

The Nexus between Manufacturing Productivity and Economic Growth in Nigeria (1986-2018)

Jirbo B.V., Atayi A.V., Adekunle S.O. and Oluyemi B.
Department of Economics, Faculty of Social and Management Science,
Afe Babalola University, Ado Ekiti, Nigeria

Abstract. The study examine the impact of manufacturing sector productivity on economic growth in Nigeria, using the error correction model approach. Findings from the study suggest that interest rate has a negative and insignificant impact on manufacturing sector productivity, but the R^2 (R-square) value of 0.8277 shows that manufacturing sector productivity have a very good impact on economic growth. It indicates that about 82.77 per cent of the variation in manufacturing sector productivity is explained by macro-economic variables. Exchange rate was found to have negative and an insignificant impact on manufacturing sector productivity. However, total government expenditure was found to have a positive and a significant impact on manufacturing sector productivity; whereas, degree of trade openness was found to have a negative and insignificant impact on manufacturing sector productivity. The study recommend among other things that affordable and sustainable interest rates is implemented by Central Bank to ensuring that the loans to the manufacturing sector are within the reach of investors in the sector without any forms ambiguity.

Keywords: Manufacturing sector, economic growth, Interest Rate, Nigeria

Introduction

Manufacturing sector is an important engine of growth, an antidote for unemployment, a creator of wealth, and a channel for sustainable development capable of promoting industrialization in the economy (Atayi *et al.*, 2018). There is a clear correlation between macro-economic factors and the development of any economy in the world's manufacturing sector. In fact, the relationship can be correctly claimed to be symbiotic or interdependent. This is because the positive output of key macroeconomic variables such as economic growth, price stability, high jobs rate and stability of the exchange rate can generate a robust manufacturing sector, as well as a symptom that some of the above listed macroeconomic variables are also doing well when the manufacturing sector is doing well. In line with the output pattern of macroeconomic indicators, the Nigerian manufacturing sector has its fair share of the boom and has burst over the years.

Researches by scholars has shown that higher productivity is a sure way to boost economic growth and raise living standards in any country. It has helped to pull many economies out of the global recession and set them on the road of growth by formulating and implementing successful productivity schemes. This will entail a quantum leap in the development of products and services. Increasing efficiency should be the priority and through productivity development schemes, many other nations that have found themselves in the same predicaments have resolved them. For example, as the center point of their economic planning, Japan from the end of the Second World War and the United States of America from the 1970s have generated high productivity and the results have been resounding (Ayodele, 2014).

In Nigeria, the manufacturing sector is favored on the basis of the general notion that the key instruments of rapid growth, structural improvements and self-sufficiency are the manufacturing sector, so that resources have been channeled into the preferred sectors through heavy expenditure in the public sector, based on an import substitution policy of level security for private investment. After the implementation of the Structural Adjustment Program (SAP) in 1986, most manufacturing companies have reported high and growing production costs as a

significant constraint on their operations. Industrialization seems to be on the crossroads in Nigeria, provided that the strategy's pursuits will lead to a more inefficient use of capital, increased foreign exchange restrictions, high cost and payment balance difficulties: This is paradoxical given that the industrial sector is theoretically at least expected to have the capacity to innovate and thus exude the dynamism that affect the other sector of the economy.

The Nigerian economy has faced difficulties in terms of both external shocks and internal problems due to the ongoing process of economic reforms along with liberalization initiatives. External shocks include a phenomenal rise in foreign capital outflows, instability in exchange rates, oil shocks, and the effects of contagion. In terms of the sluggish speed of the legal system and the absence of the social security system, industrial restructuring, non-performing assets in the banking sector, etc., internal systemic problems have been hampered by the reform process. Several threats impacting banks, mutual funds, financial companies and non-financial firms have resulted from macroeconomic instability. In terms of exchange rate, inflation, interest rate and liquidity risks, macroeconomic risks will translate into financial results for entities, companies and financial institutions. For instance, banking sector fragility can be attributed to the credit risk or the risk of loss resulting from counter party default.

In addition, the role of the institutional structure, interest rate policy and other macroeconomic variables in Nigeria's manufacturing sub-sector growth has not been fully addressed and the effect has not been fully felt in the same way. Nigeria's manufacturing sub-sector has been experiencing stunted growth and has remained low in its contribution to the Gross Domestic Product (GDP). For example, the contribution of the manufacturing sector to GDP decreased from about 70.1 percent in 1980 to just 44.3 percent in 2009 (CBN, 2009).

However it is noted that all the strategies put in place by successive Nigerian governments to reinvigorate and strengthen the Nigerian manufacturing sector have not only led to isolated growth, but with their associated capital-intensive methods have also produced relatively small modern sector jobs. The capital-intensive structure of these industries is anchored in the labor savings gained by replacing the technology of their parent companies that replace plants in metropolitan countries. There are tremendous opportunities and opportunities for SMEs in Nigeria to recover and play a crucial role in driving growth, development and industrialization, wealth creation, poverty reduction and job creation (Momoh, 2012).

The sub-sector continued to face difficulties with access to banking sector credit, which in turn had an impact on imports of raw materials. In addition, the delay in the passage by the National Assembly of the 2016 Appropriation Act impacted manufacturers' business and investment plans. The epileptic supply of electricity and the increased pump price of diesel used mostly in the private supply of electricity were other factors (Odior, 2013). As a result of high foreign exchange costs, high interest rates, weak demand, incessant poor definition, inadequate supply of raw materials, insufficient working capital and frequent machine breakdowns, this poor production sector output was due to high production costs. All these incidents combined with insufficient snow-balled funding into poor capacity utilization.

While Nigeria has consistently planned industry as the driver of economic development, the government has tended to view industry only in the short-term economic sense, with industries paying little or no attention to environmental and health problems. In addition, despite the statute, the continued intimidation of businesses by certain state and local governments over illegal multiple levies and charges creates a major disincentive for business and thus regular production interruption occurs. Inadequate and inefficient infrastructure facilities appear to raise operational costs as producers in Nigeria are forced to resort to private provision of services such as roads, water, electricity, etc.

A significant growth driver, an antidote to unemployment, a producer of wealth, and a conduit for sustainable development capable of fostering economic industrialization is the manufacturing sector (Kaldor & Mike, 2010). Nevertheless, amid all attempts to evolve the

manufacturing sector, the situation in Nigeria has shown that the manufacturing sector has not made substantial progress. The government has also embarked on a variety of approaches aimed at improving the sector's industrial production; they are still not working credibly. In addition, there has been rising concern about the decline in the production of the manufacturing sector in Nigeria in recent times. The unimpressive performance of the sector in Nigeria is mainly due to fluctuations in macro-economic variables which has been the major problem facing the Nigerian manufacturing sectors. This suggests that there was no growth propelling framework at the disposal of manufacturing sector in Nigeria over the years which tend to deteriorate their growth mechanisms. Therefore, this study intends to investigate the effect of the manufacturing sector on the economic growth in Nigeria.

Literature Review

Manufacturing productivity can be defined as the total output of production from sectors that for a particular period of time involve the production of products in factories or plants (Financial Times, 2018). The manufacturing sector consists of establishments that are engaged in the electronic, physical or chemical renovation of new goods for substances, parts or materials (United States Bureau of Labor Statistics, 2018).

This is a subset (others are sub-sectors of manufacturing, art and mining) of the industrial field. Similarly, development, mining (including crude petroleum and gas) and electricity generation are part of the industrial sector (Sanusi, 2010). Industrial, therefore, requires the conversion of raw materials into finished consumer products or intermediate or manufacturing goods. CBN (2017) further divided the industrial sector into three industrial sub-sectors, namely manufacturing, mining and electricity. The manufacturing industry is the key sector for deciding the economic growth and development of the country. In Nigeria, the sector accounts for about 10 percent of the total GDP (NBS, 2018).

The manufacturing sector is currently divided into the following group of industries. Food, Drink and Tobacco, Chemical and Pharmaceutical, Domestic and Industrial Plastic, Rubber and Foam, Essential Meal, Iron Steel and Manufactured Metal Goods, Pulp, Paper and Paper Products, Printing, Publishing and Packaging, Electrical and Electronics, Garment, Sewing, Carpet, Leather/Leather Boots, Furniture, Non-Metallic Mineral Products, Motor Products, Timber and Wood Products. The Chemical and Pharmaceutical Manufacturing Operation had the highest rate of employee involvement and paying jobs in the last three years of study. The Food Drinks and Tobacco operation was the second largest employer. This was followed by Motor Vehicles and Assembly, and the Electrical and Electronics operation was the smallest employer (NBS, 2017). Average manufacturing capacity utilization, output value added as a percentage of the gross domestic product (GDP), manufacturing contribution to GDP and the manufacturing contribution to the growth rate of GDP are some of the different metrics used to capture success in the manufacturing sector.

Empirically, international economics has long been concerned with the impact of the movement of exchange rates on the real economy. According to Dhasmana (2013), the movement of exchange rates can affect a company's output in a variety of ways, such as the cost of imported inputs, the export price relative to foreign competitors, or the cost of external borrowing. In general, the Marshall Lerner condition theorem notes that if the elasticity of demand for imports in the devaluing country plus the international elasticity of demand for the exports of the nation exceeds 1, the devaluation of a currency is good for the trade balance. Since the general theory shows that the exchange rate's effect is very dependent, we would like to review further research papers to establish the expected relationship between the exchange rate and the growth of production.

The various impacts of the exchange rate on different forms of economy have been illustrated in a lot of studies. The effect can be split into positive effects and ambiguous effects

that cannot be observed. Firstly, the research by Fong and Liu (2009) and Campa and Goldberg (1999), Caglayan and Demir (2014) and Tomlin (2010) demonstrated the positive effects. During the East Asian Financial Crisis, Fong and Liu (2009) developed the relationship between exchange rates and corporate industries in Taiwan. They claimed that currency depreciation led to an increase in exports, domestic market sales, overall sales, value added and productivity. In addition, company productivity growth was found to be impacted by the weakening of the exchange rate through the expansion of the company size. The researchers used panel data analysis to test the data and the result showed that depreciate home currency has a direct and positive impact on manufacturing firms. Campa and Goldberg (1999) also pointed out that the US dollar appreciation in the USA had a positive impact on investment and in turn reduced export volumes and increased import inputs. This may be due to the reliance on imported inputs in US manufacturing industries, according to the authors.

Caglayan and Demir (2014) examined the instability in the volatility of exchange rates and the actual exchange rate appreciation would impact the competitiveness of manufacturing companies. The research was conducted in Turkey using data from the business level panel and the empirical outcome showed that changes in the exchange rate and the appreciation of the exchange rate had a negative effect on the growth of company productivity. They find that when the exchange rate appreciates but faces a serious negative effect on exchange rate uncertainty, only export-oriented companies will remain competitive in the market. Overall, a volatile exchange rate would have a negative impact on the efficiency of production in terms of long-term growth and aggregate output.

In order to investigate how exchange rate fluctuations impact business competitiveness in terms of barriers to entry and exit, Tomlin (2010) applied a dynamic structural model. The dynamic parameters in the model were calculated using the Nested-Pseudo Probability algorithm and the Method of Simulated Moments. The structural parameter calculations have shown that the number of companies remaining on the market decreases as the real exchange rate appreciates, as well as reducing the growth of business productivity.

The analysis by Dhasmana (2013), Tsui (2008) and Swift (2007), on the other hand, shows that the effect of the exchange rate is unclear. By analyzing the data using Panel Vector Auto Regression (VAR) and empirical findings to examine whether exchange rate movements significantly affect industrial productivity, Dhasmana (2013) investigated the exchange rate determinants in Indian manufacturing firms. He concluded that it is difficult to detect the short-term effect of real appreciation. The effect of exchange rate fluctuations is greatly reduced when foreign equity ownership and the domestic equity sector join the same market.

In order to find a relationship, Tsui (2008) studied exchange rates and profit margins in terms of export rate, imported input rate and external exposure index that affect revenue and costs in the manufacturing sector. He found that when the profit margin is high, the appreciation of Taiwan's home currency has a positive effect on the manufacturing sector. This influence, on the other hand, does not extend to the Japanese manufacturing industry, as the appreciation of the Japanese yen has not only failed to have a positive effect on the sector, but has a negative impact on the sector when the profit margins are high. Swift (2007) analyzed the relationship between exchange rates and investment in Australia in person and whole manufacturing sectors. The results of the study showed that overall growth in the manufacturing sector responded to currency changes in terms of investment and had a positive effect on export share and a negative impact on imported input costs. In other words, the investment and export share decreased as the exchange rate appreciated, but the share of imported input increased incrementally. However, due to the fact that the exchange rate only marginally affects investment in domestic market companies, the effect does not extend in a similar way to individual industries.

Methodology

The method of data collection used in this study is mainly secondary. Secondary data are data obtained from various sources like, books, unpublished articles, journals, government reports, magazines and the internet. The data set for this study consists of secondary time series spanning from the period 1986-2018. The time series data were obtained from various sources, namely; Central Bank of Nigeria Statistical Bulletin (2018) and National Bureau of Statistics (2018).

Model specification

The implicit representation of the model is expressed as:

$$MSP = INR + EXR + TGE + DTO \quad (1)$$

where:

MSP = Manufacturing sector productivity

INR = Interest rate

EXR = Exchange rates

TGE = Total government expenditures (both capital and recurrent expenditures)

DTO = Degree of trade openness

The explicit form of the model in equation (1) is expressed as:

$$MSP = \beta_0 + \beta_1 INR + \beta_2 EXR + \beta_3 TGE + \beta_4 DTO + \mu_t \quad (2)$$

where:

μ_t = error term.

The Error Correction Model (ECM) which represents the deviation from the long run steady state relations among the variables will be conducted once a long-run relationship is shown to exist. Therefore, the short run dynamics was examined by means of an error correction model. This is given as:

$$\Delta MSO_t = \alpha_0 + \sum_{j=0}^n \alpha_{1j} \Delta INR_{t-j} + \sum_{k=0}^o \alpha_{2k} \Delta EXR_{t-k} + \sum_{l=0}^p \alpha_{3l} \Delta TGE_{t-l} + \sum_{m=0}^0 \alpha_{4m} \Delta DTO_{t-m} + \lambda ECT_{t-1} + \varepsilon_t \quad (3)$$

where: Δ is difference operator; ECM (-1) is one period lag of the residual; it is the equilibrium term; α_0 is the constant terms; $\alpha_1 - \alpha_4$ are respective parameters; ε_t is the white noise error term. The error correction term, ε_t is expected to have negative sign, less than unity and highly significant at the 5 per cent level (Gujarati, 2004). ECT_{t-1} is the lagged Error correction term. It is the residual obtained from the long run estimation.

Results and Discussion

From Table 3 in the appendix, the traditional test of the ADF indicates that three of the variables tend to be stationary at levels and they are MSO, INR and TGE. Their ADF test statistics values of -7.790918, -5.819927 and -4.29157 are greater than their critical values of -4.356068, -4.374307 and -3.595026 at 1%, 1% and 5% levels respectively. However, EXR and DTO were found stationary at first difference (that is at order I(1)) and 5 and 1 percent. Therefore, all the variables were found to be stationary at different orders (a mixture of I(1) and I(0) and thus that the bounds testing co integration approach.

The co-integration test result shows that the F-statistic value of 15.28 is greater than the lower (I(0)) and upper bound (I(1)) critical value at the 5% significance level. Thus, the null hypothesis of no long-run relationship is rejected at the 5% significance level. It can therefore be inferred that the variables are co-integrated. Thus, there is a long-run co-integrating relationship between manufacturing sector performance and economic growth.

Estimation of Results

Table 1. Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(MSO(-1))	0.895565	0.043250	20.70681	0.0000
D(INR)	-8.197330	5.266610	-1.556472	0.1803
D(INR(-1))	1.816376	4.434273	0.409622	0.6990
D(INR(-2))	-12.74536	4.308275	-2.958343	0.0316
D(INR(-3))	-10.96011	4.163646	-2.632334	0.0464
D(EXR)	0.510749	0.894495	0.570991	0.5927
D(EXR(-1))	-0.726297	0.888295	-0.817630	0.4508
D(EXR(-2))	-1.267067	0.932703	-1.358489	0.2324
D(EXR(-3))	-7.331888	1.107089	-6.622674	0.0012
D(TGE)	-0.000113	5.38E-05	-2.100247	0.0897
D(TGE(-1))	-0.001385	0.000115	-12.01419	0.0001
D(TGE(-2))	-0.001418	0.000127	-11.12521	0.0001
D(TGE(-3))	-0.000369	9.33E-05	-3.960044	0.0107
D(DTO)	-216.5508	194.1065	-1.115628	0.3153
D(DTO(-1))	856.9019	168.8983	5.073479	0.0039
D(DTO(-2))	744.0677	163.9577	4.538169	0.0062
ECM(-1)*	-0.742451	0.054827	-13.54182	0.0000
R-squared	0.992811	Mean dependent var		327.0496
Adjusted R-squared	0.981309	S.D. dependent var		436.4391
S.E. of regression	59.66779	Akaike info criterion		11.28147
Sum squared resid	35602.45	Schwarz criterion		12.09737
Log likelihood	-135.2998	Hannan-Quinn criter		11.52408
Durbin-Watson stat	1.940346			

* p-value incompatible with t-Bounds distribution.

Source: Authors Computation, 2018 (Eviews-9)

As expected, the lagged error correction term is negative, less than unity and statistically significant at 5 percent. The coefficient of (-0.7424) revealed that once there is disequilibrium in the system, it takes an average (high) speed of 74.24% to adjust itself back towards long-run equilibrium level.

The R^2 (R-square) value of 0.8277 shows that macro-economic variables have a very good impact on manufacturing sector output resulting in an increased economic growth. It indicates that about 82.77 per cent of the variation in manufacturing sector output is explained by macro-economic variables, while the remaining unaccounted variation is captured by the error term.

Discussion of Findings

Findings from the study revealed that interest rate has negative and insignificant impact on manufacturing sector productivity between 1986 and 2018. The implication of this is that wide interest rate spread occasioned by high interest rate in the Nigerian financial system is a reflection of the extremely poor infrastructural facilities and inefficient institutional framework necessary to bring about substantial reduction in the risk associated with financing an extremely traumatized economy (Nkurunziza, 2005). This is in-line with Salami and Oluseyi (2013)

whose findings reveal that negative relationship (between interest rate and output growth) is attributed to the high level of interest rate which denies investors access to credit and consequently making them to be caught in a development trap. In addition, exchange rate was found to have negative and an insignificant impact on manufacturing sector productivity between 1986 and 2018. The implication of this result is that Nigeria is highly dependent on the external sector for import of inputs which makes the effect of exchange rate devaluation worse especially in manufacturing because capacity to import is constrained by the depreciating currency.

This is in agreement with Servén (2013) whose results showed that real exchange rate volatility negatively affects investment in a large panel of developing countries. This negative impact is significantly larger in countries with highly open economies and less developed financial systems. He also found evidence of threshold effects, whereby uncertainty only matters when it is relatively high. A similar study of Eme and Johson (2012) revealed that there is no evidence of a strong direct relationship between changes in exchange rate and output growth. Nigeria manufacturing growth has been directly affected by monetary variables leading to a corresponding decline in output.

However, total government expenditure was discovered to have a positive and a significant impact on manufacturing sector productivity between 1986 and 2018. This is in line with the work of Ukoha (2000) whose empirical analysis showed that government capital expenditure on manufacturing, per capita real income and exchange rate demonstrated positive impacts on manufacturing capacity utilization in Nigeria. Above all, degree of trade openness was found to have a negative and insignificant impact on manufacturing sector productivity between 1986 and 2016. Trade liberalization has been the major policy thrust that drives the globalization process and opening up of the economy for importation of only finished goods makes the economy a dumping ground that inhibits industrial growth. Findings of Akinlo, Adeleke and Aremo (2013) revealed that trade openness has not contribute significantly to the enhancement of labour participation rate in Nigeria manufacturing sector. They further concluded that trade liberalization does not seem to contribute positively towards reduction in crude death rate, real per capita expenditure on consumption in Nigeria.

Conclusion and Policy Recommendations

The study thus concludes that manufacturing sector productivity indeed have positive and significant impact on economic growth in Nigeria. However, there is a need for continual review of policies that would continue to drive sustained industrial growth in Nigeria.

The study recommends among other things that:

An affordable and sustainable interest rates should be implemented by the Central Bank to ensuring that the loans to the manufacturing sector are within reach of investors in the sector without any forms ambiguity. This is to guarantee a greater productivity in the sector since it accounted for the biggest contribution to gross domestic product vis-à-vis economic growth relative to other monetary variables.

References

- Atayi, A.V., Joseph, B.T., Park, I. & Tamatuwa, K. (2018). Selected Macroeconomic Variables Performance and Manufacturing Sector Growth in Nigeria. *Journal of Accounting and Management*, 1(2), 276-284.
- Ayodele, T.D. (2014). An Empirical Evaluation of the Impact of Exchange Rate on the Nigeria Economy. *Journal of Economics and Sustainable Development*, 5(8), 25-28.

- Benson, U.O., & Victor, E.O. (2012). Real Exchange Rate and Macroeconomic Performance: Testing for the Balassa-Samuelson Hypothesis in Nigeria. *International Journal of Economics and Finance*, 4(2), 127-134.
- Caglayan, M., & Demir, F. (2014). Firm productivity, exchange rate movements, sources of finance, and export orientation. *World Development*, 54, 204-219.
- Campa, J. & Goldberg, L.S. (1999). Investment, pass-through and exchange rates: A cross country comparison. *International Economic Review*, 40(2), 287-314.
- Central Bank of Nigeria (2017). What is Monetary Policy? *Understanding Monetary Policy, Series 1* (pp. 1-52). Abuja: Central Bank of Nigeria.
- Dhasmana, A. (2013). Transmission of Real Exchange Rate Changes to the Manufacturing Sector Performance. *IIM Bangalore Research Paper*, 435.
- Dickey, D.A., & Fuller, W.A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74, 427-431.
- Eze, O.R., & Ogiji, F.O. (2013). Impact of fiscal policy on the manufacturing sector output in Nigeria: An error correction analysis. *International Journal of Business and Management Review*, 1(3), 35-55.
- Financial Times (2017). Financial Times.
- Fung, L., & Liu, J. T. (2009). The impact of real exchange rate movements on firm performance: A case study of Taiwanese manufacturing firms. *Japan and the World Economy*, 21, 85-96.
- Gujaraiti, D. N. (2004). *Basic Econometrics* (4th ed.). New York: McGraw-Hill.
- Gumbe, S., & Kaseke, N. (2009). Manufacturing Firms and Hyperinflation- Survival Options: The Case of Zimbabwe Manufacturers. *Journal of Management and Marketing Research*, 1(22).
- Ismaila, M., & Imougehele, L. E. (2015). Behavioral pattern of fiscal policy variables and effects on economic growth: An econometric exposition on Nigeria. *International Journal of Academic Research in Business and Social Sciences*, 5(2), 287-301.
- Jhingan, M. L. (2013). *The Economics of Development and Planning* (40th ed.). Delhi India: Vrinda Publications (P) ltd.
- Jorgenson, D. (1963). *Investment. Volume 1: Capital theory and investment behavior*. Cambridge, MA: MIT Press.
- Kothari, C.R. (2004). *Research methodology: methods and techniques*. New Delhi: New age International.
- Kumar, S., Webber, D. J., & Perry, G. (2012). Real wages, inflation and labour productivity in Australia. *Applied Economics*, 44(23), 2945-2954.
- Ladeinde, K. (2011). Nigerian Manufacturing Sector: The Big Picture. *Business News*, November 12th.
- Lensink R. (2010). Does Does Financial Development Mitigate Negative Effects of Policy Uncertainty on Economic Growth? *Credit Research Paper* 00/1.
- Loto, M.A. (2012). The determinants of output expansion in the Nigerian manufacturing industries. *Journal of Emerging Trends in Economics and Management Sciences*, 3(6), 991-996.
- MAN (2009). Manufacturers association of Nigeria membership profit. Retrieved from <http://www.manufactuerersnigeria.org/membership.htm>
- Mazi, S. O. (2010). The Nigerian Manufacturing Sector: The Challenges and Success. Post Economic Policy and Finance. Value Fronteira Limited. Transcribed paper Series, May 1st, 2010.
- National Bureau of Statistics (2018). Nigeria manufacturing summary report: 2010-2012, October 14th.

- Nneka, C.A. (2012). Investigating the Performance of Monetary Policy on Manufacturing Sector in Nigeria: 1980-2009. *Arabian Journal of Business and Management Review (OMAN Chapter)*, 2(1), 12-25.
- Odior, E.S. (2013). Macroeconomic variables and the productivity of the manufacturing sector in Nigeria: A static analysis approach. *Journal of Emerging Issues in Economics, Finance and Banking*, 5, 362-380.
- Sanusi, L.S. (2010). Growth prospects for the Nigerian economy. Convocation lecture delivered at the Igbinedion University, Eighth Convocation Ceremony, Okada, Edo State, Nigeria.
- Sehgal, S., & Sharma, S. (2012). Total factor productivity of manufacturing sector in india: A regional analysis for the state of Haryana. *Economic Journal of Development Issues*, 13, 97-118.
- Swift, R. (2007). Exchange rate implications for Australian manufacturing investment and exports. *Economic Analysis and Policy*, 37(2), 145-162.
- Tomlin, B. (2010). Exchange rate fluctuations, plant turnover and productivity (No. 2010, 18). Bank of Canada Working Paper.
- Tsui, H. C. (2008). Exchange rate and pricing behavior: Comparison of Taiwan with Japan for manufacturing industries. *Japan and the World Economy*, 20(2), 290- 301.
- Uchendu, O.A. (2013). Interest Rate Policy, Savings and Investment in Nigeria. *Central Bank of Nigeria Economic and Financial Review*, 31(3), 34-52.
- Ukoha, O.O. (2000). Determinants of manufacturing capacity utilization in Nigeria, 1970-1998. *The Nigeria Journal of Economics and Social Studies*, 42(2), 121-129.
- Wang, J., & Wen, C. (2013). Public Expenditure and Economic Growth: A Disaggregated Analysis for Developing Countries. *The Manchester School*, 75(5), 533-556.
- Wulwick, N. J. (1992). Kaldor's Growth Theory. *Journal of the History of Economic Thought*, 14, 36-54.

Appendix

Table 2. Traditional Unit Root Test Result (Trend and Intercept)

Variables	ADF-statistics	Critical Values	Order of integration
MSO	-7.790918	-4.356068*	I(0)
INR	-5.819927	-4.374307*	I(0)
EXR	-3.645969	-3.574244**	I(1)
TGE	-4.29157	-3.595026**	I(0)
DTO	-7.634654	-4.309824*	I(1)

Note: *and **indicate significant at 1% and 5% levels respectively

Source: Authors computations (2020), using Eviews-10

Augmented Dickey-Fuller (ADF) test was used to ascertain whether the five variables of the study exhibit unit root property. This is to find out if the relationship between economic variables is spurious or nonsensical. Econometric studies have shown that most financial and macro-economic time series variables are non-stationary and using non-stationary variables lead to spurious regression (Engel & Granger, 1987). Thus, the variables were investigated for their stochastic properties using ADF (1979) unit root test technique. The result of unit root test is presented in Table 2.

Table 3. Bounds Test Co-integration Result

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	15.28175	10%	2.2	3.09
K	4	5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Source: Authors computations (2020), using Eviews-10