Int. j. adv. multidisc. res. stud. 2022; 2(5):622-629

Received: 28-08-2022
Accepted: 08-10-2022

International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

Effect of Manufacturing Sector Growth on Stock Market Development in Nigeria (1986 - 2021)

[1] Benson Aisagbonbuomwan Esan, [2] Felicia Akujinma Anyanwu, [3] Ogochukwu Florence Ngaikedi, [4] Samuel Rapuluchukwu Molokwu

[1] Department of Banking and Finance, University of Benin, Edo State, Nigeria
[2, 3, 4] Department of Banking and Finance, Nnamdi Azikiwe University, Awka, Nigeria

Corresponding Author: **Ogochukwu Florence Ngaikedi**

Abstract
This study examined the effect of manufacturing sector growth on stock market development in Nigeria. The study was motivated by the inconclusive debate on the effect of manufacturing sector growth on stock market development coupled with poor contribution of the manufacturing sector to growth of Nigerian economy. Specifically, this study ascertained the effect of manufacturing sector growth on stock market capitalization ratio to GDP, value of stock traded ratio to GDP and turnover ratio. Secondary data for the period 1986 to 2021 were collected from the Nigerian Stock Exchange and Central Bank of Nigeria annual reports of various editions. The study applied the Autoregressive Distributive Lag (ARDL) regression technique and causality analysis in which variations in stock market capitalization ratio to GDP, value of stock traded ratio to GDP and turnover ratio were regressed on manufacturing sector growth. The results revealed that manufacturing sector growth has no significant effect on stock market capitalization ratio to GDP and turnover ratio but showed a significant effect on value of stock traded ratio to GDP. In lieu of the findings, government should implement appropriate reform policies aimed at ensuring stability in the manufacturing sector by providing adequate infrastructure such as steady power supply, availability of forex for purchase of raw materials among others and adequate regulatory framework.

Keywords: Manufacturing Sector Growth, Stock Market Development

1. Introduction

In any economy, growth and development is of paramount importance and cannot be over-emphasized for less developed countries such as Nigeria. Economic growth and development could only be experienced in a country when all organizations involved in economic activities with a view to creating value have access to short term and long-term capital. Long term capital is so much needed for acquisition of assets that will provide bundles of benefits for present needs and future requirements of organizations. Stock market is an integral part of the financial system that provides an efficient delivery mechanism for mobilization and allocation, management and distribution of long-term funds from stock (Alile & Anao, 1996) [2]. It facilitates the flow of funds from the area of surplus to the area of needs. Sule and Momoh (2009) [28] noted that the capital market is the medium through which funds are mobilized and channelled efficiently from savers to users of funds. Apart from judicious mobilization of idle savings into production use, the stock market creates an avenue for foreign investment and the influx of foreign capital for developing projects that increase the welfare of citizens. Through its role in financial equilibrium in the economy, it is for this reason that the traditional view of the stock market as the handmaiden of industry has given way to a modern view of the industry as the handmaiden of the stock market (Odife, 2003) [20].

The empirical literature reviewed focused majorly on the effect of capital market development on manufacturing sector output. Based on the review of empirical review, studies on the effect of manufacturing sector growth on stock market development in Nigeria are very scarce. This is based on the fact that the manufacturing sector is considered as not contributing substantially to economic growth owing to our over dependence of imports. Few studies earlier conducted in Nigeria have not utilized extended time period and modern estimation methods as employed in this study. For instance, Udegbunam (2002) [30] in his study has examined the effect of openness, stock market development and industrial growth in Nigeria, utilizing annual time series data covering the period from 1970 to 1997 and employing Ordinary Least squares (OLS) as estimation technique. In another study, Oke (2012) [22] has examined the effect of capital market activities on the development of the Nigerian oil

industries, utilizing annual time series data covering the period from 1999 to 2009 under the framework of co-integration technique and error correction mechanism. Meanwhile, Victor, Kenechukwu and Richard (2013) [31] have undertaking analysis into the effect of capital market on Nigeria's industrial sector development, using data from 1980 to 2008 employing descriptive statistical methods. Due to the relatively scarcity of studies on manufacturing sector stock market development nexus in Nigeria in recent time, this study contributes to the current debate but differs from the previous studies by using a fairly large period of time from 1986 to 2021 in analysing the effect of manufacturing sector growth on stock market development in Nigeria as against the effect of stock market development on manufacturing sector growth in Nigeria. In addition to an extended period of time used, this study also adopted Auto-Regressive Lag Model (ARDL) technique as against the traditional use of Johansen co-integration to estimating the long run equilibrium relationship between manufacturing sector growth and stock market development in Nigeria. Consequently, this study was carried out to examine the effect of manufacturing sector growth on stock market capitalization ratio to GDP, value of stock traded ratio to GDP and turnover ratio from 1986 to 2021.

With the introduction of the background to the study in section one, this study proceeded to structure the study as follows: section two dwelt on the review of related literature; the methodology framework was specified in section three; analysis and result of regression output was contained in section four, whereas recommendations were offered in section five.

2. Literature review

2.1 Conceptual Clarification

Manufacturing activities have significant effect on the economy of a nation. In develops economies, for instance they account for a substantial proportion of total economic activities. In Nigeria, the sub-sector is responsible for about 10% of total GDP annually in terms of employment generation, manufacturing activities account for about 12% of the labour force in the formal sector of the nation's economy. This is why manufacturing statistics are relevant indices of the economic performance of a nation. Activities in the manufacturing sector cover a broad spectrum ranging from light agro-based industries to heavy iron and steel companies. The sub-sector occupies an important position in the national economy both in terms of revenue generation and employment opportunities. Data on this sub-sector are therefore crucial in the appraisal of the performance of the national economy in order to facilitate economic planning. Such data would help local and international investors make decisions on new investments in the sub-sector. Nigeria's manufacturing industry has suffered from neglect, since the country's economy has depended on petroleum sector from the 1970s. As the government tries to diversify the economy, it is working to reinvigorate the manufacturing sector so as to increase its contribution to Nigeria's prosperity.

All over the world, the stock market has played significant roles in national economic growth and development. One intermediary in the market that operates as a rallying point for the overall activities is the stock exchange. It is a common knowledge that without a functional stock market, the stock market may be very illiquid and unable to attract investment. Essentially, the stock market provides liquidity (Block & Hirt, 2002) [4], contribute to capital formation, and investment risk reduction by offering opportunities for portfolio diversification (Levine, 1991) [14]. The liquidity role stands out clearly as the most significant among the numerous functions provided by the stock market. In the words of Levine (1991, 1997) [14, 12], without a liquid stock market, many profitable long-term investments would not be undertaken because savers may be reluctant to tie up their investments for long periods of time. The stock market mainly provides liquidity by enabling firms to raise funds through the sale of securities with relative ease and speed. Through this catalyst role, the stock market is also able to influence investment and economic growth in general. As argued by Mohtadi and Agarwall (2004) [17], large stock markets lower the cost of mobilizing savings, facilitating investment in the most productive technologies. Previous studies have mainly tried to examine the nature of the causality between stock market development and economic growth. Much of the studies are well captured in Yartey (2008) [32], and include: Thornton (1995) [29], Luintel and Khan (1999) [16], Roussear and Wachtel (2000) [26], Demetriades and Hussain (1996) [6], and Neusser and Kugler (1998) [19]. While some researchers have argued that economic activities in a country constitute the key drivers of stock market development (Yartey, 2008) [32], others tend to argue that it is rather growth in the stock market that spurs economic development (Filer *et al*., 2000) [9]. Of the empirical evidences backing-up both claims, no sharp demarcation yet existed between developments in the financial markets, in general, and national or regional economic development. The whole controversy boils down to the paradox of "the egg and the hen which is older?"

2.2 Theoretical Underpinning

The relationship between stock market development and manufacturing sector performance can be established employing neo-classical growth and endogenous growth theory. However, this work is anchored on the endogenous growth theory. The Solow and Swan type neo-classical theory as cited in Oke and Adeusi (2012) [22] states that long run aggregate output can be enhanced by technological improvement. The neo-classical theorists held that improvement in technological advancement is capable of pushing the production function upward, there by leading to the overall growth in an economy. The main stream neo-classical growth theory held that increase in savings rate will bring about a temporary increase in aggregate output in the short run but in the long run, output will adjust to a new level and savings accumulation will only affect aggregate output and not its growth rate (Ndako, 2010) [18]. The implication of this is that notwithstanding the savings rate, financial development will have no significant effect on the long run aggregate output. However, the emergence of endogenous growth model following the criticisms laid against the neo-classical growth model has increasingly acknowledged the role of financial development in the process of economic growth.

According to the endogenous growth model, growth rate of aggregate output can be determined within the model rather outside the model through savings and investment. Within the endogenous growth model, theoretical literature such as Bencivenga and Smith (1991) [3], Levine and Zervos (1996) [13] and Caporale, Howells and Soliman (2004) [5] have held

that financial market has a long run impact on economic growth by mobilizing savings into productive investment which leads to the growth rate of output. Therefore, an efficient and functional financial market can lead to an increase in aggregate output (Olweny & Kimani, 2011) [24]. According to the classical theory, the interest rate is determined using investment demand schedule and the saving schedule, i.e., schedule disclosing the relation of investment and saving with the rate of interest. Furthermore, positive relationship exists between interest rate and the independent variable. In this same vein, exchange rate policy that is being adopted in a given economy plays a vital role in attracting or distracting investors from within and outside the local economy towards investment. One basic determinants of investment in foreign economy are the exchange rate in relation with the global currency that is Naira in relation to the Dollar.

2.3 Empirical Studies

Few empirical studies were reviewed starting from Ogundipe, Okafor, Bowale and Maijeh (2021) [21] who examined the effect of financing deepening on the performance of the manufacturing sector, using a time series data from 1981 to 2019. The study employed the bounds testing co-integration approach and confirmed the existence of long-run convergence relationship between manufacturing value added and the regressors. The result of the empirical investigation confirms the finance-growth hypothesis. The bank financial deepening significantly influences the manufacturing sector performance. However, the non-bank financial deepening and external financing do not significantly influence the manufacturing sector performance in Nigeria. This evidence can be linked to the fragmentation of the shareholding structure of few leading firms and considerable number of firms operating in the market space but not listed on the stock exchange market. Also, the highly skewed FDI Inflows towards the extractive industries leave less financing options for the manufacturing sector. It is necessary to note that the manufacturing sector performance does not respond significantly to the lending interest rate--a situation not unconnected to the high cost of capital in the economy

Egbuche and Nzotta (2020) [8] investigated the effect of stock market on manufacturing sector output in Nigeria between the periods of 1981-2018. The data used were sourced from Central Bank of Nigeria (CBN) Statistical Bulletin 2018. The variables were the performance of manufacturing sector output as the dependent variable, while, Market capitalization, Total new issues, Volume of transaction & Equity Stock as the independent variables. The study employed unit root test, to determine the stationarity of the variables, co-integration approach to determine the long run equilibrium relationship of the variables and Error Correction Model (ECM) to determine the speed of adjustment. Ordinary Least Square (OLS) method of data analysis was adopted. From the model it was conclude that stock market has a positive significant effect on the performance of manufacturing sector out.

Echekoba and Ananwude (2016) [7] assess the casual relationship between index of industrial production and Nigeria stock market liquidity and the effect stock market liquidity has on industrial production. Data on index of industrial production and value of stock traded ratio to gross domestic product from 1981 to 2015 were sourced from the Nigerian Stock Exchange and Nigeria Bureau of Statistics. The result of the Johansen co-integration revealed that there was a long run equilibrium relationship between index of industrial production and stock market liquidity. The OLS regression reported that stock market liquidity has not positively influenced index of industrial production. The granger causality test discloses that stock market liquidity has no significant effect on index of industrial production rather it is the index of industrial production that has significant effect on stock market liquidity in Nigeria production

Kwode and Buzugbe (2015) [11] investigated the capital market and the performance of the manufacturing industries in Nigeria from 1970 to 2012, using the OLS method, co-integration test and error correction method. The study reveals that there is a long-term relationship between capital market and the development of the manufacturing firms in Nigeria but the growth in capital market activities did not impact significantly on the manufacturing sector during the period under review. However, the study recommends that the capital market operator and regulators should encourage local manufacturing firms to list on the exchange by relaxing their conditions, reduce fees, and expand their offerings. Government should provide necessary infrastructure to support the growth and the development of the manufacturing sector.

Ibi, Joshua, Eja and Olatunbosun (2015) [10] examined the relationship between capital market and industrial sector development adopted both descriptive and analytical methodology in the investigation. The findings revealed that real gross domestic product has a positive and significant impact on industrial output in Nigeria, while exchange rate and gross domestic investment have negative and significant relationship with industrial output in Nigeria. The study therefore recommended that the government should implement appropriate reform policies aimed at ensuring efficiency in the workings of the stock market in Nigeria. Also, there is need to reduce the cost of raising capital by firms on the stock as high cost and other bureaucratic delays could limit the use of capital market as veritable source of raising funds for investment.

Adigwe, Nwanna and Ananwude (2015) [1] empirically ascertained the stock market development and economic growth in Nigeria: An empirical examination (1985 to 2014, employing the ordinary least square econometric technique. The findings revealed that stock market has the potentials of growth inducing, but has not contributed meaningfully to Nigerian economic growth. The study suggested that more investors be encouraged into the market, improvement in the settlement system and ensure investors' confidence in the market.

Oluwafemi, Akinola and Oladepo (2014) examined the impact of Bank Credit on the real sector: evidence from Nigeria, using the error correction modelling techniques. The results show that bank credit has significant impact on manufacturing output growth both in the short run and long run but not in the agricultural subsector. Inflation and exchange rate depreciation have negative effects on manufacturing output growth in both short run and long run.

Osamwonyi and Kasimu (2013) [25] investigated the stock market and economic growth in Ghana, Kenya and Nigeria, the study employed Granger Causality test procedure as developed in Granger. The empirical findings of the study show that there is no causal relationship between stock

market development and economic growth in Ghana and Nigeria, but revealed a bidirectional causal relationship between stock market development and economic growth in Kenya. Based on the results of the study it was recommended that policy makers and regulatory bodies should formulate and implement policies that will attract investors and avail the real sector of the economy the much-needed fund for production and encourage listing of companies that contribute largely to GDP in the nation stock exchange.

Sola, Obamuyi, Adekunjo & Ogunleye (2013) [27] assessed the manufacturing performance in Nigeria: implication for sustainable development. Panel data analysis was used on secondary data from 1980 to 2008. The results indicate positive relationship between manufacturing and each of capacity utilization. Loto (2012) [15] in this work examined the global economic downturn and the manufacturing sector performance in the Nigerian economy. The outcome of the results shows that the global meltdown has insignificant effect on the manufacturing sector of the Nigerian economy.

3. Methodology

The effect of manufacturing sector growth on stock market development in Nigeria over a period of thirty-six (36) years, that is, from 1986 to 2021 was ascertained using an ex-post facto research design. The Auto-Regressive Distributive Lag (ARDL) was adopted in estimating the long-relationship; Ordinary Least Square (OLS) in ascertaining the short-run relationship; and granger causality test in assessing the effect of manufacturing sector growth on stock market development in Nigeria. Manufacturing sector growth which is the dependent variable was represented with Manufacturing Capacity Utilization (MCU). Stock market development: the independent variable was reflected with Market Capitalization Ratio to GDP (MKTCAPR), Value of Stock Traded Ratio to GDP (VSTTR) and Turnover Ratio (TURNR). These three measurements of stock market development are the only three standard indicators any stock market development in the world as stated by World Bank (2004).

The adopted and modified the model of Ibi, Joshua, Eja and Olutunbosun (2015) [10]. The original model of Ibi, Joshua, Eja and Olutunbosun (2015) [10] is stated in its functional form as:

$$INDOUT = f(RGDP, MCAP, NDEALS, VTRAN, EXCH, GDI) \quad (3.1)$$

INDOUT = industrial output;
RGDP = real gross domestic product;
MCAP = market capitalization;
NDEALS = number of deals;
VTRAN = value of transaction;
EXCH = exchange rate and;
GDI = gross domestic index of industries.

Estimating the effect of manufacturing sector growth on stock market development resulting the following functional models:

$$MKTCAPR = f(MCU) \quad (3.2)$$

$$VSTTR = f(MCU) \quad (3.3)$$

$$TURNR = f(MCU) \quad (3.4)$$

Preventing the possible effect of any outlier resulted in transforming the models into log-linear format as follows:

Model 1:

$$LogMKTCAPR_t = a_0 + a_1 LogMCU_t + u_t \quad (3.5)$$

Model 2:

$$LogVSTTR_t = a_0 + a_1 LogMCU_t + u_t \quad (3.6)$$

Model 3:

$$LogTURNR_t = a_0 + a_1 LogMCU_t + u_t \quad (3.7)$$

Where:

$MKTCAPR$ is stock market capitalization ratio to GDP;
$VSTTR$ is value of stock traded ratio to GDP;
$TURNR$ is stock market turnover ratio;
MCU is manufacturing capacity utilization;
a_0 is constant coefficient,
u is a random error term;
t is the time trend.

4. Results and discussion

Summary of Descriptive Statistics

From Table 1, the mean of the variables is 45.91032, 11.73774, 5.374194 and 6.352903 for MCU, MKTCAPR, VSTTR and TURNR respectively. The median for the variables is 43.80000, 2.280000, 1.900000 and 17.56000 respectively for MCU, MKTCAPR, VSTTR and TURNR. The maximum and minimum values are 60.50000 and 29.29000 for MCU, 56.00000 and 0.010000 for MKTCAPR, 26.22000 and 0.450000 for VSTTR and 17.56000 1.020000 for TURNR. The standard deviation is 10.18790, 14.46699, 6.517917 and 0.648874 for MCU, MKTCAPR, VSTTR and TURNR in that order. All the variables were positively skewed towards normality except for MCU. From the Kurtosis value, all the variables are leptokurtic in nature except for MCU whose Kurtosis statistic are less than 3. The significant p-value of Jarque-Bera at 5% for MKTCAPR and VSTTR show that the variables are normally distributed but not the case for MCU and TURNR.

Table 1: Descriptive Properties of the Data

	MCU	MKTCAPR	VSTTR	TURNR
Mean	45.91032	11.73774	5.374194	6.352903
Median	43.80000	2.280000	1.900000	6.220000
Maximum	60.50000	56.00000	26.22000	17.56000
Minimum	29.29000	0.010000	0.450000	1.020000
Std. Dev.	10.18790	14.46699	6.517917	3.733009
Skewness	-0.169797	1.209241	1.563186	0.648874
Kurtosis	1.533611	4.037060	4.855987	3.874536
Jarque-Bera	2.926424	8.944211	17.07440	3.163243
Probability	0.231491	0.011423	0.000196	0.205641
Sum	1423.220	363.8700	166.6000	196.9400
Sum Sq. Dev.	3113.799	6278.813	1274.497	418.0606
Observations	36	36	36	36

Source: Data output via E-views 10.0

Stationarity Test Result

Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) test for stationarity in Tables 2 and 3 show that all the

variables are stationary and have no stationarity defect that affects most time series data. Stationarity would not be achieved for all the variables at level form but was later confirmed at first difference.

Table 2: ADF Test Result

Variables	ADF Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
MCU	-3.283566 (0.03)**	-3.679322	-2.967767	1(1)/Stationary
MKTCAPR	-5.767479 (0.00)*	-3.679322	-2.967767	1(1)/Stationary
VSTTR	-5.619640 (0.00)*	-3.679322	-2.967767	1(1)/Stationary
TURNR	-7.513883 (0.00)*	-3.679322	-2.967767	1(1)/Stationary

Source: Data output E-views 10.0

Table 3: PP Test Result

Variables	PP Test Statistic	Test Critical Value at 1%	Test Critical Value at 5%	Remark
MCU	-3.262819 (0.03)**	-3.679322	-2.967767	1(1)/Stationary
MKTCAPR	-5.800555 (0.00)*	-3.679322	-2.967767	1(1)/Stationary
VSTTR	-6.672474 (0.00)*	-3.679322	-2.967767	1(1)/Stationary
TURNR	-11.20728 (0.00)*	-3.679322	-2.967767	1(1)/Stationary

Source: Data output E-views 10.0

ARDL Co-integration Relationship

The result of the ARDL as reflected in Tables 4 – 6 reveal that manufacturing capacity utilization and stock market development indicators: market capitalization ratio to GDP, value of stock traded ratio to GDP and turnover ratio are not co-integrated/related in the long run. The F-statistic of 2.787357 for market capitalization ratio to GDP, 5.716679 for value of stock traded ratio to GDP and 4.473817 for turnover ratio are less than the lower and upper bound test values of 4.94 and 5.73 respectively. This is an inference that manufacturing sector growth and stock market development are not related in the long run in Nigeria.

Table 4: Bound Test for MKTCAPR and MCU

T-Test	5% Critical Value Bound		Remark
F-Statistic	Lower Bound	Upper Bound	
2.787357	4.94	5.73	Null Hypothesis Accepted

Source: Data output via E-views 10.0

Table 5: Bound Test for VSTTR and MCU

T-Test	5% Critical Value Bound		Remark
F-Statistic	Lower Bound	Upper Bound	
5.716679	4.94	5.73	Null Hypothesis Rejected

Source: Data output via E-views 10.0

Table 6: Bound Test for TURNE and MCU

T-Test	5% Critical Value Bound		Remark
F-Statistic	Lower Bound	Upper Bound	
4.473817	4.94	5.73	Null Hypothesis Accepted

Source: Data output via E-views 9.0

OLS Regression

In ascertaining the relationship in the short run between manufacturing sector growth and stock market development in Nigeria, the models were estimated using the OLS technique.

Market capitalization Ratio to GDP and Manufacturing Capacity Utilization

As can be seen in Table 7, market capitalization ratio to GDP has positive and significant relationship with manufacturing capacity utilization. The co-efficient of the constant -36.45473 shows that holding manufacturing capacity utilization constant, market capitalization ratio to GDP would be -36.45%. A unit increase in manufacturing capacity utilization would results to 1.05% rise in market capitalization ratio to GDP. The Adjusted R-squared shows that 53.08% variation in market capitalization ratio to GDP was attributed to changes in manufacturing capacity utilization. The p-value of the F-statistic is significant at 5% level, thus the changes in market capitalization ratio to GDP owing to fluctuation in manufacturing capacity utilization is significant. The Durbin Watson statistic of .07 is a suggestion that the variables in the model are serially correlated but this is corrected by the serial correlation LM test in Table 10.

Table 7: Market capitalization Ratio to GDP and Manufacturing Capacity Utilization

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-36.45473	8.344998	-4.368453	0.0001
MCU	1.049709	0.177585	5.911016	0.0000
R-squared	0.546451	Mean dependent var		11.73774
Adjusted R-squared	0.530811	S.D. dependent var		14.46699
S.E. of regression	9.909508	Akaike info criterion		7.487207
Sum squared resid	2847.752	Schwarz criterion		7.579723
Log likelihood	-114.0517	Hannan-Quinn criter.		7.517365
F-statistic	34.94011	Durbin-Watson stat		0.718261
Prob (F-statistic)	0.000002			

Source: Data output E-views 10.0

Value of Stock Traded Ratio to GDP and Manufacturing Capacity Utilization

From Table 8, manufacturing capacity utilization has significant positive relationship with value of stock traded ratio to GDP. If manufacturing capacity utilization is held constant, value of stock traded ratio to GDP would stand at 0.21%. With inference from the Adjusted R-square, manufacturing capacity utilization explained 48.17% changes in value of stock traded ratio to GDP, and this is statistically significant following the F-statistic p-value of

0.00 (significant at 5% level). The Durbin Watson statistic of 1.9 is very close to 2.0 benchmark which implies that there is no autocorrelation in the model.

Table 8: Value of Stock Traded Ratio to GDP and Manufacturing Capacity Utilization

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.97399	4.265425	2.807222	0.0092
MCU	0.209836	0.086518	2.425347	0.0223
R-squared	0.517437	Mean dependent var		5.538333
Adjusted R-squared	0.481691	S.D. dependent var		6.563854
S.E. of regression	4.725560	Akaike info criterion		6.038489
Sum squared resid	602.9347	Schwarz criterion		6.178608
Log likelihood	-87.57733	Hannan-Quinn criter.		6.083314
F-statistic	14.47559	Durbin-Watson stat		1.943886
Prob (F-statistic)	0.000053			

Source: Data output E-views 10.0

Turnover Ratio to GDP and Manufacturing Capacity Utilization

The regression result in Table 9 shows that manufacturing capacity utilization has significant positive relationship with turnover ratio. It would be deduced from the coefficient of the constant that if manufacturing capacity utilization is held constant, turnover ratio would be 0.24%. Manufacturing capacity utilization explained 43.35% changes in turnover ratio by looking at the Adjusted R-square, and this is statistically significant at 5% level of significance as evidenced by the F-statistic and p-value of 23.94 and 0.00 respectively. The Durbin Watson statistic of 1.41 is that not far from the benchmark of 2.0 which suggest no autocorrelation. Nevertheless, the deficiency that be connected with the Durbin Watson value of 1.41 was corrected with the serial correlation LM test in Table 10 which reveals that the variables in the model are not serially correlated.

Table 9: Turnover Ratio and Manufacturing Capacity Utilization

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-4.959931	2.366400	-2.095982	0.0449
MCU	0.246412	0.050358	4.893194	0.0000
R-squared	0.452245	Mean dependent var		6.352903
Adjusted R-squared	0.433357	S.D. dependent var		3.733009
S.E. of regression	2.810049	Akaike info criterion		4.966622
Sum squared resid	228.9949	Schwarz criterion		5.059137
Log likelihood	-74.98264	Hannan-Quinn criter.		4.996780
F-statistic	23.94335	Durbin-Watson stat		1.407793
Prob (F-statistic)	0.000034			

Source: Data output E-views 10.0

Serial Correlation LM Test

The serial correlation LM test assesses if the variables in a model are serially correlated, and when such exist, the regression result is assumed to be biased. The null hypothesis of serial correlation LM test assumes no autocorrelation in the model up lag order 2. From Table 10, the variables in the models are not serially correlated judging by the insignificant p-values of the F-statistics.

Table 10: Breusch-Godfrey Serial Correlation LM Test

Models	F-statistic	Prob. F(1,27)
Model 1	0.007249	0.9328
Model 2	0.018175	0.8938
Model 3	1.254857	0.3012

Source: Data Output E-views 10.0

Testing the Effect on Manufacturing Capacity Utilization on MCU

The effect of manufacturing capacity utilization on stock market development in Nigeria surrogated by market capitalization ratio to GDP, value of stock traded ratio to GDP and turnover ratio was estimated using the Granger Causality test and the results presented in Table 11. It is observed that manufacturing capacity utilization has no significant effect on market capitalization ratio GDP and turnover ratio as causality does not flow from market capitalization ratio GDP and turnover ratio to manufacturing capacity utilization. However, there is bidirectional/feedback relationship between value of stock traded ratio and manufacturing capacity utilization. In order words, manufacturing capacity utilization has significant effect on value of stock traded ratio GDP and the same time value of stock traded ratio GDP also has significant effect on manufacturing capacity utilization. Again, it was found that turnover ratio granger cause manufacturing capacity utilization at 5% level of significance, that is, turnover ratio has significant effect on turnover ratio.

Table 11: Granger Causality Result for MCU and Stock Market Development

Null Hypothesis:	Obs	F-Statistic	Prob.	Remarks
MCU does not Granger Cause MKTCAPR	35	3.04851	0.0922	No Causality
MKTCAPR does not Granger Cause MCU		0.67173	0.4196	No Causality
MCU does not Granger Cause VSTTR	35	4.48916	0.0435	Causality
VSTTR does not Granger Cause MCU		19.5659	0.0001	Causality
MCU does not Granger Cause TURNR	35	2.44911	0.1292 0.0059	No Causality
TURNR does not Granger Cause MCU		8.92771		Causality

Source: Data output via E-views 10.0

Discussion of findings

The positive and significant positive relationship between stock market development and manufacturing capacity utilization in short run as evidenced in Tables 7-9 aligns with a priori expectation. This result is an indication that performance of the manufacturing sector has the potential of

developing the stock market in Nigeria. This finding is agreement with previous studies of Oluwafemi, Akinola and Oladepo (2014), Oke and Adeusi (2012) [22] and Loto (2012) [15] on the positive and significant relationship between stock market development and manufacturing sector growth. The Auto-Regressive Distributive Lag (ARDL) exhibited the absent of a long run equilibrium relationship between manufacturing capacity utilization and stock market development in Nigeria as spelled out in Tables 4 – 6, it is worthy to note that the granger causality test shows that there is significant effect of stock market development on manufacturing capacity utilization. This supports the works of Ibi, Joshua, Eja and Olatunbosun (2015) [10], Kwode and Buzugbe (2015) [11] and Sola, Obamuyi, Adekunjo and Ogunleye (2013) [27].

5. Conclusion and recommendations

This study was carried out to ascertain the effect of manufacturing sector growth on stock market development in Nigeria. There is a widely held argument that efficient functioning of manufacturing sector growth is a criterion for stock market development because efficiency in manufacturing sector translates to the level of development in a stock market. Whether this assertion holds using Nigerian data was the major objective of this study. From the result of the analysis. This research concludes that manufacturing sector growth has no significant effect on stock market development in Nigeria.

There are various implications based on the result of this study. First, Government should implement appropriate reform policies aimed at ensuring stability in the manufacturing sector by providing adequate infrastructure such as steady power supply, availability of forex for purchase of raw materials, and adequate regulatory framework among others. Secondly, government through the Nigerian stock exchange should reduce the cost of raising capital by firms on the stock market as high cost and other bureaucratic delays could limit the use of capital market as veritable source of raising funds for investment. Finally, although inflation is a necessary evil, but it should be curbed a little (not harsh monetary policies) and not much high level (rate) of taxation. A moderate level of inflation is necessary for improving economic growth through import of capital equipment which will lead to incentives of industrial sector and also contribute to enhanced output.

6. References

1. Adigwe PK, Nwanna IO, Ananwude AC. Stock market development and economic growth in Nigeria: An Empirical Examination (1985-2014). Journal of Policy and Development Studies. 2015; 9(5):134-154.
2. Alile H. Dismantling barrier of foreign capital inflows. The business times of Nigeria, 14th April, 1996, page 5.
3. Bencivenga V, Smith B. Financial intermediation and endogenous growth. Review of Economic Studies. 1991; 58:195-209.
4. Block SB, Hirt GA. Foundations of financial management IRWIN. Boston, USA, 2002.
5. Caporale GM, Howells PGA, Soliman AM. Stock market causal linkages. Journal of Economic Development and Economic Growth. 2004; 29(1):33-50.
6. Demetriades PO, Hussain KA. Does financial development cause economic growth? Time series evidence from 10 Countries. Journal of Development Economics. 1996; 61:387-411.
7. Echekoba FN, Ananwude AC. The Relationship between index of industrial production and stock market liquidity: A co-integration evidence from stock exchange of Nigeria's value of stock traded ratio. Frontiers of Accounting and Finance. 2016; 1(1):29-39.
8. Egbuche AC, Nzotta SM. Effect of stock market on manufacturing sector output in Nigeria. International Journal of Management Sciences. 2020; 8(3):3-61.
9. Filler RK, Jan H, Nauro FC. Do stock market promote economic growth? The William Davidson Institute (University of Michigan Business School) Working, 2000, Paper Series No. 267.
10. Ibi EE, Joshua NJ, Eja BR, Olatunbosun HU. Capital market and industrial sector development in Nigeria: An empirical investigation. European Journal of Accounting Auditing and Finance Research. 2015; 3(6):63-79.
11. Kwode IE. Capital market and the performance of the manufacturing industries in Nigeria, 1970-2012. European Journal of Business and Management. 2015; 7(13):50-65.
12. Levine R. Stock markets and economic growth. Journal of Finance. 1997; 46(4):144-565.
13. Levine R, Zervos S. Stock market development and long-run economic growth. The World Bank Review. 1996; 10(2):323-339.
14. Levine R. Stock markets, growth, and tax policy. The Journal of Finance. 1991; 46(4):1445-1465.
15. Loto MA. Global economic downturn and the manufacturing sector performance in the Nigerian economy (A Quarterly Empirical Analysis). Journal of Emerging Trends in Economics and Management Sciences. 2012; 3(1):38-45.
16. Luintel K, Khan M. A quantitative reassessment of the finance-growth nexus: Evidence form a Multivariate VAR. Journal of Development Economics. 1999; 60:381-405.
17. Mohtadi H, Agarwal S. Stock market development and economic growth: evidence from developing countries. Oxford University Press, New York, 2004.
18. Ndako UB. Stock markets, banks and economic growth: A time series evidence from South Africa. African Finance Journal. 2010; 12(2):72-92.
19. Neusser K, Kugler M. Manufacturing growth and financial development: Evidence from OECD Countries. Review of Economics and Statistics. 1998; 80:638-46.
20. Odife DO. Changing trends in stock exchange and capital market development: Lessons for Africa, 2003. Retrieved from http:/www.unita.orgdfmresources.
21. Ogundipe AA, Okafor V, Bowale E, Maijeh PC. Financial deepening and manufacturing sector performance in Nigeria: Evidence from bank, non-bank and external financing sources. African Journal of Business and Economic Research. 2021; 16(S1):203-220.
22. Oke MO, Adeusi SO. Impact of capital market reforms on economic growth: The Nigerian experience. Australian Journal of Business and Management research. 2012; 2(2):20-30.
23. Olorunfemi S, Obamuyi TM, Adekunjo FO, Ogunleye

EO. Manufacturing performance in Nigeria: Implication for sustainable development. Asian Economic and Financial Review. 2013; 3(9):1195-1213.
24. Olweny TO, Kimani D. Stock market performance and economic growth: Empirical evidence from Kenya using causality test approach. Advances in Management & Applied Economics. 2011; 1(3):153-196.
25. Osamwonyi IO, Kasimu A. Stock Market and economic growth in Ghana, Kenya and Nigeria. International Journal of Financial Research. 2013; 4(2):60-75.
26. Rousseau P, Wachtel P. Equity markets and growth: Cross country evidence on timing and outcomes, 1980-1995. Journal of Banking and Finance. 2000; 24:1933-1957.
27. Sola O, Obamuyi TM, Adekunjo FO, Ogunleye EO. Manufacturing performance in Nigeria: Implication for sustainable development. Asian Economic and Financial Review. 2013; 3(9):1195-1213.
28. Sule KO, Momoh OC. The impact of stock market earnings on Nigerian per capita income. African Journal of Accounting, Economics, Finance and Banking Research. 2009; 5(5):77-88.
29. Thornton J. Financial deepening and economic growth in developing countries. Economia Internazionale. 1995; 48:423-30.
30. Udegbunam RI. Openness, stock market development, and industrial growth in Nigeria. The Pakistan Development Review. 2002; 41(1):69-92.
31. Victor OO, Kenechukwu NJ, Richard O, EO. Capital market and industrial sector development in Nigeria: A theoretical analysis. Journal of Emerging Trends in Economics and Management Sciences. 2013; 4(1):20-30.
32. Yartey CA. The determinants of stock market development in emerging economies: Is South Africa different? IMF Working Paper, WP/08/32, 2008.