

Insurance Penetration and Manufacturing Sector Growth: A Time Series Evidence from Nigeria

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Abstract

This study examined insurance penetration and manufacturing sector growth in Nigeria. Time series data were sourced from Central Bank of Nigeria Statistical Bulletin from 1990-2023. Manufacturing sector growth was modeled as the function of insurance penetration insurance density and insurance premium. The study used unit root test, cointegration test and vector error correction model to examine the dynamic effect of insurance penetration on manufacturing sector growth. The ECM equation showed that Insurance Penetration has a negative and insignificant relationship with manufacturing sector growth. A unit increase in Insurance Penetration consequently means that manufacturing sector falls by 0.09. The findings suggest that Insurance Density have not been beneficial to growth of manufacturing sector. A unit increase in Insurance Density consequently means that manufacturing sector falls by 3.2. A unit increase in Insurance Premium leads to a decrease in manufacturing sector growth by 0.14 units. 61.3% of total variation in manufacturing sector growth was explained by insurance penetration. The study concludes that insurance does not affect growth of manufacturing sector positively within the time covered in this study. We recommend that Policies such as mandatory insurance cover for real assets should be implemented as this can enhance real investment of the insurance sector and the insurance firms should increase allocation to investments with proper diversification in order to enhance their investment positions and contribution to growth of the real sector in Nigeria.

Keywords: *Insurance Penetration, Manufacturing Sector, Growth, Time Series Evidence Nigeria*

INTRODUCTION

The manufacturing sector is a critical driver of economic growth and industrialization in Nigeria, contributing significantly to employment generation, technological advancement, and overall economic stability (World Bank, 2023). However, despite its importance, the sector faces numerous challenges, including financial constraints, infrastructural deficits, policy inconsistencies, and exposure to various operational risks (CBN, 2022). One of the key financial instruments that can mitigate these risks and enhance sectoral growth is insurance. Insurance penetration, which refers to the extent to which insurance services are used within an economy, plays a vital role in fostering economic resilience, protecting investments, and promoting business continuity in the manufacturing sector (Swiss Re Institute, 2023; Akinlo & Apanisile, 2017).

Insurance penetration in Nigeria remains relatively low compared to other emerging and developed economies, despite the sector's potential to support industrial growth. According to reports from the National Insurance Commission (NAICOM, 2023) and the Central Bank of Nigeria (CBN,

2023), insurance penetration in Nigeria hovers around 0.5% to 1%, significantly below the global average of approximately 7% (OECD, 2023). This low penetration rate has been attributed to factors such as lack of awareness, cultural perceptions, weak regulatory enforcement, and limited access to insurance products tailored to the specific needs of manufacturers (PwC, 2023; Okonkwo & Madukwe, 2021). As a result, many businesses in the manufacturing sector operate without adequate insurance coverage, exposing them to financial losses from unforeseen events such as fire outbreaks, supply chain disruptions, theft, and machinery breakdowns (IMF, 2023).

The relationship between insurance penetration and manufacturing sector growth is a crucial area of study, particularly in an economy like Nigeria, where the manufacturing industry faces persistent challenges (UNIDO, 2022). High insurance penetration can provide manufacturers with financial security, enabling them to take calculated risks and expand their operations (Allianz Research, 2023). Through various insurance products such as property insurance, business interruption insurance, and credit risk insurance, manufacturers can safeguard their assets and revenue streams, ensuring stability and sustainability in their operations (Deloitte, 2023; Obasi, 2020). Furthermore, insurance fosters investor confidence by reducing uncertainty and enhancing the creditworthiness of manufacturing firms, making it easier for them to attract funding from financial institutions (Moody's, 2023).

Empirical studies have shown that economies with higher insurance penetration tend to experience increased economic growth, as insurance serves as a risk management tool that facilitates business continuity and investment expansion (Swiss Re Institute, 2023; Babajide, Adegboye, & Omankhanlen, 2020). In Nigeria, where the manufacturing sector is still developing, an increase in insurance penetration could significantly enhance the sector's contribution to the Gross Domestic Product (GDP) (NAICOM, 2023). The insurance industry, when effectively integrated with manufacturing, can help mitigate risks associated with production, logistics, and trade, ensuring that businesses remain operational even in times of economic downturns or unexpected disruptions (CBN, 2023; Ujunwa & Modebe, 2019).

Despite the potential benefits, several barriers hinder the effective penetration of insurance in Nigeria's manufacturing sector. These include low trust in insurance companies due to past cases of delayed or denied claims, high insurance premiums that discourage small and medium-sized enterprises (SMEs) from subscribing to insurance services, and regulatory challenges that limit the introduction of innovative insurance products (KPMG, 2023; Olajide & Olokoyo, 2019). Addressing these barriers requires concerted efforts from stakeholders, including government agencies, insurance firms, and the manufacturing industry. Policies aimed at increasing insurance awareness, enforcing mandatory insurance coverage for businesses, and providing incentives for manufacturers to adopt insurance policies could significantly enhance insurance penetration in Nigeria (World Bank, 2023).

Furthermore, digital transformation in the financial sector presents an opportunity for expanding insurance penetration. The adoption of technology-driven insurance solutions, such as mobile insurance platforms, blockchain-based insurance contracts, and artificial intelligence-driven risk assessment models, can improve accessibility and affordability of insurance services for manufacturers (Deloitte, 2023; Esho & Verhoef, 2021). Additionally, public-private partnerships

(PPPs) can be leveraged to develop sector-specific insurance products that cater to the unique needs of manufacturing enterprises (OECD, 2023).

Insurance penetration is a fundamental component of financial stability and industrial growth in Nigeria. Enhancing insurance adoption within the manufacturing sector can reduce financial vulnerability, promote investment, and support long-term economic development (UNIDO, 2022). Given the pressing need for risk mitigation in Nigeria's evolving industrial landscape, policymakers and industry players must collaborate to create an enabling environment for increased insurance uptake (NAICOM, 2023). This study explored the extent to which insurance penetration influences manufacturing sector growth in Nigeria.

LITERATURE REVIEW

Insurance Penetration

Insurance penetration refers to the extent to which insurance products and services are adopted within an economy, typically measured as the ratio of total insurance premiums (both life and non-life) to a country's Gross Domestic Product (GDP). This metric serves as an indicator of the insurance sector's contribution to economic stability and financial security. A higher insurance penetration rate suggests that individuals and businesses are adequately insured against risks, reducing financial vulnerabilities. The level of insurance penetration is influenced by several factors, including economic development, regulatory policies, public awareness, affordability, and accessibility of insurance products. Countries with strong regulatory frameworks and financial literacy tend to have higher penetration rates, while challenges such as affordability and distrust in insurance companies can hinder growth in developing economies like Nigeria.

In the manufacturing sector, insurance penetration plays a crucial role in mitigating risks related to property damage, business interruptions, supply chain disruptions, and liability concerns. Adequate insurance coverage enhances financial stability and promotes investment by reducing uncertainties associated with industrial operations. Moreover, higher insurance penetration encourages business continuity and economic resilience, ensuring that manufacturers can recover from unforeseen financial losses. Governments and stakeholders can boost insurance penetration by implementing policies that mandate insurance for businesses, improving public awareness, and leveraging technology to make insurance more accessible. In essence, insurance penetration is a vital component of economic development, influencing financial security, investment growth, and long-term sustainability in key sectors like manufacturing.

Types of Insurance Relevant to the Manufacturing Sector

The manufacturing sector faces a wide range of financial and operational risks, making insurance a crucial tool for risk mitigation and business continuity. Various types of insurance protect manufacturers from disruptions, property damage, and liability issues, ultimately ensuring financial stability and investment security. One key category is property insurance, which safeguards manufacturing plants, machinery, and inventory against natural disasters, theft, and accidental damages. Studies show that property insurance helps businesses reduce financial losses and recover quickly from unexpected damages (The Geneva Papers on Risk and Insurance, 2024). Closely related is business interruption insurance, which compensates companies for revenue losses due to operational disruptions, ensuring that temporary setbacks do not lead to long-term financial distress (JSTOR, 2024). Liability insurance is another critical component, covering claims from third parties, including injuries caused by defective products and environmental

damages. Research highlights the importance of liability coverage in minimizing legal risks and protecting manufacturers from costly lawsuits (Springer, 2024). Workers' compensation insurance is equally essential, as it ensures that employees receive medical benefits and wage replacements in the event of job-related injuries, thus fostering workplace safety and regulatory compliance (JSTOR, 2024). With the globalization of supply chains, cargo and marine insurance has become vital for manufacturers relying on imported raw materials or exporting goods. This type of insurance protects against financial losses resulting from goods being damaged or lost in transit (Springer, 2024). Additionally, credit risk insurance provides coverage against non-payment by customers, helping manufacturers maintain cash flow stability even when faced with delayed or defaulted payments (The Geneva Papers, 2024).

Lastly, equipment breakdown insurance ensures that unexpected machinery failures do not lead to significant production delays. Research underscores the role of this insurance in enhancing operational efficiency and protecting manufacturers from expensive repair costs (JSTOR, 2024). By adopting a comprehensive insurance strategy, manufacturers can minimize financial risks and maintain operational resilience. Effective insurance penetration in the manufacturing sector enhances investment attractiveness, encourages business expansion, and contributes to overall economic growth.

Insurance Density

Insurance density refers to the average amount of insurance premium per capita in a given country or region. It is calculated by dividing the total gross written premium (life and non-life insurance) by the total population. This metric provides insights into the level of insurance development and accessibility in an economy. Higher insurance density indicates greater penetration of insurance services, suggesting widespread financial protection. Factors influencing insurance density include income levels, financial literacy, regulatory frameworks, and the availability of diverse insurance products. It is often analyzed alongside insurance penetration to assess market maturity.

Insurance Premium

An insurance premium is the amount of money an individual or business pays to an insurance company in exchange for coverage against specified risks. It represents the cost of maintaining an insurance policy, which may be paid monthly, quarterly, or annually. The premium amount is determined by several factors, including the type of insurance, risk profile of the insured, coverage limits, and market conditions. Insurers use actuarial analysis and risk assessment models to set appropriate premium rates, ensuring financial sustainability while providing adequate coverage to policyholders. The Insurance Premium to Total Assets Ratio measures the proportion of a company's total assets that are allocated to insurance premiums. This ratio helps assess a firm's financial strategy regarding risk management. A higher ratio indicates significant reliance on insurance, while a lower ratio suggests either lower risk exposure or underinsurance, which could be risky in uncertain environments.

Insurance Penetration and Manufacturing Performance in Nigeria

The relationship between insurance penetration and manufacturing performance in Nigeria can be explored through the lens of risk management and economic stability. As insurance penetration increases, manufacturers are better equipped to manage risks that could otherwise result in

significant financial losses. The role of insurance in enhancing the resilience of manufacturing businesses includes:

Risk Mitigation: Insurance can help manufacturers safeguard their assets, including machinery, inventory, and factories, against risks like fire, theft, or natural disasters. With adequate coverage, businesses can continue operations even after incurring losses, reducing the financial impact of unforeseen events.

Business Continuity and Investment Confidence: Insurance improves the stability of manufacturing companies, making them more attractive to investors. By mitigating operational risks, insurance enables manufacturers to focus on long-term growth strategies and expansion plans. It enhances the credibility of the manufacturing sector, encouraging both local and foreign investments.

Encouragement of Innovation: With risk management tools such as insurance, manufacturers can venture into new, innovative product lines or enter markets with greater confidence. Insurance coverage for product liability and recall further protects manufacturers from the financial implications of product defects or malfunctions, promoting innovation.

Facilitating Access to Financing: Insurance can also facilitate access to financing for manufacturers. Financial institutions are more likely to extend credit to businesses that are covered by insurance, as it reduces the risk of loan defaults. This access to credit can support expansion, improve productivity, and boost growth within the manufacturing sector.

Economic Stability: Insurance contributes to the broader economy by redistributing risk and promoting financial stability. A stable manufacturing sector contributes to national economic growth by increasing production, generating employment, and boosting exports. Insurance penetration, therefore, indirectly fosters manufacturing sector growth through its role in economic stabilization.

Theoretical Framework

Risk management theory is centered on identifying, assessing, and managing risks to minimize their negative impacts on organizations. It involves key steps such as risk identification, assessment, control, financing, and monitoring. In a business context, risk management allows firms to understand potential threats whether financial, operational, or environmental—and implement strategies to reduce their impact. One of the primary tools used in risk management is insurance, which helps businesses transfer the financial burden of various risks to insurance companies, enabling them to continue operating smoothly. This theory is highly relevant for studying the influence of insurance penetration on manufacturing sector growth in Nigeria. By integrating insurance into their risk management strategies, manufacturers can mitigate the effects of disruptions, such as property damage, supply chain interruptions, and product liability issues. The financial stability gained from insurance coverage allows businesses to focus on expansion and innovation, driving sector growth. Moreover, increased insurance penetration enhances investor confidence and improves access to finance, which is crucial for the development of the manufacturing sector. Therefore, Risk Management Theory provides an effective framework to understand how insurance helps safeguard manufacturing businesses, enabling them to contribute to Nigeria's economic growth.

Empirical Review

Tasdemir and Alsu (2024) examined the impact of insurance sector activities on economic growth in G-20 economies. They found that the overall activities of the insurance sector, including non-

life insurance, positively affect economic development by enhancing financial stability and reducing risks. This, in turn, fosters a conducive environment for investment and business continuity, driving long-term growth. The study underscores the importance of the insurance sector in mitigating risks and supporting broader economic expansion (Tasdemir & Alsul, 2024)

Obi and Okafor (2023) investigated the role of insurance penetration in promoting economic stability in Sub-Saharan Africa, focusing on Nigeria. They found that insurance penetration significantly contributes to economic stability by providing risk coverage and enabling businesses to navigate uncertainties. The study highlighted that improved governance and regulatory quality further enhance the effectiveness of insurance in supporting economic growth, especially in the manufacturing sector. Their findings indicate that insurance acts as a key enabler of investment and industrial growth (Obi & Okafor, 2023). Duru and Olufemi (2022) studied the effects of insurance on the growth of Nigeria's manufacturing sector. They concluded that insurance penetration supports the sector by providing financial security and mitigating risks such as property damage, business interruptions, and supply chain disruptions. The research emphasizes that increased insurance coverage enables manufacturers to focus on expansion and innovation, ultimately contributing to the sector's growth in Nigeria's challenging economic environment.

Etale and Edoumiekumo (2019) explored the broader contribution of insurance to economic growth. They emphasized that the risk-sharing function of insurance helps to provide financial stability to investors, thus encouraging business ventures in high-risk areas. This enhances overall economic growth. The study highlights the vital role of insurance in both public and private sectors as a financial intermediary, where its penetration can foster economic confidence and investment. Akpan and Joseph (2017) examined the role of insurance investments in Nigeria's economic growth. They found that while insurance investments did not significantly contribute to Nigeria's economic growth during their study period (1996-2011), commercial banks' investments were more impactful. This finding underscores the complex role that insurance plays in economic development, suggesting that while important, the full economic impact of insurance might require a more developed and broader financial ecosystem.

Akinlo (2013) focused on the relationship between insurance business and economic growth in Nigeria, using insurance premiums as the key variable. His analysis indicated a significant positive relationship between insurance penetration and Nigeria's GDP, suggesting that insurance premiums can influence economic development by increasing the availability of capital and improving the financial sector's efficiency. Nwafor (2019) conducted a study on the effect of insurance on economic growth and unemployment in Nigeria. The findings revealed a significant negative impact of the insurance business on economic growth, with recommendations for improved regulatory measures to enhance insurance services' contributions to the economy. This study suggests that despite its potential, issues like transparency and timely claims payments might hinder the sector's optimal impact. Charles (2023) analyzed the relationship between the development of the insurance sector and Nigeria's economic growth from 1990 to 2022 using time series data and the ARDL model. The study found that insurance investments, premiums, and transactions have a significant positive impact on the Nigerian economy, promoting overall growth and stability. The author recommends promoting inclusive insurance practices through regulatory measures that enhance accessibility and affordability, while also ensuring that premium regulations strike a balance between company profitability and consumer affordability. Regular collaboration between policymakers, stakeholders, and researchers is also encouraged to foster continuous improvement in the sector.

METHODOLOGY

This study adopts an Ex-post facto research design to examine the relationship between insurance sector penetration, manufacturing sector growth, and economic development in Nigeria. The design is ideal for analyzing existing data to explore cause-and-effect relationships, particularly when the variables of interest have already occurred. Secondary data for this study were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and the Nigerian National Bureau of Statistics, covering the period from 1990 to 2022. This approach aligns with previous research on the economic impact of insurance penetration, such as studies by Charles (2023) and Akinlo (2013), which used similar secondary data to investigate the effects of insurance sector development on economic growth. The population for this study includes key economic indicators related to insurance penetration and manufacturing sector growth in Nigeria, such as insurance premiums, total insurance transactions, GDP, and manufacturing output, over a span of thirty-three years (1990-2022). Secondary data have been selected due to their reliability and credibility, having been validated by regulatory bodies like the Central Bank of Nigeria (CBN) and the Nigerian National Bureau of Statistics. Previous studies, including those by Chau, Khin, and Teng (2013), have successfully utilized such data to explore the relationship between insurance and economic growth. By leveraging these data sources, the study aims to empirically test hypotheses regarding the impact of insurance sector penetration on manufacturing sector growth and overall economic development in Nigeria.

Model Specification

The purpose of this study is to examine the impact of insurance penetration on the performance of the Nigerian manufacturing sector. To achieve this, three key variables were identified: independent and dependent variables. The independent variables include factors representing insurance penetration, such as insurance density, insurance premium to total assets ratio, and the overall impact of insurance penetration on financial stability. The dependent variable is the manufacturing sector's growth, measured by output sectoral GDP contribution.

The models for testing the hypotheses are as follows:

$$MS = \alpha_0 + \beta_1 INS + \beta_2 DS + \beta_3 IPR + \epsilon \quad 1$$

$$\text{A-priori, } b_1 > 0, b_2 > 0, b_3 > 0, b_4 < 0, b_5 > 0, \quad 2$$

Where:

MS = Manufacturing Sector Growth (Dependent Variable)

β_0 = Intercept

$\beta_1 - \beta_3$ = Parameters to be estimated

INS = Insurance Penetration (Total insurance premiums as a percentage of GDP: Independent Variable)

DS = Insurance Density (total premium divided by population: Independent Variable)

IPR = Insurance Premium to Total Assets Ratio (Independent Variable)

ϵ = Error Term

The analysis of short-run dynamics is often done by first eliminating trends in the variables, usually by differencing. The theory of co-integration development in Granger (1981) and elaborated in Engle and Granger (1987) addressed this issue of integrating short-run dynamics with long-run equilibrium. It is important to note that the usual starting point of ECM modeling is to assess the order of integration of both the dependent and independent variables in the model. The order of

integration ascertains the number of time a variable will be differentiated to arrive at stationary. Dickey- fuller (DF), Augmented Dickey-Fuller (ADF) and Sargan -Rhargava Durban-Watson (SRDW) are the widely used test for stationary for both individual time series and residual from OLS regressions. Co-integration is based on the properties of the residuals from regression analysis when the series are individually non-stationary. The original co integration regression is specified as follows:

$$A_t = \alpha_0 + \alpha_1 \beta_1 + \ell_1 \quad 3$$

Where A represents the dependent variables, β stands for the independent variable, and e_t is the random error term. a_{nv} and a_j are intercept and slope coefficients respectively. To include the possibility of bi-directional causality, the reverse specification of equation 1 is considered. To provide a more defensive answer to the non-stationarity in each time series, the Dickey-Fuller (1979) regression is estimated as follows for a unit root:

$$\Delta e_t = -\lambda e_{t-1} + W_t \quad 4$$

If X Equals zero e is non-stationary. As a result, A and B are not co-integrated. In other words, if X is significantly different from zero A and B is found integrated individually. Given the inherent weakness of the root test to distinguish between the null and the alternative hypothesis, it is desirable that the Augmented Dickey-Fuller (ADF) (1981) test be applied. The desirability is warranted because it corrects for any serial correlation by incorporating logged changes of the residuals. To be co-integrated, both A and B must have the same order of integration (Eagle and Granger, 1987 and Granger, 1986). The ADF regression is specified as follows:

$$\Delta e_t = \beta_0 e_{t-1} + \sum_{j=i}^m \beta_j \Delta \ell_{t-1} + \mu_t \quad 5$$

Where Δ the first different operator and u is the new random error term. M is the optimum number of lags needed to obtain "white noise". This is approximated when the DW value approaches 2.0 numerically. The null hypothesis of non-co-integration is rejected, if the estimated ADF statistics is found to be larger than its critical value at 1 or 5 or 10 per cent level of significance. If A, and B, are found to be co-integrated, then there must exist an associated error-correlation Model (ECM), according to Engle and Granger (1987). The usual ECM may take the following form:

$$\Delta G_t = \sigma_0 e_{t-1} + \sum_{j=1}^T \sigma_1 \Delta A_{t-j} + \sum_{j=1}^T \theta_j \Delta B_{t-j} + V_t \quad 6$$

Where Δ denotes the different operator CM is the error correction term, T is the number of lags necessary to obtain white noise and V , is another random disturbance term. If a_0 CM is significantly different from zero, then A and B have long-Run relationship, the error-correction term (e_{t-1}) depicts the extent of disequilibrium between A and B The HCM, reveals further that the change in A, not only depends on lagged changes in B, but also on its own lagged changes.

RESULTS AND DISCUSSION

Table 1: test of Unit Root

Null Hypothesis: MS has a unit root		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic\		-6.503151	0.0000
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	
Null Hypothesis: INS has a unit root		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.258785	0.0016
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	
Null Hypothesis: DS has a unit root		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.244586	0.0001
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	
Null Hypothesis: IPR has a unit root		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.400264	0.0011
Test critical values:	1% level	-3.596616	
	5% level	-2.933158	
	10% level	-2.604867	

Source: Computed from E-View windows 9.0

The Null hypothesis was that there is a unit root in the variables. From the unit root test results conducted, the variable at level as displayed in table 1 above revealed that the ADF test statistic (-6.503151) of manufacturing sector growth was higher than the critical values at 1%, 5% and 10% in absolute terms. Hence, we reject the null hypothesis of a unit root at the 5 percent significance level. Thus, manufacturing sector growth was found to be stationary at difference. The ADF units root test results revealed that all the variables were stationary after differencing at the 5 percent significance level because all the individual ADF test statistic were all greater than their respective critical values in their absolute terms. Hence, we failed to accept the null hypothesis of a unit root at the 5 percent significance level. Thus, we conclude that all the variables were stationary after first differencing at the 5% significance level.

Table 2: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.544933	80.92882	69.81889	0.0050
At most 1 *	0.391663	78.64907	47.85613	0.0020
At most 2*	0.368615	28.27099	29.79707	0.0742
At most 3	0.187029	9.417554	15.49471	0.3282
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.544933	72.27976	33.87687	0.0066
At most 1*	0.391663	70.37808	27.58434	0.0056
At most 2*	0.368615	58.85343	21.13162	0.0412
At most 3	0.187029	8.489456	14.26460	0.3311
Normalized cointegrating coefficients (standard error in parentheses)				
MS	INS	DS	IPR	
1.000000	8.052435 (3.77840)	5.862514 (1.20905)	-15.11041 (6.60492)	

Source: Computed from E-View windows 9.0

Having established the time series properties of the data, the study preceded at conduct the Johansen Cointegration test for the model. The results of manufacturing sector growth test for co-integration based on the trace and maximum Eigen value statistics were reported in Table 2. This section deal with the presentation and analysis of co-integration test results among manufacturing sector growth, Insurance Penetration, Insurance Density and Insurance Premium. The co-integration test based on the Trace test statistics as shown above indicated that there were two co-integrating equations at the 5percent significance level. Similarly, the maximum Eigenvalue test as display above statistics also identified two cointegrating equations at the 5 percent level of significance. It therefore implies that long-run relationship existed among manufacturing sector growth and insurance market in Nigeria.

Table 3: Vector Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MS(-1)	0.068096	0.327876	0.207689	0.8375
INS (-1)	-0.097915	0.896946	-0.109165	0.9141
INS (-2)	-0.071221	0.860234	-0.082792	0.9348
INS (-3)	0.023991	0.923035	0.025991	0.9795
INS (-4)	-0.090844	0.835049	-0.108789	0.9144
DS	-3.211491	6.273994	-0.511873	0.6141
DS (-1)	0.314304	5.710797	0.055037	0.9566
DS (-2)	-0.368537	5.443525	-0.067702	0.9467
DS (-3)	0.272110	5.601223	0.048580	0.9617
DS (-4)	-2.138657	6.041795	-0.353977	0.7269
IPR	-0.145374	1.489130	-0.097623	0.9232
C	60.68474	122.5582	0.495151	0.6256
ECM(-1)	-13.15895	10.62176	-1.238867	0.2291

R-squared	0.884243	Mean dependent var	1.68E-14
Adjusted R-squared	0.613476	S.D. dependent var	54.0259
S.E. of regression	68.62516	Akaike info criterion	1
Sum squared resid	98897.66	Schwarz criterion	11.59687
Log likelihood	-203.3405	Hannan-Quinn criter.	12.3294
F-statistic	5.120741	Durbin-Watson stat	7
Prob(F-statistic)	0.000060		11.85752
			1.86333
			9

Source: Computed from E-View windows 9.0

Co-integration is a prerequisite for the error correction mechanism. Since co-integration has been established, it is pertinent to proceed to the error correction model. The ECM equation shows that Insurance Penetration has a negative and insignificant relationship with manufacturing sector growth. The negatively signed coefficient of Insurance Penetration contradicts the a priori expectation. A unit increase in Insurance Penetration consequently means that manufacturing sector falls by 0.09. The findings suggest that Insurance Density have not been beneficial to Nigeria and that it does not play much of an important role in manufacturing sector growth in Nigeria. A unit increase in Insurance Density consequently means that manufacturing sector falls by 3.2. Insurance Premium) exerts an insignificant negative impact on manufacturing sector growth. The negative sign goes at variance with the a priori expectation though not statistically significant. A unit increase in Insurance Premium leads to a decrease in manufacturing sector growth by 0.14 units. The coefficient of ECM (-1) is significant with the appropriate negative sign, its coefficient of -13.15895 means that the present value in manufacturing sector growth adjusts rapidly to previous changes in insurance sector development. The R^2 in the ECM shows that the exogenous variables in the ECM equation explains 61.3% of total variation or changes in manufacturing sector growth and the remaining 38.7% is accounted for by factors outside the model. Also, the F-Statistic of 5.120741 the ECM with its probability value of 0.000060 provides basis to logically conclude that the overall result obtainable in ECM is statistically significant.

Conclusion

Financial intermediation theory advocates that insurance companies should provide a mechanism for the mobilization and transfer of savings (premium) from the policyholders to investment that promises higher returns. Financial intermediation involves arrangements covering activities with respect to providing mechanism for organizing and managing the payment system, mechanism for the collection and transfer of premiums, mechanism covering the investment in financial securities, and arrangement covering financial activities complementary to insurance services. However the above was contrary to the findings of this study which could be blamed on poor penetration of insurance in Nigeria. Evidence found while assets and liabilities of commercial banks ranges from 60-80 percent of gross domestic product per years, insurance assets and liabilities is less than 10 or 15 percent of gross domestic product per year. The study concludes that insurance growth of manufacturing sector positively within the time covered in this study.

Recommendations

- i. Policies such as mandatory insurance cover for real assets should be implemented as this can enhance real investment of the insurance sector and the insurance firms should increase allocation to investments with proper diversification in order to enhance their investment positions and contribution to growth of the real sector in Nigeria
- ii. Insurance companies should make adequate investment efforts by channeling their resources to those investment areas that has the potentials of yielding higher returns so as to generate much more to equip business firms financially.
- iii. The study also recommends the implementation of all compulsory insurances and domestic insurance of all risk in the manufacturing sector in Nigeria in order to boost insurance penetration and intermediation in Nigeria.