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EVALUATING THE SUPPLY-LEADING HYPOTHESIS IN SUB-SAHARAN AFRICA: LESSON FROM NIGERIAN MANUFACTURING SECTOR

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Abstract

This paper empirically analyzed the supply-leading hypothesis in sub-Saharan Africa focusing on Nigerian manufacturing sector. The specific objectives centered on the impacts of the three measures of financial deepening, ratio of broad money supply to GDP, private sector credit as a ratio of GDP and ratio of market capitalization to GDP on manufacturing value added. Fully Modified Least Squares (FMOLS) and Granger causality test formed basis for the analysis. The unit root test results show that the variables become stationary at first difference. It was found from the cointegration test result that the variables have long run relationship. The cointegrating regression result shows that credit to the private sector as a ratio of GDP exerts significant positive impact on manufacturing value added. A percentage increase in private sector lending increases manufacturing value added by 0.858. On the contrary, the result showed that broad money supply and market capitalization impacted negatively on manufacturing value added. The Granger causality test shows that unidirectional causality flows from private sector credit to manufacturing value added. . It was equally observed that joint causality runs from the three measures of financial deepening to manufacturing value added. These findings demonstrate that the financial-real sector independency in Nigerian economy tends to follow the conventional path of supply-leading hypothesis. Accordingly, it was recommended that monetary authorities should initiate policies capable of improving the financial deepening position in Nigeria by allowing for rapid and sustained growth of private sector credits and ensuring efficient allocation of the total volume of money in the economy.

Keywords: Supply-leading hypothesis, Financial deepening, Manufacturing Value added, FMOLS, Granger causality test

INTRODUCTION

The supply-leading hypothesis underscores the efficacy of financial deepening through the availability of investment-accommodating interest rate, growth in monetary aggregates and improved credit rationing process in driving the process of growth in real sector of the economy. These provide the mechanism through which monetary policy affects macroeconomic outcomes and trigger overall growth of the economy. Although, changes in monetary policy have remained very flexible, it has equally become a very veritable tool for macroeconomic adjustments in Nigeria (Okonkwo et al., 2015). It is noteworthy that financial deepening has remained a top priority in government's efforts to engender real sector development and salvage the economy from its seemingly comatose condition. The pursuit of this all-important macroeconomic objective has remained an integral part of monetary policy coordination as the Central Bank of Nigeria (CBN) has often evolved measures to boost the capacity of deposit money banks to create money while controlling the value and cost of money.

Besides the traditional objectives of maintaining price stability, external balance, employment generation and output growth, monetary policy operations provide credit rationing guidelines which enhances loans and advances to the real sector of the economy. This offers opportunity for the deepening of the financial system in accordance with the propositions of the supply leading hypothesis. As the apex monetary authority in Nigeria saddled with the mandate of monetary policy coordination, the CBN often allocate bank credit and fix lending rate at low levels to stimulate growth and maintain price stability (Usman and Adejare, 2014). This is particularly important following the growing interdependency of the financial and real sectors of the economy.

Furthermore, the growing diversification of firms' and households' portfolios is especially relevant, as they are more and more affected by the developments in financial markets. This is an indication that monetary policy is essential in deepening of the financial system. It is important to note that the role the role of monetary authorities in Nigeria has been changing overtime in accordance with the changing dimension of the financial landscape. For instance, deposit money banks have in the process of implementing monetary policy exploited credit transfer techniques to add to their traditional tasks a new role of originating, pooling and distributing credit risks outside the banking system. This is directed towards making credits readily available and more accessible to the core users, especially the real sector.

Although monetary policy has been adjudged as an integral part of macroeconomic policy framework in Nigeria, its conduct has been characterized by high degree of complexity. This is often associated with high risk of financial instability in the economy wide aggregate. It is worrisome that monetary policy frameworks, especially interest rate variations, broad money

supply and credit rationing methods have been characterized by inconsistencies in the implementation process. This has remained a major bottleneck in the process of financial deepening as the available financial services seem inadequate and poorly accessible to key players in the manufacturing sector. In spite of various efforts by the Monetary Policy Committee to restore sanity in the Nigerian financial system, monetary policy outcomes have continued to vary over time with corresponding variations in the core indicators of financial deepening. For instance, the CBN (2017) Statistical Bulletin shows that the ratio of broad money supply (M_2) to GDP decreased from 24.3 percent in 2009 to 21.2 percent in 2017. Similarly, ratio of private sector credit to GDP decreased from 23.1 percent in 2009 to 19.6 percent in 2017. This has added to the ongoing controversies on the effectiveness of monetary policy considering its perceived implications on the access to financial resources by manufacturing firms. It is against this backdrop that this paper in line with the supply-leading hypothesis, explored the relative effectiveness of financial deepening on manufacturing output during 1990-2017. Accordingly, the extent of financial deepening was measured by the broad money supply as a ratio of GDP, credit to the private sector as ratio to nominal GDP and market capitalization as a ratio of GDP. On the other hand, manufacturing output was measured by the manufacturing value added as percentage of GDP. Following the forgoing introduction, the layout of the rest of this paper include review of related literature, research method, findings and discussion and concluding remarks.

REVIEW OF RELATED LITERATURE

Theoretical Literature

Supply-Leading Hypothesis

The supply-leading hypothesis is based on the assumption that financial deepening is growth-enhancing. Therefore, the existence and development of the financial markets are perceived as source of increased level of saving and investments and in turn promotes the efficiency of capital accumulation. Ohwofasa and Aiyedogbon (2013) argued that the supply-leading hypothesis centers on the assumption that well-functioning financial institutions have the capacity of driving total economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from non-growth sectors to the more modem growth inducing sectors, and also promote a competent entrepreneur response in these modern sectors of the economy.

Additionally, Adeyeye et al. (2015) opined that the key proposition of the supply-leading hypothesis is that financial deepening is a predictor of economic growth and based on this, financial sector development is perceived as a precursor of optimal allocation of financial

resources. This hypothesis is primarily built on the assumption that causal relationship between financial development and economic growth actually runs from the former to the latter. Mckinnon (1973) and Shaw (1973) are of the view that an efficient financial sector tends to reduce transaction and monitoring costs and asymmetric information with benefits of improved financial intermediation. Overall, the supply-leading hypothesis has it that growth in the real sector is largely determined by the extent of financial development. Hence, financing deepening is expected to great opportunities for rapid and sustained growth of the overall economy.

Demand-Following Hypothesis

The demand-following hypothesis credited to Robinson (1952) is based on the proposition that financial deepening is a function of growth that occurs in the economy overtime. In other words, causality is believed to flow economic growth to financial development. Growing demand for financial services deepens the financial system as the economy progresses (Calderón and Liu, 2002). The proponents of the demand-following hypothesis argue that expansion of the real sector fosters the development of the financial sector due increase in macroeconomic outcomes. It is argued in monetary economics literature that the demand-following perception of the development of the financial markets is merely a lagged response to economic growth. Put differently, growth in the real sector of the economy is perceived to trigger demand for financial products. That is, as the economy expands, it provokes increased demand for more financial services and thus leads to greater financial development.

In view of proposition of the demand-following hypothesis, the development of the financial system at the expense of the sector might amount to waste of resources. However, optimal resource allocation involves focusing on the real sector in the in the early stages of growth which in turn creates opportunities for the development of the financial sector. As the economy advances, it triggers demand for more financial services and thus leads to greater financial development. Demetriades and Hussein (1996) supported the claim that the expansion of the real sector grows fosters financial deepening with high potentials of economic turnaround.

Stylized Facts on Financial Deepening Indicators and Manufacturing Value added in Nigeria

The extent of financial deepening in Nigeria has continued to vary between 1990 and 2017. Specifically, the trends in financial deepening measured by ratio of broad money supply to GDP and ratio of private sector credits to GDP are summarized in Figure 1.

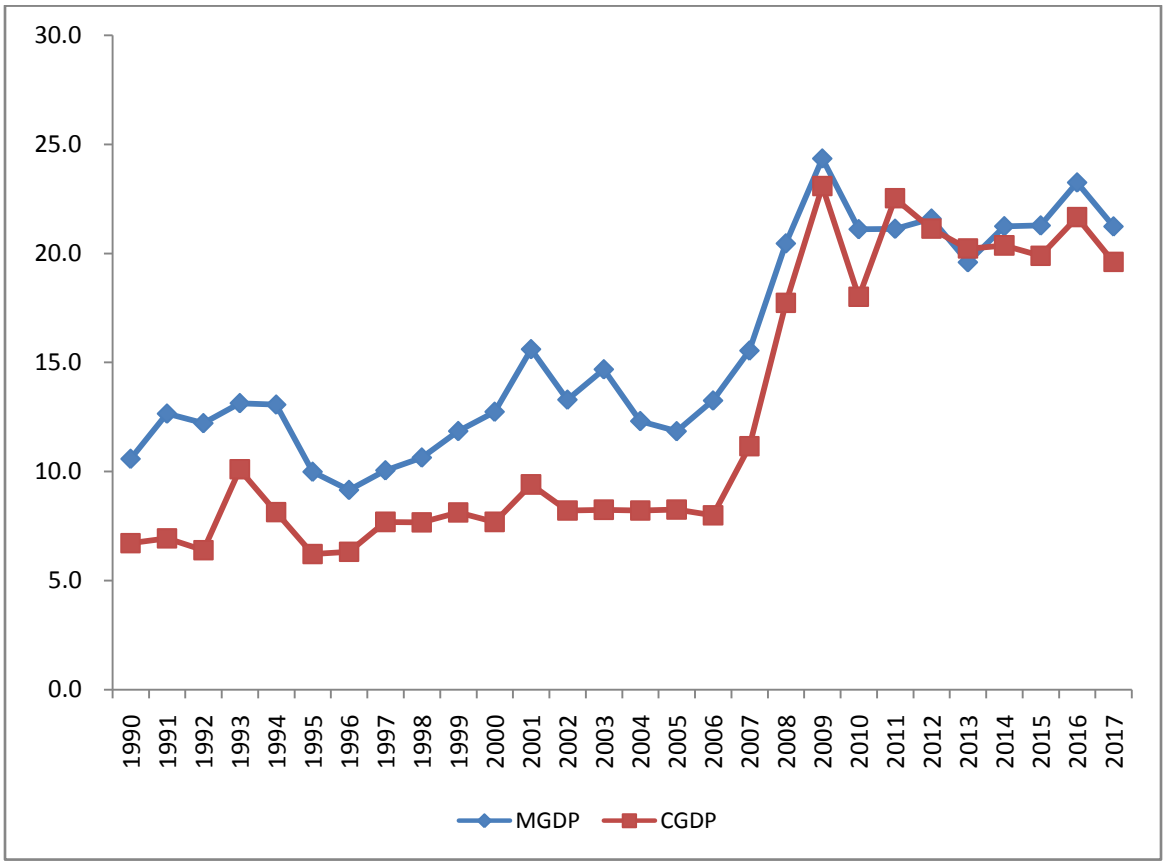

Figure 1: Trends of financial deepening indicators in Nigeria, 1990-2017.

Source: Author's illustration based on data extracted from CBN Statistical Bulletin (2017)

As showed in Figure, both ratio of broad money supply to GDP (MGDP) and ratio of private sector credits to GDP (CGDP) fluctuated over the period covered. This could be linked to the dynamics of monetary policy implementation in Nigeria. Except in 2011 and 2013, MGDP exceeds CGDP during the study period. This is an indication that MGDP is an all-important tool of monetary policy in Nigeria. It was further gathered from the plots that both MGDP and CGDP reached maximum values of 24.3 percent and 23.1 percent respectively in 2009. This could be partly attributed to the efforts of the monetary authorities to reposition the real sector of the Nigerian economy in the wake of the global financial crisis of 2008. Additionally, the trend of manufacturing value added (MAVUD) is reported in Figure 2.

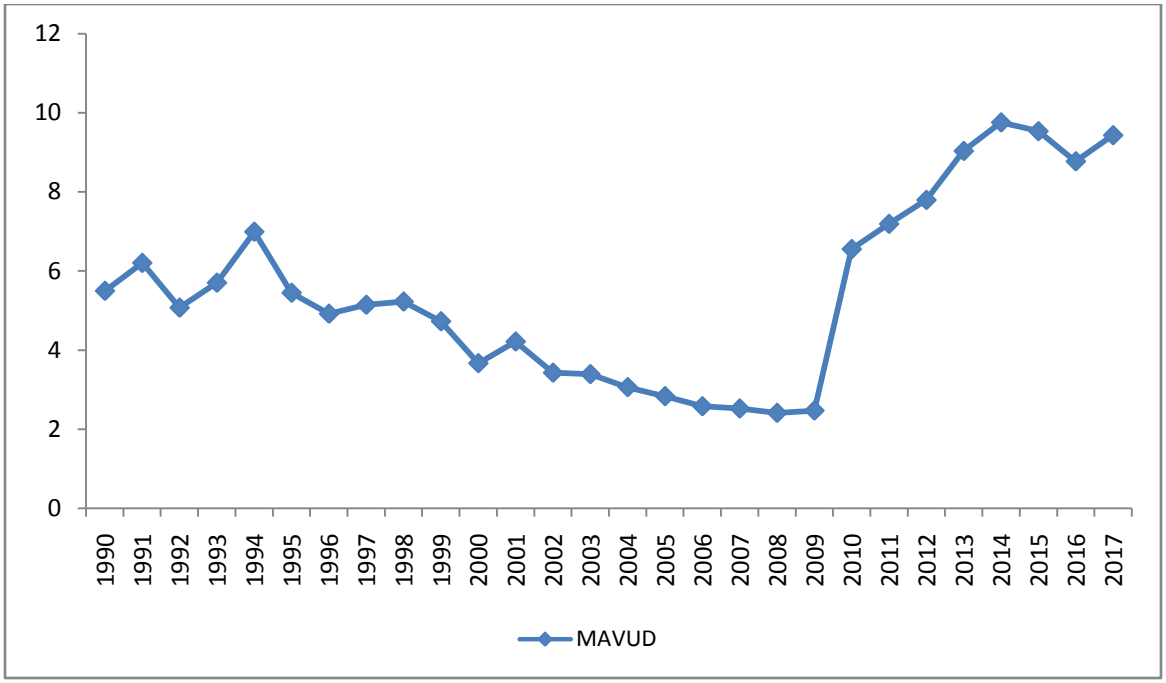

Figure 2: Trends of manufacturing value added in Nigeria, 1990-2017.
Source: Authors illustration based on data extracted from World Bank (2017) World Development Indicators

The manufacturing value addition to GDP (MAVUD) reported in Figure 2 decreased from 5.49 percent in 1990 to a record low of 2.41 percent in 2008. This dismal performance of the manufacturing sector in term of its share of the GDP can also be linked to the financial crisis of 2008 which threatened the pace of economic progress in Nigeria. Starting from 2009, the contributions of manufacturing sector to GDP increase from 2.46 percent in 2009 to 9.75 in 2014. It however, varied again between 2015 and 2017.

Empirical Literature

A myriad of studies have been undertaken across the globe to determine the nexus between financial deepening and real sector development with the outcomes of these researches varying across sectors, countries and economic blocs. Adeyeye et al. (2015) examined the effectiveness of the supply-leading hypothesis on the Nigerian economy using GDP as the growth indicator. The study spanned from 1981 to 2013 with the Granger Pairwise causality test forming basis as the tool for analyzing the time series data. The result showed weak evidence in support of supply-leading hypothesis; rather, the demand-following hypothesis tends to be dominant in the economy. However, the study suggests that there is bi-directional causality

between financial development variables and indices of economic growth which thus confirms the existence of their interdependence in Nigeria context.

Ghildiyal, Pokhriyal and Mohan (2015) investigated the causal impact of financial deepening on economic growth focusing on Indian economy. Autoregressive Distributed Lag (ARDL) Bound testing approach was employed for the analysis. Again, Granger Error Correction Model (ECM) technique was utilized to estimate the causal impact in the short run. The findings show that an equilibrium relationship exists between financial deepening and economic development. Hence, it is concluded that government should strive to improve the financial deepening position in order to bolster economic growth.

Bakang (2016) analyzed the effects of financial deepening on economic growth in the Kenyan banking sector using quarterly time series data from 2000 to 2013. In the study, financial deepening was measured by four alternative indicators such as liquid liabilities as ratio to nominal GDP; credit to the private sector as ratio to nominal GDP; commercial bank assets as ratio to commercial bank assets plus central bank assets and Commercial Bank Deposits as ratio to nominal GDP. On the other hand, economic growth was measured by real GDP. The study found that banking sector in Kenya is an important source of economic growth. Specifically, the empirical results reveal that liquid liabilities, credit to the private sector, commercial central bank assets and commercial bank deposits have positive and statistically significant effects on GDP. Therefore, the study recommended for the improvement of existing policies that will encourage the public to save more money with commercial banks so as stimulate the deepening of the financial system.

Chang and Wu (2012) empirically assessed the threshold cointegration effect of financial deepening on economic growth in Taiwan during 1981-2010. The results show that a threshold cointegration exists between financial deepening and economic growth. In short-run, economic growth has a significant and positive effect on financial deepening in the high-growth regime. This supports the demand-following hypothesis. Additionally, the result further revealed that the impact of financial deepening on economic development is positive and significant in the high- and low- growth regimes. On the basis of this finding, the study concludes that financial deepening can spur economic growth in Taiwan.

Karimo and Ogbonna (2017) examined the direction of causality between financial deepening and economic growth in Nigeria for the period 1970–2013. The econometrics tool for data analysis is the Toda–Yamamoto augmented Granger causality test and results showed that the growth-financial deepening nexus in Nigeria follows the supply-leading hypothesis. This is an indication that financial deepening drives the process of growth in the Nigerian economy. Among other things, the study recommended that policy efforts should be geared towards

removing obstacles that undermine the growth of credit to the private sector and policy efforts must be directed towards restoring the confidence of the investing public in the stock market.

Odhiambo (2007) assessed the direction of causality between financial development and economic growth in three African countries comprising Kenya, South Africa and Tanzania. Using three proxies of financial development, the study found that the direction of causality between financial development and economic growth largely depends on the choice of measurement for financial development. In addition, the strength and clarity of the causality evidence is found to vary from country to country and over time. On balance, a demand-following impulse is found to be stronger in Kenya and South Africa, whilst Tanzania shows evidence of supply-leading impulse. Following the outcome of the empirical analysis, the study recommended that for Kenya and South Africa the real sector of the economy need to be developed further in order to sustain the development of the financial sector. However, it was suggested for the deepening of the Tanzanian financial sector in order to make the economy more monetized and in turn drive rapid and sustained development of the real sector.

RESEARCH METHOD

Model Specification

The model for this study is anchored on the supply-leading hypothesis which assumes that financial deepening drives the process of growth in the real sector. The model incorporates broad money supply as a ratio of GDP (MGDP), credit to the private sector as ratio to nominal GDP (CGDP) and market capitalization as a ratio of GDP (MKCG) as the underlying measures of financial deepening whereas manufacturing sector performance was captured by the manufacturing value added as percentage of GDP (MAVUD). The econometric specification of the model is of the form:

$MAVUD_t = \underline{\mu}_0 + ß_1 MGDP_t + ß_2 InCGDP_t + ß_3 MKCG + U_t$ *(3.1)*

Where:

MAVUD = manufacturing value added, MGDP = broad money supply as a ratio of GDP, CGDP = credit to the private sector as ratio to nominal GDP, MKCG = market capitalization as a ratio of GDP, $\underline{\mu}_0$ = constant term, $ß_1$- $ß_3$ = slope coefficients and U_t *and* white noise error process.

The dynamic Granger causality model for estimating the direction of causality between the underlying indicators of financial deepening and manufacturing performance are of the form:

$$MAVU_t = b_1 + \sum_{i=1}^{P} \pi_{11}^{1} MAVU_{t-i} + \sum_{i=1}^{P} \pi_{12}^{2} MGDP_{t-i} + \sum_{i=1}^{P} \pi_{13}^{3} CGDP_{t-i} + \sum_{i=1}^{P} \pi_{14}^{4} MKCG_{t-i} + e_{1t}$$

$$MGDP_t = b_2 + \sum_{i=1}^{P} \pi_{21}^{1} MGDP_{t-i} + \sum_{i=1}^{P} \pi_{22}^{2} MAVU_{t-i} + \sum_{i=1}^{P} \pi_{23}^{3} CGDP_{t-i} + \sum_{i=1}^{P} \pi_{24}^{4} MKCG_{t-i} + e_{1t}$$

$$CGDP_t = b_3 + \sum_{i=1}^{P} \pi_{31}^{1} CGDP_{t-i} + \sum_{i=1}^{P} \pi_{32}^{2} MGDP_{t-i} + \sum_{i=1}^{P} \pi_{33}^{3} MAVU_{t-i} + \sum_{i=1}^{P} \pi_{34}^{4} MKCG_{t-i} + e_{1t}$$

$$MKCG_t = b_4 + \sum_{i=1}^{P} \pi_{41}^{1} MKCG_{t-i} + \sum_{i=1}^{P} \pi_{42}^{2} MGDP_{t-i} + \sum_{i=1}^{P} \pi_{43}^{3} CGDP_{t-i} + \sum_{i=1}^{P} \pi_{44}^{4} MAVU_{t-i} + e_{1t}$$

Where:

b_1- b_4 = (n x 1) vector of intercepts, $\pi_{11} - \pi_{44} =$ an (nxn) coefficients matrices, e_1- e_4 represent an (n x 1) vector of white noise error process and p denotes optimal lag order.

Nature and Source of Data

Year-end time series data on broad money supply as a ratio of GDP, credit to the private sector as ratio of nominal GDP, market capitalization as a ratio of GDP and manufacturing value added were used in estimating the model. These data were extracted from the CBN Statistical Bulletin (2017) and World Bank (2017).

Method of Data Analysis

This Phillips and Hansen (1990) Fully Modified Least Squares (FMOLS) method was adopted for estimating the cointegrating regression parameters. It is preferred to the static OLS as it corrects for the simultaneity process in the explanatory variables and increases the likelihood of estimating robust results.

In addition to the FMOLS, the Granger causality test was applied in estimating the direction causality amongst the series. Hence, the null hypothesis of no causality was tested against the alternative hypothesis of causality using chi-square (x^2) asymptotically distributed statistics at 5 percent level of significance. The Augmented Dickey-Fuller (ADF, 1981) unit root and Hansen (1992) cointegration tests were applied as pre-estimation in addition to the some post-estimation tests.

FINDINGS AND DISCUSSION

Descriptive Statistics

The descriptive statistics which show the mean distribution, maximum and minimum values of the series, the respective standard deviations and Jarque-Bera statistics are summarized in Table 1.

Table 1: Descriptive statistics of the variables in the model (E-views output)

	MAVUD	MGDP	CGDP	MKCG
Mean	5.483386	15.63571	12.41429	18.45214
Median	5.183675	13.30000	8.250000	16.05500
Maximum	9.754130	24.30000	23.10000	51.00000
Minimum	2.410130	9.200000	6.200000	4.020000
Std. Dev.	2.350942	4.749286	6.246523	10.46266
Jarque-Bera	1.879232	2.958258	4.077515	10.99019
Probability	0.390778	0.227836	0.130190	0.004107
Observations	28	28	28	28

As showed in Table 1, manufacturing value added averaged 5.48 percent during the period studied. This is indicative that the manufacturing sector seems not to substantially contribute to the growth of the Nigerian economy. It was equally gathered that the average values of broad money supply as ratio of GDP, private sector credits as ratio of GDP, market capitalization as ratio of GDP are 15.64 percent, 12.41 percent and 18.45 percent respectively. The standard deviation for each of the series revealed that all the variables clustered around their respective mean values. This is very welcoming as it shows that each of the variables has minimum variance. The result further showed that all the variables except market capitalization as a share of GDP are normally distributed at 5 percent level of significance given that the associated probability values of their respective Jarque-Bera statistics are greater than 0.05. Thus, the null hypothesis of normal distribution of these variables maintained.

Unit root test

The unit root test was carried out using Augmented Dickey-Fuller (ADF) test method at 5 percent level of significance. The results for each of the series are summarized in Table 2.

Table 2: ADF Unit root test results

Variable	Levels test results	First difference test results	Order of integration
	t-statistic	t-statistic	
MAVUD	-1.031	-4.979	I(1)
	(0.922)	(0.003)	
MGDP	-2.208	-4.696	I(1)
	(0.466)	(0.005)	
CGDP	-2.138	-5.394	I(1)

Table 2...

	(0.503)	(0.001)	
MKCG	-3.311	-6.658	I(1)
	(0.086)	(0.000)	

Note: In parenthesis are MacKinnon (1996) one-sided p-values

The unit root test results reported in Table 2 showed that all the variables are non-stationary at levels. This is because the corresponding probability values of the t-statistics for each of the series at the levels test results are exceed 0.05. For this reason, the null hypothesis of unit root cannot be rejected for each of the series. The non-stationarity of the series aligns with the postulation of Nelson and Plosser (1982) that macroeconomic time series tend to contain unit root which increases the possibility of estimating spurious regression result. Following the evidence of unit root in the series, the data were transformed via first differencing and the results reported in column 3 of Table 2 show that all the series become stationary at first difference. In other words, they are first difference stationary and as such denoted as I(1).

Cointegration Test Results

Following the difference stationarity process in the series, the Hansen (1992) cointegration approach was applied to determine whether the variables have long run relationship at 5 percent level of significance. The result is reported in Table 3.

Table 3: Hansen cointegration test result

Series: MAVUD MGDP CGDP MKCG				
Null hypothesis: Series are cointegrated				
	Stochastic	Deterministic	Excluded	
Lc statistic	Trends (m)	Trends (k)	Trends (p2)	Prob.*
0.341814	3	0	0	> 0.2

The cointegration test result reported in Table 3 showed that the test statistic (0.342) in the first column is associated with high probability value (> 0.2) which is above 0.05. This implies that the variables in the model have long run relationship. Hence, the null hypothesis that the series are cointegrated cannot be rejected at 5 percent level. The evidence of cointegration among the series is a pointer that they can move together in the long run. Therefore, the long run parameters of the regressors are estimated using FMOLS.

Cointegration Regression Model

The long run coefficients of the explanatory variables were computed to gain deeper insights into the link between financial deepening and manufacturing sector performance. The result is reported in Table 4a.

Table 4a: Cointegrating regression model

Dependent Variable: MAVUD				
Method: Fully Modified Least Squares (FMOLS)				
Sample (adjusted): 1991 2017				
Included observations: 27 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MGDP	-0.909***	0.313	-2.901	0.008
CGDP	0.858***	0.232	3.695	0.001
MKCG	-0.110***	0.039	-2.808	0.010
C	11.306***	2.661	4.249	0.000
R-squared	0.428	Mean dependent var		5.482949
Adjusted R-squared	0.353	S.D. dependent var		2.395725
S.E. of regression	1.927	Sum squared resid		85.40129
Long-run variance	3.632			
F-statistic	11.088	Prob(F-stat.)		0.000

Note: *** denotes significant at 1 percent level

The estimated cointegrating regression model in Table 4a shows that credit to the private sector as a ratio of GDP exerts significant positive impact on manufacturing value added. A percentage increase in private sector lending increases manufacturing value added by 0.858. This finding aligns with both the theoretical and statistical expectations and as such identifies private sector lending as important channel through which financial deepening spurs the productivity of manufacturing firms. On the other hand, the result uncovered that broad money supply and market capitalization impacted negatively on manufacturing value added. On the average, 1 percent increase in the broad money supply and market capitalization contracts manufacturing value added by 0.909 percent and 0.110 percent respectively. These findings deviated from the underlying hypothesis of financial deepening, but suggest that the manufacturing sector seem not to specifically benefit from the non-targeted increase in the total volume of money and changes in the size of the Nigerian stock market. However, the F-ratio (11.088) with probability value (0.000) indicates that the underlying measures of financial deepening (broad money supply, private sector lending and market capitalization) in the model are collectively significant in explaining the changes in the manufacturing value added. This finding attests to the joint

forecasting ability of financial deepening indicators on manufacturing sector output. The model was also subjected to serial correlation as showed in Table 4b.

Table 4b: Correlogram serial correlation test result

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
. | . |	. | . |	1	0.021	0.021	0.0129	0.909
. |* . |	. |* . |	2	0.107	0.107	0.3715	0.830
. |* . |	. |* . |	3	0.079	0.076	0.5743	0.902
. | . |	. | . |	4	0.025	0.011	0.5952	0.964
. *| . |	. *| . |	5	-0.115	-0.134	1.0630	0.957
. | . |	. | . |	6	-0.012	-0.019	1.0680	0.983
. | . |	. | . |	7	0.003	0.028	1.0684	0.994
. *| . |	. *| . |	8	-0.169	-0.151	2.2496	0.972
. *| . |	. *| . |	9	-0.094	-0.091	2.6304	0.977
. | . |	. | . |	10	-0.002	0.020	2.6305	0.989
. *| . |	. *| . |	11	-0.146	-0.111	3.6727	0.979
. *| . |	. *| . |	12	-0.139	-0.127	4.6781	0.968

The correlogram-based serial correlation test results reported in Table 4b show that the Q-statistics for the 12 lags are associated with high probability values which are above 0.05. Thus, the null hypothesis of no serial correlation in the residuals is maintained at 5 percent level of significance. This is indicative that the model can be relied upon in forecasting changes in manufacturing value added.

Granger Causality Test

The Granger causality test was performed at 5 percent level of significance to determine the direction of causality among the variables. The results are reported in Table 5.

Table 5: VAR Granger causality/block exogeneity wald tests results

Null Hypothesis (H_0): No causality			
Direction of causality	Chi-square (X^2) calculated	P-value	Decision
MGDP→MAVUD	2.871951	0.2379	Cannot Reject H_0
MAVUD→MGDP	0.572075	0.7512	Cannot Reject H_0
CGDP→MAVUD	7.032411	0.0297	Reject H_0
MAVUD→CGDP	0.565611	0.7537	Cannot Reject H_0

Table 5...

MKCG→MAVUD	3.161290	0.2058	Cannot Reject H_0
MAVUD→MKCG	4.024466	0.1337	Cannot Reject H_0
MGDP,CGDP,MKCG→MAVUD	23.31030	0.0007	Reject H_0

Table 5 shows that unidirectional causality flows of private sector credit to manufacturing value added. This finding authenticates the long term impact of private sector credit on manufacturing output evidenced in the cointgrating regression result. Hence, the null hypothesis of no causality is rejected. It therefore follows that ratio of private sector credits to GDP has predicting power on manufacturing value added. The result also shows that no causality exists between broad money supply as ratio of GDP and manufacturing value added as well as between market capitalization as ratio of GDP and manufacturing value added. In each of these two instances, the null hypothesis of no unidirectional or bidirectional causality cannot be rejected. Lastly, the result shows that joint causality flows from the underlying indicators of financial deepening (broad money supply, private sector lending and market capitalization) to manufacturing value added. This is a pointer that the three measures of financial deepening in the model collectively have high predictive power for manufacturing value added during the period studied.

CONCLUDING REMARKS

The thrust of this paper is the empirical evaluation of the supply-leading hypothesis with a focus on the effectiveness of financial deepening on value addition in the Nigerian manufacturing sector. The empirical results from the cointegrating regression analysis show that financial deepening positively influenced manufacturing value added through deposit money bank lending to the real sector. The other two measures of financial deepening, broad money supply and market capitalization impacted negatively on value addition in the manufacturing sector. The Granger causality tests results show that private sector lending granger causes manufacturing value added. It was equally observed that joint causality flows from the three measures of financial deepening to manufacturing value added. These findings are in accord with the supply-leading hypothesis and support the findings of Karimo and Ogbonna (2017), Bakang (2016) and Adeyeye et al. (2015). It is therefore concluded that on specific terms, the effectiveness of financing deepening manifests through deposit money bank credits to the real sector. Overall, the joint predictive power of the three indicators of financial deepening on manufacturing value added testifies that the financial-real sector independency in Nigerian economy tends to follow the conventional path of supply-leading hypothesis. On the basis of the findings, it is recommended that monetary authorities should initiate policies capable of improving the financial deepening position in Nigeria by allowing for rapid and sustained growth

of private sector credits and efficient allocation of the total volume of money in the economy. Further studies should focus on more sector-specific analysis of supply-leading hypothesis by exploring the finance-growth nexus in agricultural and service sectors in order to identify areas in which the effectiveness of financial deepening is optimized and areas in which it is ineffective.

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