back home by people living overseas, such as remittances. These are important because they bring in foreign currency for many developing countries. In Nigeria, money sent back by people living abroad has been a major part of household income and resource for the economy, sometimes even more than money from foreign investments (World Bank, 2020).

In summary, the external sector is very important because it plays a pivotal role in affecting the overall economy through trade, investments, exchange rates, and money flows. When this sector works well, it helps the economy grow, makes more foreign currency available, and supports the development of industries. But there are some problems, like depending too much on exports, unstable exchange rates, and unpredictable capital flows, which can hurt the economy. This is especially true for a country like Nigeria, which is very affected by changes happening outside their borders.

Manufacturing Sector

The manufacturing sector is part of the economy that takes raw materials and other resources and turns them into finished products through production processes that increase their value (Todaro & Smith, 2020). It is seen as a key part of economic growth because it helps create jobs, encourages innovation, improves productivity, and supports industrial development (Kaldor, 1967). According to the World Bank (2020), manufacturing is important for industrialization and economic growth because it adds value to raw materials and helps increase productivity. In countries like Nigeria, the manufacturing sector plays an important role in reducing reliance on basic goods and helping the economy become more varied.

One main thing about the manufacturing sector is value addition, which means making raw materials more valuable through processing and making products. Unlike industries that just take out natural resources manufacturing changes inputs into products that are worth more. As the United Nations Industrial Development Organization (UNIDO, 2019) pointed out, adding value helps countries compete better in exports and take part more in global trade networks. In Nigeria, the low level of value addition has limited how much the manufacturing sector contributes to the country's overall economic output, known as gross domestic product (GDP).

Another important concept is industrialization, which refers to the expansion and development of manufacturing activities within an economy. Industrialization usually means changing how resources are used, moving from less productive areas like farming to more productive areas like making goods (manufacturing). The International Monetary Fund (IMF, 2018) argued that countries that grow their manufacturing sectors over time often see higher incomes and better living conditions. But in Nigeria, the growth of manufacturing has been slow because of poor infrastructure and not having clear or consistent policies. The manufacturing sector also plays a big role in creating jobs. It offers work both directly in factories and indirectly through related businesses, covering jobs for people with different skills, from those with little training to experts. The World Bank (2020) pointed out that manufacturing creates more jobs compared to many other industries. However, in Nigeria, the sector's ability to provide employment has been limited by problems like not enough electricity and difficulty getting money for businesses.

One more important factor is how much of their production capacity manufacturing companies are using. When a company uses a lot of its capacity, it means they are using their resources well. But if they aren't using much, it shows they are not working as efficiently as they could be. In 2022, the Central Bank of Nigeria reported that in Nigeria, many manufacturing companies don't

use their full production capacity. This is because of problems like high costs to make things, unreliable electricity, and relying too much on materials brought in from other countries. Technology and innovation are also very important in the manufacturing industry. Using better technology can help make more products, improve the quality of those products, and cut down on costs. The United Nations Industrial Development Organization (UNIDO, 2019) argued that innovation is key to being competitive in the world market. In Nigeria, the lack of using new technology and not enough money spent on research and development has slowed down the growth and made the manufacturing industry less competitive globally.

Furthermore, the manufacturing industry is connected to other parts of the economy. Backward linkages mean getting raw materials from local industries like farming and mining, while forward linkages mean selling finished products to other sectors and to people who buy them. When these connections are strong, it helps the economy grow and become more connected. But in Nigeria, these connections are not very strong, which has limited how much the manufacturing sector can help the whole economy grow. The manufacturing sector is also affected by the business environment, which includes things like infrastructure, rules and regulations, and the availability of money. A good business environment encourages more investment and growth in manufacturing. According to the IMF in 2018, having stable economic policies, good institutions, and proper infrastructure is important for the growth of industries. In Nigeria, problems like bad infrastructure, changing policies, and unstable currency have made it hard for the manufacturing sector to perform well.

In addition, this sector is very important for spreading out the types of products a country exports and earning more foreign currency. A solid manufacturing industry allows countries to sell a variety of made goods, which helps them not depend too much on raw material exports. The World Bank (2020) said that making products for export is key to long-term economic growth. However, Nigeria's manufacturing exports are much smaller than its oil exports, which limits how much the sector can contribute to earning foreign money. In short, the manufacturing sector is a key part of growing the economy, making industry stronger, and changing the country's economic structure. It helps add value to products, creates jobs, spreads out exports, and brings in new technologies. But in Nigeria, the sector has many problems, like poor infrastructure, low use of available resources, and not enough technological progress. Solving these issues is important to fully use the manufacturing sector's potential and reach long-term economic growth.

Theoretical Review

Dependency Theory

Dependency theory is a type of development theory that looks at how the global economy works. It says that there is an unfair relationship between rich, developed countries (called the core) and poorer, developing countries (called the periphery). This idea was made famous by thinkers like Andre Gunder Frank and Samir Amin. They believed that poor countries are not naturally poor, but they became that way because of a long history of being exploited and forced to take part in the global capitalist system (Frank, 1967; Amin, 1976). According to this theory, wealth flows from poorer countries to richer ones, helping the rich get richer while making it hard for the poor to develop. From the point of view of the outside part of an economy, dependency theory says that developing countries are forced to sell their raw materials and buy finished goods from other countries. This creates an unfair trade system that leads to ongoing problems with trade and makes these countries more likely to be affected by changes in the world economy. In Nigeria, for example, the economy is very much based on selling crude oil, while most of the finished products are imported. This fits with the Dependency Theory idea that poorer countries are stuck in a weak position in world trade (Todaro & Smith, 2015).

Dependency theory also talks about unequal exchange, where poorer countries send out raw materials that are of low-value and bring in finished goods that are of high-value. Over time, this makes it harder for these countries to get a fair deal in trade. In Nigeria, for example, crude oil is sent out as raw material, but refined oil and other industrial products are brought in at higher prices. This pattern keeps the country dependent on others and slows down the growth of local industries, since most of the valuable production happens outside the country. When it comes to manufacturing, dependency theory suggests that developing countries have trouble building strong industries because they rely too much on foreign technology, money, and markets. Local businesses find it hard to compete with well-established foreign companies which make industrial growth weak. In Nigeria, the manufacturing sector struggles because it depends on imported machines, raw materials, and other goods. This increases costs and makes it harder for local producers to compete at home and abroad (CBN, 2022).

Another main point of dependency theory is that big foreign companies, called multinational corporations (MNCs), have a big influence on the economy of developing countries. These companies bring in investment and technology, but they also take most of their profits back to their home countries and keep control over important industries. In Nigeria, many sectors like manufacturing and oil extraction are controlled by foreign firms which limit the ability of

local businesses to develop their own industries and improve technology (UNCTAD, 2021).

Furthermore, dependency theory shows how countries can become too dependent on outside money, such as foreign help, loans, and money coming from other countries. While this money can help with development, it can also lead to heavy debt and make a country rely too much on foreign governments for their policies. Nigeria depends a lot on borrowing from other countries and foreign investments, which makes its economy very sensitive to changes in the global financial situation. This can cause problems in the country's trade with other nations and hurt manufacturing industries, especially when there is a sudden loss of money or when the value of the currency changes a lot.

The theory also talks about how some economic plans favour certain industries, like those that export raw materials, over others, like manufacturing. In Nigeria, the focus has been on oil exports for a long time, which has made it harder to grow the manufacturing industry. This has limited the variety of products made locally and made the economy more vulnerable to changes in the price of oil on the world market. However, some people argue that dependency theory doesn't fully show how developing countries can grow by joining the global economy.

Countries like South Korea and China have done well by getting involved in international trade and investment. This shows that although there are challenges from being too dependent, good domestic plans and strong systems can help overcome these problems.

In short, dependency theory helps explain the difficulties Nigeria faces in its trade and manufacturing areas. It shows how relying too much on raw materials exports, depending on foreign goods, and not being fair in global trade can stop industrial growth. To improve manufacturing in Nigeria, it is important to reduce this dependence by creating a more varied economy, adding more value locally, developing new technology, and having good policies that support industry.

Comparative Advantage Theory

The comparative advantage theory is a classical idea about international trade that was created by David Ricardo in 1817. This theory says that countries should focus on making and exporting products that they can create at a lower cost compared to other countries, and they should import products that are more expensive for them to make (Ricardo, 1817). This helps use resources more efficiently and improves the well-being of people through trade. This theory is still an important base for understanding how trade works around the world and how countries interact economically. From the point of view of a country's external sector, this theory explains why countries trade with each other and how their trade

patterns form. It shows that countries export goods they can make better and import goods they can't make as well. In Nigeria's case, the country has a comparative advantage in natural resources, especially crude oil. Because of this, Nigeria's external sector is mostly focused on exporting oil, while it brings in many manufactured goods and expensive products from other countries (Todaro & Smith, 2015).

The theory also talks about the benefits of trade from specialization. When countries focus on areas where they are most efficient, they can be more productive and make more goods. However, in Nigeria, this specialization has mainly happened in the oil sector, which has made the economy less diverse. Although oil exports bring in a lot of money, depending too much on just one product makes the economy riskier because oil prices can change a lot, and it makes the economy less stable.

In relation to the manufacturing sector, comparative advantage theory says that countries should focus on industries where they are more efficient compared to others. Nigeria has a lot of workers and natural resources, so it should build strong manufacturing industries, especially in food processing and light manufacturing. But the manufacturing sector in Nigeria hasn't developed a strong comparative advantage because of problems like poor infrastructure, high costs to make products, and not enough technology (CBN, 2022). Another idea from this theory is dynamic comparative advantage. It means that a country's advantage can change over time if it invests in education, technology, and better facilities. China and South Korea, for example, moved from focusing on farming to making goods by using smart policies and making big investments. This shows that Nigeria could also develop a strong manufacturing industry if it uses the right policies.

The theory explains how opening up trade can help a country be more efficient and competitive. When countries reduce trade barriers, they can reach bigger markets, bring in better technologies, and work more efficiently. In Nigeria, opening up trade has made it easier to get imported goods, but it has also made local factories face strong competition from cheaper products from other countries. This has hurt some local industries that can't compete with these imports (World Bank, 2020). Additionally, Comparative Advantage Theory shows how the way resources are used affects economic growth. Using resources wisely in areas where the country has an advantage can help the economy grow. However, in Nigeria, resources have mostly been used in the oil industry instead of manufacturing. This imbalance has made the manufacturing sector less important for the country's overall economy, jobs, and exports.

The theory also helps explain how the external sector connects to how industries perform. A strong

external sector can help manufacturing grow by giving access to imported goods like materials, machines, and technology. But if a country depends too much on imports, it can hurt its ability to produce things locally. In Nigeria, many manufacturing companies rely heavily on imported raw materials and equipment, which makes them sensitive to changes in currency value and problems with foreign supplies. In short, Comparative Advantage Theory gives important clues about Nigeria's external sector and the difficulties its manufacturing industry faces. Even though Nigeria has a comparative advantage in oil production, relying too much on this area has limited the growth of manufacturing. To improve manufacturing, Nigeria needs to focus on building a new kind of comparative advantage through industrial development, technology progress, and economic variety. This will help the country create a more balanced and lasting external sector.

Endogenous Growth Theory

The endogenous growth theory came about because the old neoclassical growth models had some big shortcomings. This theory focuses on how an economy can grow over the long term by using things that are inside the economy, like education, new ideas, and the spread of knowledge. Economists like Paul Romer in 1986 and Robert Lucas in 1988 helped develop this idea. They said that technology doesn't just happen on its own; it comes from spending money on research, learning, and improving skills. This is different from older models that treated technological progress as something that happens outside the economy. When looking at the outside part of the economy, the theory says that international trade and being open to the world can help a country grow. Trade allows businesses to get better equipment, materials, and ways to make things, which makes them more efficient. In Nigeria, the external sector helps spread new technology through importing machinery and getting foreign investments. But whether the country can take advantage of these things depends on how well it can absorb new ideas and technologies. This depends on factors like how educated the people are and how good the government and systems are (Romer, 1990).

Endogenous growth theory also highlights the importance of knowledge spillovers, which happen when businesses and industries gain from the innovations and skills of others. In an open economy, being connected to international markets can increase these spillovers. For Nigeria, working with the global economy through trade and investment can encourage learning and innovation in local industries. However, weak connections between foreign companies and local industries have limited how much knowledge is shared with the manufacturing sector (UNCTAD, 2021).

Regarding the manufacturing sector, the theory sees industrialization as a major factor in long-term economic growth. Manufacturing is usually linked to increasing returns to scale, technological progress, and

innovation. According to Endogenous Growth Theory, investing in manufacturing can create productivity improvements that benefit other parts of the economy. In Nigeria, though, the manufacturing sector has not fully used this potential because of low investment in research and development (R&D) and limited technological ability (CBN, 2022). Another important part of the theory is human capital development, which means the education, skills, and knowledge of the workforce. A skilled workforce helps drive innovation and productivity, making it easier for companies to use new technologies. In Nigeria, the level of human capital is still a challenge for manufacturing growth. The sector often lacks enough skilled workers, which makes it hard to compete in both local and international markets (World Bank, 2020).

The theory also shows how innovation and technology are key to making the economy grow. Companies that spend money on new ideas and technology can work more efficiently, save money, and make better products. In Nigeria, not enough money is being spent on innovation and there isn't enough support for research, which is slowing down the growth of the manufacturing industry. This has led to lower productivity and less ability to compete in the global market. Endogenous Growth Theory also points out how important government policies and strong institutions are for growth. Policies that help with education, building better infrastructure, supporting research and development, and encouraging industry can all make the economy perform better. In Nigeria, the policies are not steady, the infrastructure is not good enough, and it's hard to get money for businesses, which is holding back both the export side of the economy and the manufacturing industry. So, good policies are needed to help the economy grow and become more competitive.

Also, the theory talks about how foreign direct investment (FDI) can help the economy grow. FDI brings in new technology, better management practices, and access to international markets. In Nigeria, most FDI goes into the oil industry and doesn't really help the manufacturing sector much. To get the most benefit from FDI, the country should focus on investing in areas like manufacturing, where it can have a bigger positive effect. In short, endogenous growth theory gives a clear picture of how things inside the country, like education, innovation, and policies, affect economic growth. It shows how the export sector can help spread technology and knowledge, and it stresses how important the manufacturing sector is for improving productivity and building industry. For Nigeria, long-term growth depends on improving domestic skills, encouraging innovation, and using opportunities from the export sector to help develop manufacturing.

Empirical Literature

Empirically, Leera, Amadi and Ezeibunwo (2022) looked at how the Nigerian external sector

environment affected the performance of the Nigerian manufacturing sector from 1981 to 2019. They used the Autoregressive Distributed Lag (ARDL) model to analyze the data. The model included the manufacturing sector output index as the main thing they were looking at, and they used exchange rate, trade openness, and foreign direct investment as the other factors. The results revealed a negative and significant impact of changes in the exchange rate on the performance of the manufacturing sector in the short run. However, openness of trade and foreign direct investment displayed positive but insignificant effects on manufacturing sector performance. In the long run, the foreign direct investment and exchange rate had positive and significant effects on manufacturing sector performance, but openness of trade had a negative and meaningful effect on manufacturing performance.

Nteegah and Olubiya (2022) studied the link between the external sector and the performance of the manufacturing sector in Nigeria using the Parsimonious Vector Error Correction model (VECM). Their findings revealed that openness of trade and debt from external sources had positive influence on manufacturing performance. However, foreign direct investment and exchange rate had negative effects over the period studied (1985 to 2020). They (i.e., Nteegah and Olubiya, 2022) resolved that the external sector has a meaningful influence on the manufacturing sector performance in Nigeria.

Salimatu and Umami (2022) used an Autoregressive Distributed Lag (ARDL) method to investigate how external sector variables affect the manufacturing sector performance, spanning 1981 to 2021. They found that in the long run, debt, imports, foreign direct investment (FDI), and gross fixed capital formation (GFCF) all had a negative effect on the sector's performance. However, exports and external reserves had a positive impact. Even though some negative effects were still present, GFCF was an exception.

Chidi and Tonye (2023) also used the ARDL model to study the relationship between external reserves and the performance of the manufacturing industry in Nigeria from 1981 to 2020. Their findings showed that the exchange rate had a positive effect on the share of the manufacturing sector in the country's gross domestic product. External reserves had a negative but significant effect on this share, while foreign direct investment had a positive but not significant effect.

Cookey and Oladosu (2023) looked at how exchange rate changes affect the manufacturing industry in Nigeria between 1985 and 2022. They used two methods: the Correction Model (ECM) and Granger causality. Their results showed that exchange rate changes have a negative effect on the GDP of Nigeria's manufacturing sector. They also found that trade openness and foreign reserves have a positive and strong

effect on the manufacturing sector's GDP. The Granger causality test showed that there is a one-way relationship between the exchange rate and the manufacturing sector's GDP, as well as between foreign reserves and the sector's GDP. However, there was no direct cause-and-effect link between trade openness and the manufacturing sector's GDP. The study concluded that exchange rate volatility has a major impact on the performance of Nigeria's manufacturing sector.

Wosu and Aturuchi (2024) used an error correction method to study how external factors like exchange rates and investments affect the industrial sector's output in Nigeria from 1980 to 2023. The outcomes disclosed a positive connection between foreign direct investment and foreign port investment. On the other hand, they found a negative link between exchange rates and industrial productivity in the sector during the time period they studied.

Oweibo and Sunday (2024) looked at how foreign exchange use in different sectors affects how the manufacturing firms perform in Nigeria between 1997 and 2023. They used a method called ordinary least squares. Their study found that using foreign exchange in the industrial sector had a positive but insignificant influence, while the agricultural sector had a positive and significant influence. The transport sector had a negative and significant influence, and the oil and gas sector had a positive but not significant effect on the overall manufacturing output in Nigeria. These findings help understand how different sectors' use of foreign exchange relates to manufacturing performance, and give useful information for making decisions and creating policies.

Okene, Steve and Ifeany (2024) studied how exchange rates and manufacturing performance are connected in Nigeria from 1995 to 2022, and how interest rates might influence that relationship. They used the ordinary least squares method to analyze the data. Their results showed that interest rates don't help reduce the negative impact of exchange rates on manufacturing performance in Nigeria. This is thought to be because the interest rate system in Nigeria is not strong enough.

Momodu, Njoku and Ndukwe (2024) examined how the external sector affects the performance of the manufacturing sector in Nigeria from 1985 to 2022. They used an autoregressive distributed lag (ARDL) model. The study reported that exchange rates had a negative but significant influence on manufacturing performance in the long run. External debt had a positive and significant influence on manufacturing performance both in the long and the short terms. Also, export trade had a positive effect on manufacturing performance in both the long and short terms.

Using a special technique – an Autoregressive Distributed Lag (ARDL), Ewubare and Ogbokor (2024)

looked at how cross boarder capital flows affect Nigeria's manufacturing output from 1986 to 2022. Their findings showed that, at the 5 percent significance level, exchange rate does not have a significant influence on manufacturing growth in the long run or short run. However, foreign direct investment had a significant negative influence on manufacturing output in the short run. On the other hand, official development assistance and debt from external sources both had significant positive influence on output of manufacturing in the short run. In the long run, foreign direct investment and official development assistance did not influence manufacturing growth, but external debt had a significant positive influence on the performance of Nigeria's manufacturing sector.

Hassan and Abdul-Ganiyu (2024) studied the association between exchange rate and the performance of industrial sector in Nigeria from 1986 to 2023. They used Error Correction Model (ECM) technique. Their results showed a negative and significant association between exchange rate and industrial performance. Credit to the private sector as a percentage of GDP had a positive but weak relationship with industrial performance. Electricity supply also had a positive association with industrial performance, although it was not statistically significant. The lending rate had a negative and significant impact on industrial performance. Additionally, there was a positive and significant association between technological progress and industrial performance.

Imoagwu, Okaforocha, Onwuka and Okoli (2024) looked at how the exchange rate influences the manufacturing industry in Nigeria over twenty-five years, from 1996 to 2022. They used the Autoregressive Distributive Lag (ARDL) model. The outcomes revealed that the exchange rate and export tax had a negative but not significant influence on the manufacturing sector in the long term. However, government spending had a positive influence on the manufacturing sector in the long run in Nigeria.

Nwikina, Wadi, Wilson and Edi (2025) used Error Correction Model (ECM) to explore the influence of exchange rate on the manufacturing industry performance in Nigeria spanning 1985 to 2022. The discovered that the real exchange rate had a big negative influence on manufacturing sector GDP. On the other hand, external reserves had a positive and large influence on manufacturing sector GDP, as did openness of trade. Based on these results, the study concluded that the exchange rate has a major influence on manufacturing industry performance in Nigeria.

Effiong, Ukere and Ekpenyong (2025) investigated how the exchange rate affects the way manufacturing sector performs in Nigeria spanning 1981 to 2022. The study employed an autoregressive distributed lag technique and discovered that both the

exchange rate and interest rate had a negative and significant influence on manufacturing sector performance in Nigeria. Other important results were that bank credit to the manufacturing sector and government spending had a positive and significant influence on the sector's performance during the time period studied.

Research Gap: Even though many studies have looked at how external sector variables affect economic growth in Nigeria, not much focus has been on the manufacturing sector. Also, the results from past research are inconsistent. A lot of these studies didn't use data up to 2023. This study addressed these issues by using a thorough method and data spanning 1981 to 2023 to look at how external sector variables influence manufacturing performance in Nigeria.

III. METHODOLOGY

The study adopted an ex-post facto research design, which is commonly used as an alternative to experimental research for examining hypotheses concerning cause-and-effect relationships. This study looked at how the external sector affects Nigeria's manufacturing sector. The data used spans 1981 to 2023. The information was collected from the statistical reports of Nigeria's central bank and the World Bank's World Development Indicators. To understand how the external sector influences the performance of the manufacturing sector, the study used a model developed by Nteegah and Olubiyi (2022). In their research, they looked at how factors like trade openness, exchange rate, foreign investment, and external debt affect the share of manufacturing in Nigeria's GDP. This study added two more factors: official development assistance and money sent back by migrants - remittances inflow. Therefore, in log from, the model used in this study is shown as follows:

$$\text{LnMSGDP}_t = \alpha_0 + \alpha_1 \text{LnEXR}_t + \alpha_2 \text{LnFDI}_t + \alpha_3 \text{LnEDT}_t + \alpha_4 \text{LnTOP}_t + \alpha_5 \text{LnODA}_t + \alpha_6 \text{LnMRI}_t + e_t \quad (1)$$

Where: MSGDP is manufacturing sector contribution to gross domestic product, EXR is exchange rate, FDI is foreign direct investment, EDT is external debt, TOP is trade openness (exports + imports/GDP), ODA is official development assistance, MRI is migrant remittance inflow, α_0 = intercept parameter, e_t = error term, $\alpha_1 - \alpha_6$ = slope parameters. **On the a priori**, it is expected that; $\alpha_1 < 0$; $\alpha_2, \alpha_3, \alpha_4, \alpha_5$ and $\alpha_6 > 0$.

Explanation of Variables in the Model

In this study, manufacturing sector performance is the explained variable and it is measured by manufacturing sector's contribution to gross domestic product (MSGDP). MSGDP represents the monetary value of the final output of goods and services produced by manufacturing sector in Nigeria annually. In this study MSGDP was captured as a dependent variable.

Exchange Rate (EXR):

Exchange rate is the price of one currency in terms of another. It can be expressed in one or two ways: as units of domestic currency per unit of foreign currency; or units of foreign currency per unit of domestic currency. However, the definition for this study is 'the price of a unit of a foreign currency in terms of the domestic currency (e.g., \$1.00 = ₦1360.00). It is usually determined by the demand for and supply of foreign exchange. In this study therefore, it was used as an explanatory variable. Since naira is not used everywhere and transactions are made with different countries, there is the need to include exchange rate as one of the variables in the model and it was expected to have a negative relationship with manufacturing sector contribution to gross domestic product.

Foreign Direct Investment (FDI):

Foreign direct investment occurs when an investor based in one country (the home country) acquires an asset in another country (the host country) with the intent to manage that asset. In this study, FDI was used as a predictor variable and it was expected to have a positive relationship with manufacturing sector contribution to gross domestic product.

External Debt (EDT):

EDT refers to the total amount of money that a country (Nigeria) owes to foreign lenders. These lenders can include foreign governments, international financial institutions, commercial banks, or private investors. In this study, EDT was used as a predictor variable and it was expected to have a positive relationship with manufacturing sector contribution to gross domestic product.

Trade Openness (TOP):

This is the ratio of exports and imports to GDP (i.e., exports + imports/GDP). This is also known as economic openness. It is believed that higher degree of trade openness ensures better flow of foreign investment from developed countries to developing countries, which will increase the production base and translate into production of exportable goods and increase the contribution of manufacturing sector to gross domestic

product. In this study, trade openness or economic openness was captured as an independent variable. Economic openness was used to represent trade intensity and this shows the extent in which goods and services are allowed to go in and out of a particular economy.

Official Development Assistance (ODA):

Net disbursements of loans or grants made on concessional terms by official agencies, historically by high-income member countries of the Organization for Economic Cooperation and Development (OECD). In this study, official development aids served as independent variable and it was expected to have a positive relationship with manufacturing sector contribution to gross domestic product.

Migrant Remittance Inflow (RMI):

Financial resource inflow arising from the cross border movement of nationals of a country. In this study, migrant remittances inflow served as independent variable and it was expected to have a positive relationship with manufacturing sector contribution to gross domestic product.

Techniques of Data Analysis

The methods used to study the data include the Augmented Dickey Fuller test (ADF) and the Autoregressive Distributed Lag (ARDL) approach. The ADF test helps determine if the data is stationary, which means it doesn't change over time in a way that affects results. The general formula for the ADF test is:

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha_i \Delta y_i + \delta_t + U_t \quad (2)$$

Where: y is a time series, t is a linear time trend, Δ is the first difference operator, α_0 is a constant, n is the optimum number of lags in the independent variables and U is random error term. To look at both short-term and long-term relationships between financial deepening and poverty incidence, the study employed the Autoregressive Distributed Lag – ARDL method. This method helps avoid issues like autocorrelation and endogeneity, giving unbiased and efficient results. The ARDL model used in this study is as follows:

$$\begin{aligned} \Delta \ln MSGDP_{t,j} = & C_0 + C_1 \ln MSGP_{t-1,j} + C_2 \ln EXR_{t-1,j} + C_3 \ln FDI_{t-1,j} + C_4 \ln EDT_{t-1,j} + C_5 \ln TOP_{t-1,j} \\ & + C_6 \ln ODA_{t-1,j} + C_7 \ln MRI_{t-1,j} + \sum_{i=1}^{n1} \alpha_{1i,j} \Delta \ln MSGDP_{t-1,j} + \sum_{i=0}^{n2} \alpha_{2i,j} \Delta \ln EXR_{t-1,j} \\ & + \sum_{i=0}^{n3} \alpha_{3i,j} \Delta \ln FDI_{t-1,j} + \sum_{i=0}^{n4} \alpha_{4i,j} \Delta \ln EDT_{t-1,j} + \sum_{i=0}^{n5} \alpha_{5i,j} \Delta \ln TOP_{t-1,j} + \sum_{i=0}^{n6} \alpha_{6i,j} \Delta \ln ODA_{t-1,j} \\ & + \sum_{i=0}^{n6} \alpha_{7i,j} \Delta \ln MRI_{t-1,j} + \lambda ECM_{t-1} - 1 + \mu_t - - - - (3) \end{aligned}$$

Where: Δ = difference operator while μ_t = white noise or error term, n = optimal lag length, $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7$ = short run dynamics of the model and $c_1,$

$c_2, c_3, c_4, c_5, c_6, c_7$ = long run elasticities and μ_t = error term. ECM_{t-1} = error correction term obtained from the co-integration model. The error coefficients (λ) show how

quickly the co-integration model corrects any imbalance from the previous period or the speed at which it adjusts to get back to the long run equilibrium. The coefficient of ECM is expected to be negative and statistically significant. A negative and significant ECMt-1 coefficient means that any short-term movement between the explained and independent variables will eventually return to the long run relationship.

IV. RESULTS AND DISCUSSION

Appraising the trends of the growth rate of manufacturing sector contribution to gross domestic product (MSGDP), exchange rate (EXR), foreign direct investment (FDI), external debt (EDT), trade openness (TOP), official development assistance (ODA) and migrant remittance inflow (MRI) in Nigeria from 1981 to 2023

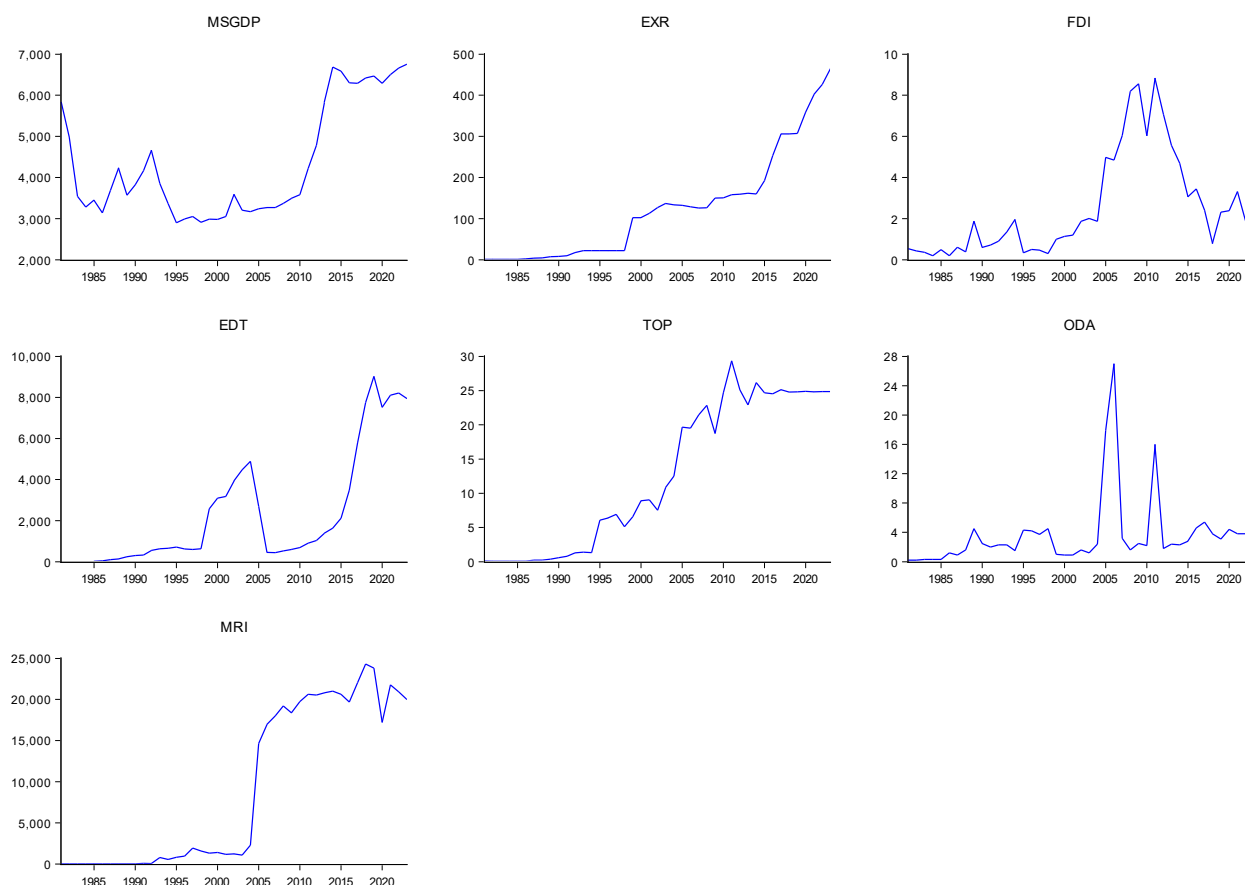


Figure 1: The trends of the growth rate of manufacturing sector contribution to gross domestic product, exchange rate, foreign direct investment, external debt, trade openness, official development assistance and migrant remittance inflow in Nigeria from 1981 to 2023

Manufacturing Sector Contribution to Gross Domestic Product (MSGDP)

The trend of manufacturing sector contribution to GDP (MSGDP) exhibits considerable fluctuations throughout the study period. During the early 1980s, the sector recorded relatively high contributions, but this was followed by a notable decline and instability throughout the late 1980s and 1990s. The decline may be attributed to structural weaknesses in the manufacturing sector, including inadequate infrastructure, poor electricity supply, dependence on imported inputs, and the adverse effects of the Structural Adjustment Programme (SAP). From the early 2000s onward, the sector experienced a gradual recovery, culminating in a sharp increase around 2014–2016. Although a slight decline occurred afterward, manufacturing output remained significantly higher than earlier periods, suggesting improved industrial performance. The upward trend in recent years

indicates that industrial policies and private sector investments may have contributed positively to manufacturing activities. However, the fluctuations demonstrate the sector's vulnerability to macroeconomic instability and infrastructural deficits.

Exchange Rate (EXR)

The exchange rate graph reveals a persistent upward movement over the study period, indicating continuous depreciation of the Nigerian naira against foreign currencies. The exchange rate remained relatively stable during the early years but began rising significantly from the mid-1990s, with particularly sharp increases after 2015. This pattern reflects successive exchange rate adjustments, foreign exchange shortages, and increasing pressures on the external sector. Persistent depreciation raises the cost of imported goods and production inputs, thereby increasing inflationary

pressures and reducing the competitiveness of domestic industries that rely heavily on imported machinery and raw materials.

Foreign Direct Investment (FDI)

The FDI series indicates relatively low and unstable inflows during the 1980s and 1990s. Beginning in the early 2000s, inflows increased substantially, reaching their peak between 2008 and 2013. This period coincided with economic reforms, debt relief initiatives, and favorable global oil market conditions. However, after 2013, FDI inflows declined sharply and became increasingly volatile, reflecting investor concerns about insecurity, policy inconsistency, foreign exchange restrictions, and declining oil revenues. The declining trend in recent years suggests the need for reforms aimed at improving the investment climate.

External Debt (EDT)

The external debt trend remained relatively low and stable during the 1980s and early 1990s before increasing significantly in the late 1990s and early 2000s. A temporary moderation appears around the mid-2000s, likely associated with debt relief obtained from international creditors. However, from approximately 2015 onward, external debt rose dramatically, reaching unprecedented levels by the end of the study period. Rising external debt provides resources for financing infrastructure and development projects when domestic resources are insufficient. However, excessive debt accumulation increases debt servicing obligations and may crowd out productive public expenditure. The rapid increase in Nigeria's external debt highlights the importance of ensuring that borrowed funds are invested in productive sectors capable of generating sufficient returns to support debt repayment. Debt sustainability and fiscal discipline should remain central to economic policy.

Trade Openness (TOP)

The trade openness indicator shows a gradual increase from the early 1980s through the mid-2000s, reflecting Nigeria's growing integration into the global economy. The ratio rose substantially between 2000 and 2008, reaching its highest level before experiencing moderate fluctuations thereafter. Despite these fluctuations, trade openness remained relatively high throughout the latter part of the period. Greater trade openness can stimulate economic growth by expanding market access, promoting competition, and facilitating technology transfer. However, excessive dependence on imports may weaken domestic industries and expose the economy to external shocks. Policymakers should implement measures that strengthen local production capacity and increase the export of value-added

manufactured products to maximize the benefits of trade liberalization.

Official Development Assistance (ODA)

The ODA trend remained relatively low for much of the study period but experienced significant spikes around 2005 and 2010. These spikes likely reflect debt relief arrangements, donor interventions, development programs, and humanitarian assistance. Following these peaks, ODA inflows declined considerably but continued to fluctuate at moderate levels. Official development assistance can supplement domestic resources and support critical sectors such as education, healthcare, poverty reduction, and infrastructure development. However, reliance on external aid may create dependency and reduce incentives for domestic resource mobilization.

Migrant Remittance Inflow (MRI)

The migrant remittance inflow (MRI) graph exhibits relatively low inflows throughout the 1980s and 1990s. However, beginning in the early 2000s, remittances increased sharply and maintained a strong upward trajectory. The inflows peaked around 2018–2020 before experiencing a moderate decline and stabilization at relatively high levels. This trend reflects the growing Nigerian diaspora population and increased cross-border financial transfers. Remittances constitute a significant source of foreign exchange and household income. They contribute to poverty reduction, education, healthcare spending, entrepreneurship, and financial sector development. The strong growth in remittance inflows suggests that policies aimed at reducing transfer costs, strengthening formal remittance channels, and encouraging diaspora investment could further enhance their developmental impact.

Collectively, the trends reveal important structural changes in the Nigerian economy. Manufacturing output, trade openness, migrant remittances, and external borrowing have increased substantially over time, while exchange rate depreciation has become more pronounced. Foreign direct investment experienced growth during the reform period but has weakened in recent years, and official development assistance has remained volatile.

Unit Root Test Result

To avoid drawing misleading inferences, the study employed the Augmented Dickey-Fuller (ADF) unit root test to ascertain the stationarity properties of the variables. The test is based on two hypotheses: the null hypothesis (H_0) states that the variable contains a unit root and is therefore non-stationary, whereas the alternative hypothesis (H_1) posits that the variable does not contain a unit root and is stationary. The results of the ADF test are presented in Table 1.

Table 1: Unit Root Test Outcome using Augmented Dickey-Fuller

Variables	Level form		First difference		Order of integration
	ADF Statistics	5% Critical Value	ADF Statistics	5% Critical Value	
MSGDP	-2.412362	-3.523623	-4.683643	-3.523623	1(1)
EXR	0.263461	-3.520787	-5.306409	-3.523623	1(1)
FDI	-1.539626	-3.520787	-7.719088	-3.523623	1(1)
EDT	-2.370629	-3.523623	-3.892983	-3.523623	1(1)
TOP	-2.134009	-3.520787	-5.932011	-3.526609	1(1)
ODA	-4.518933	-3.520787	-	-	1(0)
MRI	-1.907849	-3.520787	-5.937536	-3.523623	1(1)

Recall: MSGDP, EXR, FDI, EDT, TOP, ODA and MRI as defined previously.

Source: Author's Computation, 2026.

The ADF unit root test results presented in Table 2 indicate that, at the 5% significance level, ODA is stationary at level, I(0), as its ADF test statistic exceeds the corresponding 5% critical value. In contrast, MSGDP, EXR, FDI, EDT, TOP, and MRI attain stationarity after first differencing, indicating that they

are integrated of order one, I(1). The presence of a mixture of I(0) and I(1) variables satisfies the stationarity condition for employing the Autoregressive Distributed Lag (ARDL) model to examine the existence of long-run relationships among the variables.

Table 2: ARDL Bounds Test for Co-integration

Model		F-Statistic = 4.383485
MSGDP= F(EXR, FDI, EDT, TOP, ODA, MRI)		K = 6
Critical Values	Lower Bound	Upper Bound
5%	2.63	3.62

Recall: MSGDP, EXR, FDI, EDT, TOP, ODA and MRI as defined previously.

Source: Author's Computation, 2026.

The ARDL bounds test for cointegration indicates the existence of a long-run relationship among the variables - MSGDP, EXR, FDI, EDT, TOP, ODA, and MRI. This conclusion is supported by the computed F-statistic of approximately 4.4, which exceeds the corresponding upper-bound critical value at the 5%

significance level. Therefore, the null hypothesis of no long-run relationship is rejected at the 5% level. The presence of cointegration implies that the variables share a stable long-run equilibrium relationship, thereby justifying the estimation of both their short-run and long-run effects within the ARDL framework.

Table 3: Estimated ARDL Long Run Coefficients. Dependent Variable: MSGDP ARDL (4, 4, 4, 4, 2, 4, 4)

Regressors	Coefficient	t-Statistic	P-Value
LOG(EXR)	-0.828968	-2.915454	0.0268
LOG(FDI)	0.897891	4.946871	0.0026
LOG(EDT)	0.855634	4.635948	0.0036
LOG(TOP)	-0.582819	-8.518285	0.0001
LOG(ODA)	0.357712	4.868076	0.0028
LOG(MRI)	0.188384	3.632369	0.0109

Recall: EXR, FDI, EDT, TOP, ODA and MRI as defined previously.

Source: Author's Computation, 2026.

The long run coefficients from Table 3 reveal that in Nigeria, exchange rate and trade openness have negative and significant relationship with manufacturing sector performance. On the other hand, foreign direct

investment, external debt, official development assistance and migrant remittance inflow have positive and significant relationship with manufacturing sector performance.

Table 4: Error Correction Representation for the Selected ARDL Model ARDL (4, 4, 4, 4, 2, 4, 4)

Regressors	Coefficients	t-Statistic	P-Value
DLOG(EXR)	0.097365	1.831593	0.1167
DLOG(FDI)	-0.391417	-5.516395	0.0015
DLOG(EDT)	0.229829	5.173227	0.0021
DLOG(TOP)	0.513511	6.226148	0.0008
DLOG(ODA)	-0.116207	-5.248582	0.0019

Regressors	Coefficients	t-Statistic	P-Value
DLOG(MRI)	-0.442381	-6.658901	0.0006
ECM (-1)	-0.068526	-4.972825	0.0000
R-squared = 0.885293		D-W stat. = 2.321980	
Adjusted R-squared = 0.664703		Akaike info criterion = -2.766925	
Schwarz criterion = -1.657884			

Recall: EXR, FDI, EDT, TOP, ODA and MRI as defined previously

Source: Author (2026).

Table 4 presents the short-run dynamic coefficients associated with the long-run relationships estimated through the Error Correction Model (ECM). The error correction term (ECT) has the expected negative sign and is statistically significant, confirming the existence of an adjustment mechanism through which deviations from the long-run equilibrium are corrected over time. This implies that when manufacturing sector performance departs from its long-run equilibrium path in the short run, the system gradually adjusts to restore equilibrium.

The Durbin-Watson statistic of 2.321980 suggests that the model does not suffer from a serious problem of serial correlation. At the same time, the model demonstrates a strong explanatory power, as indicated by an R-squared value of approximately 0.885. This implies that about 89% of the variations in manufacturing sector performance during the period under investigation are explained by the variables included in the model, while the remaining 11% is attributable to other factors not captured in the model and is represented by the error term. Overall, the ECM results indicate a good fit and provide evidence of meaningful short-run dynamics alongside the established long-run relationship.

Furthermore, the coefficient for foreign direct investment, official development assistance and migrant remittance inflow are negative in the short run. This means that if foreign direct investment, official development assistance and migrant remittance inflow increase by one percent, the performance of manufacturing sector will decrease by about 0.391417, 0.116207 and 0.442381 percent respectively. At the same time, the coefficients for foreign direct investment, official development assistance and migrant remittance inflow are statistically significant. This result corroborates the findings of Nteegah and Olubiye (2022), which looked at external Sector and the performance of manufacturing sector in Nigeria using Parsimonious Vector Error Correction model (VECM) method. They discovered that direct investment from overseas have negative effects on the performance of manufacturing sector in Nigeria. This suggests that, in the short term, foreign direct investment, official development assistance and migrant remittance inflow exert a contractionary effect on manufacturing output.

The result points to structural inefficiencies in the Nigerian economy, particularly in the transmission of

external resources into productive industrial activity. Consequently, several policy implications emerge. First, the negative short-run impact of foreign direct investment (FDI) underscores the need for a strategic reorientation of investment inflows toward the manufacturing sector. Policymakers should design targeted incentives aimed at attracting efficiency-seeking and export-oriented FDI rather than resource-seeking investments concentrated in the extractive industries. In addition, strengthening backward and forward linkages between foreign firms and domestic manufacturers is essential to ensure technology transfer, local sourcing of inputs, and broader industrial spillovers. Without such linkages, FDI may continue to operate in enclaves with minimal contribution to domestic industrial development.

Second, the adverse short-run effect of official development aids (ODA) suggests that aid inflows are not being effectively channeled into productive sectors. This calls for a reallocation of ODA toward critical infrastructure development, particularly in energy, transportation, and industrial clusters, which are fundamental to manufacturing growth. Furthermore, improving institutional quality, transparency, and accountability in the management of aid resources is imperative to minimize leakages and ensure that such funds contribute meaningfully to industrial expansion.

Third, the negative relationship between remittance inflows and manufacturing performance highlights the predominance of consumption-driven use of remittances in Nigeria. To address this, policies should focus on mobilizing remittances for productive investment through financial instruments such as diaspora bonds, investment funds, and targeted credit schemes for small and medium-scale manufacturing enterprises. Enhancing financial inclusion and promoting savings and investment culture among remittance-receiving households would further facilitate the transformation of these inflows into drivers of industrial growth.

Fourth, the findings point to the importance of macroeconomic stability, particularly with respect to exchange rate management. Large inflows of foreign capital can exert appreciation pressures on the domestic currency, thereby reducing the competitiveness of locally manufactured goods. Appropriate monetary and exchange rate policies are therefore required to mitigate such effects and support export-oriented

industrialization. In sum, the negative short-run relationships observed in this study suggest that the challenge in Nigeria is not merely the inflow of foreign capital, but its effective utilization. A coherent policy framework that aligns external inflows with domestic industrial objectives is essential for transforming these resources into catalysts for sustainable manufacturing sector growth.

Furthermore, the coefficients of exchange rate, external debt and trade openness have positive signs. This means that a percentage increase in exchange rate, external debt and migrant remittance inflow will lead to an increase in the performance of manufacturing sector by 0.097365, 0.229829 and 0.513511 percent respectively. That is, in the short run, increases in these macroeconomic variables are associated with improvements in manufacturing output. Interestingly, the coefficients for exchange rate, external debt and migrant remittance inflow are statistically significant. This outcome supports the findings of Nteegah and Olubiyi (2022), which looked at external sector and the performance of manufacturing sector in Nigeria using Parsimonious Vector Error Correction model (VECM) method. They found that trade openness and external debt have positive effects on the performance of manufacturing sector in Nigeria.

The positive relationship between exchange rate, external debt and trade openness and manufacturing sector performance in Nigeria suggests that, in the short run, increases in these macroeconomic variables are associated with improvements in manufacturing output. The findings carry important policy implications for industrial development and macroeconomic management. First, the positive short-run effect of the exchange rate implies that currency movements particularly depreciation may enhance the competitiveness of domestically produced goods by making imports more expensive and exports relatively cheaper. This supports the argument for a managed exchange rate regime that avoids excessive overvaluation of the domestic currency. Policymakers should therefore maintain exchange rate policies that promote export competitiveness while ensuring stability to prevent volatility-induced uncertainty in the manufacturing sector.

Second, the positive relationship between external debt and manufacturing performance suggests that borrowed funds, at least in the short term, are being utilized in ways that support productive activities. This underscores the importance of strategic debt

management, where external borrowing is channeled into infrastructure development, industrial financing, and capital projects that directly benefit the manufacturing sector. However, this also calls for caution, as the sustainability of such borrowing depends on effective utilization and the economy's capacity to service debt obligations over time.

Third, the positive impact of trade openness indicates that increased integration into the global economy may facilitate access to advanced technology, capital goods, and larger markets for Nigerian manufacturers. This finding supports policies that encourage trade liberalization, reduce barriers to imports of intermediate and capital goods, and promote export diversification. Nonetheless, openness should be accompanied by measures that protect nascent industries from unfair competition and enhance their capacity to compete globally.

Moreover, the combined positive short-run effects of these variables highlight the importance of complementary policies that strengthen the absorptive capacity of the manufacturing sector. Investments in infrastructure, human capital development, and institutional quality are essential to sustain and amplify these gains. Without such structural support, the short-run benefits may not translate into long-term industrial growth. In inference, the positive short-run relationships indicate that macroeconomic openness, prudent exchange rate management, and productive use of external debt can stimulate manufacturing performance in Nigeria. However, sustaining these gains requires a coherent policy framework that balances openness with domestic capacity building and ensures that external resources are effectively utilized for industrial development.

Post Estimation Diagnostic Tests Results

Post-estimation diagnostic tests were conducted to assess the reliability, adequacy, and statistical validity of the estimated model and to determine whether the results provide a sound basis for policy inference and recommendations. Specifically, the study employed the Breusch-Godfrey Serial Correlation LM test to examine the presence of serial correlation, the Breusch-Pagan-Godfrey heteroskedasticity test to assess whether the error variance is constant, and the normality test to determine whether the residuals are normally distributed. The results of these diagnostic tests are presented in Table 5, Table 6, and Figure 2, respectively.

Test for Serial Correlation

Table 5: Breusch-Godfrey Test for Serial Correlation

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.242351	Prob. F(2,4)	0.7955
Obs*R-squared	4.215084	Prob. Chi-Square(2)	0.1215

Source: Author (2026).

The results shown in Table 5 indicate that the error correction model does not have a serial autocorrelation issue. This is because the chi-square value and the associated probability of the chi-square statistic are both above 0.05.

Heteroskedasticity Test Results

Autoregressive Conditional Heteroskedasticity test (Breusch-Pagan-Godfrey) was utilized to check whether or not the variance of the residuals in the ECM is homoscedastic.

Table 6: Autoregressive Conditional Heteroskedasticity Test Result

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.360223	Prob. F(32,6)	0.9725
Obs*R-squared	25.64929	Prob. Chi-Square(32)	0.7789
Scaled explained SS	0.542408	Prob. Chi-Square(32)	1.0000

Source: Author (2026).

The Breusch-Pagan-Godfrey test result in Table 6 confirms that the error correction model is free from heteroskedasticity, which suggests that the variance of the residual in the MSGDP - manufacturing sector

contribution to gross domestic product model is homoscedastic over the period covered in this study.

Normality Test Result

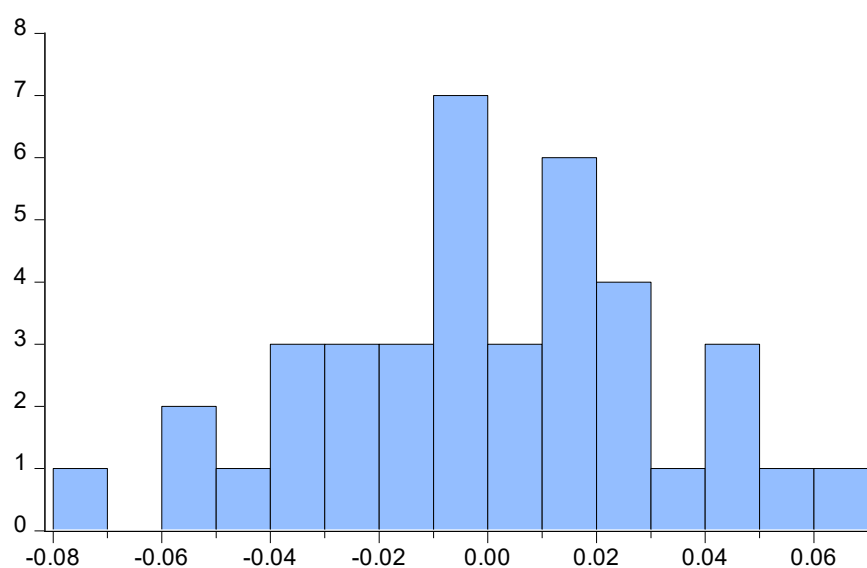


Figure 1: Normality Test Result

Source: Author (2026).

Series: Residuals	
Sample 1985 2023	
Observations 39	
Mean	1.11e-14
Median	-0.001248
Maximum	0.063311
Minimum	-0.078496
Std. Dev.	0.031553
Skewness	-0.206960
Kurtosis	2.786930
Jarque-Bera	0.352185
Probability	0.838540

The result presented in Figure 2 indicates that the residuals are normally distributed at the 5% significance level. This is evidenced by the Jarque-Bera probability value of approximately 0.839, which is greater than the conventional 0.05 significance threshold. Therefore, the null hypothesis of normality cannot be rejected, confirming that the residuals of the ECM model satisfy the assumption of normal distribution.

V. CONCLUSION AND RECOMMENDATIONS

This study investigated the influence of external sector on the performance of manufacturing sector in Nigeria from 1981 to 2023. The data employed for this study came from the statistical reports of Nigeria's central bank and World bank - World development indicators and included information on the contribution of the manufacturing sector to the gross domestic product, exchange rate, foreign direct investment, external debt, trade openness, official development assistance and migrant remittance inflow. The study used

an Autoregressive Distributed Lag - ARDL technique to examine how these variables relate in both the short term and the long term. The study found that in the long term, exchange rate and trade openness have negative and significant relationship with manufacturing sector performance. However, foreign direct investment, external debt, official development assistance and migrant remittance inflow have positive and significant relationship with manufacturing sector performance. In the short term, foreign direct investment, official development assistance and migrant remittance inflow have negative and significant relationship with manufacturing sector performance. At the same time, exchange rate, external debt and trade openness have positive and significant relationship with manufacturing sector performance. Based on these findings, the study suggested that macroeconomic openness, prudent exchange rate management, and productive use of external debt can stimulate manufacturing performance in Nigeria. To achieve the above, government should put

in place a coherent policy framework that balances openness with domestic capacity building and ensures that external resources are effectively utilized for industrial development in Nigeria. Specifically, there is need for a strategic reorientation of investment inflows toward the manufacturing sector. Policymakers should design targeted incentives aimed at attracting efficiency-seeking and export-oriented foreign direct investment rather than resource-seeking investments concentrated in the extractive industries. In addition, strengthening backward and forward linkages between foreign firms and domestic manufacturers is essential to ensure technology transfer, local sourcing of inputs, and broader industrial spillovers. Government should channel official development aids toward critical infrastructure development, particularly in energy, transportation, and industrial clusters, which are fundamental to manufacturing growth. Furthermore, improving institutional quality, transparency, and accountability in the management of aid resources is imperative to minimize leakages and ensure that such funds contribute meaningfully to industrial expansion. Government should focus on mobilizing remittances for productive investment through financial instruments such as diaspora bonds, investment funds, and targeted credit schemes for small and medium-scale manufacturing enterprises. Enhancing financial inclusion and promoting savings and investment culture among remittance-receiving households would further facilitate the transformation of these inflows into drivers of industrial growth. Government should maintain exchange rate policies that promote export competitiveness while ensuring stability to prevent volatility-induced uncertainty in the manufacturing sector. External borrowing should be channeled into infrastructure development, industrial financing, and capital projects that directly benefit the manufacturing sector. Government should formulate policies that will encourage trade liberalization, reduce barriers to imports of intermediate and capital goods, and promote export diversification. Nonetheless, openness should be accompanied by measures that protect nascent industries from unfair competition and enhance their capacity to compete globally. Moreover, the combined positive short-run effects of these variables highlight the importance of complementary policies that strengthen the absorptive capacity of the manufacturing sector. Investments in infrastructure, human capital development, and institutional quality are essential to sustain and amplify these gains. Without such structural support, the short-run benefits may not translate into long-term industrial growth.

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