ANALYTICAL APPROACH TO DYNAMISM OF FINANCIAL DEEPENING AND

PERFORMANCE OF NON-OIL EXPORT IN NIGERIA

[1] MULKAT AJIBOLA YUSUFF AND [2]AUWAL MUHAMMAD ADAMU

[1&2] Department of General Studies

The Federal Polytechnic, Ilaro, P. M. B 50, Ilaro Ogun state, Nigeria

ABSTRACT

This study explores the financial deepening- non-oil export performance nexus in Nigeria. Several methods have been employed to examine this link. The results of co integration tests show that the estimated variables do not exhibit convergence property. The impulse response investigation reveals that all the measures of financial deepening excluding credit to private sector have direct and strong effect on performance in non-oil sector. The variance decomposition examination confirm that even though "own shock" constitute largest source of variation in non-oil export performance forecast error, the contribution of all the measures of financial deepening to variation in non-oil exports performance forecast error are also significant. The study therefore concludes that all the measures of financial deepening analyzed are sturdy influencers of production in non-oil sector of the economy.

Keywords: Convergence, Financial deepening, Forecast error, Non-oil export, Performance

1.0 INTRODUCTION

It is a fact that the role played by export in the growth of nations be it developed or developing economies is significant. An export sector that is well developed provides the needed foreign exchange to finance imports required for development (Ilegbinosa, Uzomba & Somiari, 2012), create opportunities for employment in the economy and reduce pressure on the balance of payment (Abogan, Akinola & Baruwa, 2014). A closer look at the export profile in Nigeria shows that crude-oil exportation dominated the nation's total export. The export of crude oil and products related to oil account for more than 90% of the country's total export and has remained the principal source of foreign exchange earnings. The economy of Nigeria which is largely driven by oil is faced by countless economic challenges. This is due to declining in oil export earnings caused by frequent fluctuation in oil price. The need to broaden Nigeria's export base through diversification to non-oil export becomes imperative.

Over the years, some policies targeted at improving the country's earning from non-oil export have been implemented. These are policies of import substitution, trade liberalization and export

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promotion. To boost economic activities, government consistently embarked on financial reforms to enhance financial deepening of the financial system to enable domestic firms especially in sectors other than oil have access to the required fund to finance production. Financial deepening simply refers to increase supply of financial services with an array of choices of services tailored to all levels in the economy. Available statistics indicate that sequel to financial reform, there was a significant improvement of financial deepening. M2/GDP increases from an average of 14.1 percent at the end of 2008 to an average of 19.8 percent by the end of 2018. Private sector credit as ratio of GDP also rose within the period from 9.5 percent to 19.3 percent (CBN Statistical Bulletin, 2018). The contribution of non-oil export to total export also increases moderately. According to 2018 foreign trade statistics report of Nigerian Bureau of Statistics (NBS), the proportion of export that is not related to oil increase marginally from 4.6% in 2017 to 6.2% in 2018.

Studies that have assessed the relationship concerning financial deepening and non-oil export merely concentrate on different component of non-oil export (Udah & Obafemi, 2011; Aiyetan & Aremo, 2015; Adeyefa & Obamuyi, 2018). The pragmatic exploration of the linkage between financial deepening and aggregate performance of non-oil export sector remain fuzzy. This study for that reason make an effort to present empirical proof on which of the measures of financial deepening have an impressive impact on aggregate performance of non-oil export sector so that policy could be appropriately directed.

2.0 REVIEW OF THEORY

This study is anchored on the financial liberation theses developed by Mckannon (1973) and Shaw (1973). The theses indicated that a free financial sector stimulates saving intensity, promote investments and induce economic growth. They argued that low rate of investment and sluggish growth of developing economies are consequences of financial repression. In their hypotheses, excessive government interventions in the areas of pegging interest rate, regulating lending rate, imposing high reserve ratios and trade restrictions in these countries repressed their financial sector. This culminated into low savings, low investments and sluggish growth. They advocated a liberalized financial sector as a necessary condition to promote investment that will accelerate the rate of growth.

Orok-Duke (2009) cited in Anthony and Mustafa (2011) explained that liberalizing financial sector involves the removal of credit controls, allowing market determined interest rate, development of capital market and deregulation of international capital flows. The work of Mckannon and Shaw became a reference point for wide adoption of financial liberation by developing countries.

Nigeria embarked on financial sector reforms in the financial sector by implementing Structural Adjustment Programme (SAP) in 1986. The core objective include having interest rates that is determined by market forces and a highly competitive banking sector (Anthony & Musafa, 2011). This in effect was to deepen the financial system and thus turn the banking sector into a

diversified and dependable sector for efficient financial services delivery especially towards the development of sectors that are not oil bound.

3.0 REVIEW OF EMPIRICAL STUDIES

A host of studies has been conducted on non-oil export. While a huge amount of these researches has focused on connection between non-oil export and growth, only a few have examined the link between financial deepening and different components of non-oil export. The results of these studies differ from one another owing to different anticipated objectives, variables estimated and time of study.

Concerning the nexus of non-oil export and economic growth, several studies outside Nigeria had reported a positive and significant connection between non-oil export and growth of the economy (Hosseini & Tang, 2014; Mohsen, 2015; Aljebrin, 2017; Kawai, 2017; Khayati, 2019). However, the findings of studies carried out in Nigeria on the degree of association between non-oil export and the growth of the economy remain inconclusive. While the studies of Kromtit, Kanadi, Ndangra and Lado (2017); Kawai (2017); Onurah (2018) with Olayemi and Olayungbo (2018) indicated a significant effect of non-oil export on growth, the finding of the study carried out by Onodugo, Ikpe & Anowor (2013) revealed a minute and weak effect. The study of Abogan, Akinola & Baruwa (2014) on the other hand found a moderate effect. This variation in these findings might be attributed to the use different estimating techniques and time of study. Furthermore, there are also diverse outcomes from studies on causality. Hosseini and Tang (2014) in their study found one-way causality from non-oil export to economic growth. The result of the study carried out by Khayati (2019) indicated absence of causal relationship. Mohsen (2015) in his study found bi-directional relationship. The study of Raheem (2016) however supported the finding of Hosseini and Tang (2014) that only one way causality exist between non-oil export and growth.

In another study, Ogba, Park and Nakah (2018) disaggregated non-oil export into sub-sectors and evaluated how revenue from each of these sub-sectors affect economic growth. The outcome of the study showed that revenue from agriculture, manufacturing, service including custom and excise duties strongly imparted on Nigerian economy. Revenue from solid minerals and company income tax on the other hand imparted inversely on growth. The study further revealed that revenue of solid minerals and excise duties are statistically insignificant. Their result truly reflect the situation in Nigeria, the country's solid mineral potential remain untapped and many producers evade tax easily owing to large scale corruption.

Providing empirical evidence on how various export promotional strategies imparted on output from non-oil sector in sub-Saharan Africa (SSA), Apanisile and Okunlola (2017) found that not all export promotional strategies affect growth positively. There are some that have negative effect. The study therefore concludes that favourable export promotional policies will enhance non-oil output growth in SSA.

In a related study, Edeme and Obiayo evaluated how non-oil export respond to monetary and fiscal policies in Nigeria. The study also attempted to authenticate the degree of the response of non-oil to these policies. The findings showed that the two policies exerted a response from non-oil export in the short run but in the long run the response is indeterminate. The study further indicated that the reaction to fiscal policy surpass that of monetary policy. Though non-oil export respond differently to these policies, the study still recommends a mix of the two policies because a mix of the policy actions work faster in expanding non-oil export.

The effect of the reforms carried out in the financial sector on non-oil export was also investigated, Anthony & Mustafa (2011) found a strong linkage between the reforms of financial system and productivity in non-oil sector in Nigeria. The study thus recommended further improvement in financial liberalization policy embarked on by the monetary authority so as to encourage the development of the productive sector in Nigeria.

As can be observed from the foregoing empirical review, the focus has been extensively on non-oil exports-growth nexus. The few studies which investigated the response of non-oil export to various promotional strategies have not sought to specifically examine the impact adequate financing could have on fast-tracking increase productivity of non-oil export business. This perceived barrier is what this study hopes to fill.

4.0 METHODOLOGY

This study utilized ex-post facto research design. The data are drawn from Central Bank of Nigeria Statistical Bulletin published in 2018. They are annual time series data covering 1989-2017.

5.0 MODEL SPECIFICATION

The study adapts the model used in Aiyetan and Aremo (2015). In their study, broad money supply as ratio of GDP, private sector credit as ratio of GDP and total saving as ratio of GDP were regressed on manufacturing output. The specified model is given as:

$$LMOG_t = \alpha + \beta L(M2/GDP)_t + \psi L(CPS/GDP)_t + \lambda L(TS/GDP)_t + \epsilon_t$$

Where:

$LMOG_t$ = log of manufacturing output at period t

$L(M2/GDP)_t$ = log of broad money supply as ratio of GDP at period t

$L(CPS/GDP)_t$ = log of private sector credit as ratio of GDP at period t

$L(TS/GDP)_t$ = log of total savings as ratio of GDP at period t

However, concerning this study, revenue from non-oil export replaces manufacturing output as dependent variable. Market capitalization/GDP is thereafter added as one of the explanatory variables. This study specified the model as:

$$lnNOR = \beta_o + \beta_1 lnM2G + \beta_2 lnCSG + \beta_3 lnMCG + \beta_4 lnTSRG + U$$

Where:

NOR= Non-oil export revenue

M2G= Broad money supply/GDP

CSG= Credit to private sector/GDP

MCG= Market capitalization/GDP
TSRG= Total saving/GDP
U= Error term
Ln= Natural logarithm
β_o = Intercept of constant term
β_1 to β_4 = Co-efficient of explanatory variables.

6.0 APRIORI EXPECTATION

Both theory and empirical literature had proven the role of financial deepening in mobilizing credits from the surplus sectors of the economy to the deficit sectors in order to enhance a desirable growth rate. This study therefore assumes that increased access to credit facilities made possible by financial deepening will boost investment and production in non-oil export sector and subsequently export supply cum revenue. The coefficients of the explanatory variables are therefore expected to be positive. That is, $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$.

6.1 Procedure of Estimation

To analyze the stated model, the estimation techniques employed were:

6.2 Unit root Test

It is recommended in econometric analysis that, the data should be first checked for unit root. Data that has unit root is not stationary and will produce spurious result. The techniques used to verify the stationary status of data in this study are Augmented Dickey Fuller (ADF) and Phillip Perron (PP) tests

6.3 Cointegration Test

Convergence property is needed before a useful conclusion could be made concerning the relationship amongst the variables of estimation. Co integration test check if there is convergence amongst the series. If there is a convergence, it implies that there exist interaction between the dependent variable and the regressors in the long run. In this study, Johansen co integration test technique was used for the analysis.

6.4 Vector Auto Regression (Var)

VAR pioneered by Sims (1980) is used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. VAR is useful in explaining past and causal relationship among multiple variables over time, as well as predict future occurrence (Bose & Sereika, 2017). The reduced form VAR treats all the variables in the system as endogenous and expresses each variable as a function of the lagged values of their own and lagged values of all other variables in the system.

In empirical applications of VAR, the coefficients of VAR are not reckoned with because they have no economic interpretation. The emphasis is on the impulse response functions and variance decomposition. VAR uses the impulse response functions to trace the effect of one-time shock to one of the innovations on the current and future values of the endogenous variables and variance decomposition provides information about the relative importance of each random innovation in affecting the variables.

7.0 RESULTS AND DISCUSSIONS

Descriptive statistics was conducted to summarize all the variables used in this study. The outcome from the analysis is presented below.

Table 1 Descriptive Statistics

	LNOR	LM2G	LMCG	LCSG	LTSRG
Mean	3.281784	2.633806	2.045055	2.301061	2.118515
Median	3.332205	2.541602	1.924249	2.104134	2.149434
Maximum	7.030150	3.190476	3.687629	3.139833	3.146305
Minimum	-1.609438	2.219203	1.115142	1.774952	1.205971
Std. Dev.	2.782691	0.291900	0.780267	0.458730	0.396967
Skewness	-0.244753	0.609290	0.296581	0.833227	-0.009345
Kurtosis	1.868823	1.931301	1.691525	2.022227	3.427540
Jarque-Bera	2.342067	4.050039	3.181920	5.755205	0.282340
Probability	0.310046	0.131991	0.203730	0.056270	0.868342
Sum	121.4260	97.45084	75.66704	85.13927	78.38504
Sum Sq. Dev.	278.7613	3.067407	21.91740	7.575605	5.672987
Observations	37	37	37	37	37

Source: Authors' Computation, 2019

As can be observed in table 1, the mean exhibited by the variables are positive. The variables also do not deviate widely from their means as indicated by their individual low standard deviation. All the variables except private sector credit/GDP (LCSG) are normally distributed because the probability of their respective Jarque-Bera estimates are not significant at 5% level of significance.

8.0 UNIT ROOT TEST RESULT

As indicated in table 2, all the variables contain unit root and not stationary at level. They however became stationary at first difference. Thus, the order of integration is one.

Table 2 Results of Unit Root Tests

Series	ADF		Phillip Perron		
At level	Test-stat	Critical values @ 5%	Test-stat	Critical values @ 5%	Remark
LNOR	-0.935653	-2.945842	-1.186442	-2.945842	Not stationary
LM2G	-1.020185	-2.945842	-1.063896	-2.945842	Not stationary
LCSG	-0.915964	-2.945842	-0.838793	-2.945842	Not stationary
LMCG	-0.857263	-2.945842	-0.682500	-2.945842	Not stationary
LTSRG	-1.759943	-2.945842	-1.857524	-2.945842	Not stationary
At first difference					
DLNOR	-7.036883**	-2.948404	-7.790303**	-2.948404	I(1)
DLM2G	-5.537610**	-2.948404	-5.528056**	-2.948404	I(1)
DLCSG	-5.840836**	-2.948404	-5.986512**	-2.948404	I(1)
DLMCG	-5.802422**	-2.948404	-6.086818**	-2.948404	I(1)
DLTSRG	-5.512331**	-2.948404	-5.663234**	-2.948404	I(1)

Source: Authors' Computation, 2019

** denote stationary @ 5%

9.0 COINTEGRATION TEST RESULT

The study proceed to co integration to verify whether or not there is convergence among the estimated variables. Given that the order of integration of all the variables is one, Johansen test technique was used for the analysis. The outcome of the test presented in table 3 indicate that there is no co integrating equations. This implies that the variables do not have relationship in the long run. The study thus proceeded to analyze the short-run behaviour by estimating a VAR model.

Table 3 Results of Johansen Co Integration

Unrestricted Co integration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.545551	62.93828	69.81889	0.1564
At most 1	0.351153	35.33484	47.85613	0.4305
At most 2	0.267190	20.19532	29.79707	0.4097
At most 3	0.177506	9.314903	15.49471	0.3371
At most 4	0.068283	2.475414	3.841466	0.1156

Unrestricted Co integration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.545551	27.60344	33.87687	0.2324
At most 1	0.351153	15.13952	27.58434	0.7371

At most 2	0.267190	10.88042	21.13162	0.6592
At most 3	0.177506	6.839489	14.26460	0.5083
At most 4	0.068283	2.475414	3.841466	0.1156

Source: Authors' Computation, 2019

1.0 DIAGNOSTIC TEST RESULTS

The first step in Impulse Response Functions and Variance Decomposition analyses is to estimate VAR model. In this study the lag length was checked before the estimation of VAR. The result as shown in table 4 suggests that the variables of the model should be lagged once. The results of the VAR are however not presented because it lacks economic importance. Nevertheless, the reliability of the model estimated was investigated.

The residual tests results presented in tables 5, 6 & 7 show that the model is free from non-normality, serial correlation and heteroscedacity respectively.

Table 4 Results of VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-42.10328	NA	1.10e-05	2.770781	2.995246	2.847330
1	79.11251	199.6495*	3.90e-08*	-2.888971*	-1.542182*	-2.429678*
2	95.06882	21.58795	7.35e-08	-2.356989	0.112123	-1.514951
3	120.5124	26.94025	9.49e-08	-2.383082	1.208355	-1.158299

 * indicates lag order selected by the criterion
 LR: sequential modified LR test statistic (each test at 5% level)
 FPE: Final prediction error
 AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion

Table 5 Results of VAR Residual Normality Tests

Component	Skewness	Chi-sq	df	Prob.
1	0.455469	1.244711	1	0.2646
2	1.046339	6.568956	1	0.0104
3	0.446448	1.195896	1	0.2741
4	0.836102	4.194397	1	0.0406
5	-0.281286	0.474729	1	0.4908
Joint		13.67869	5	0.0178

Component	Kurtosis	Chi-sq	df	Prob.
1	3.811255	0.987203	1	0.3204
2	4.918623	5.521669	1	0.0188
3	2.673521	0.159882	1	0.6893
4	5.485218	9.264465	1	0.0023
5	2.349573	0.634582	1	0.4257
Joint		16.56780	5	0.0054

Component	Jarque-Bera	Df	Prob.
1	2.231914	2	0.3276
2	12.09063	2	0.0024
3	1.355778	2	0.5077
4	13.45886	2	0.0012
5	1.109312	2	0.5743
Joint	30.24649	10	0.0008

Table 6 Results of VAR Residual Serial Correlation LM Tests

Lags	LM-Stat	Prob
1	20.39162	0.7260
2	23.11846	0.5706
3	14.31764	0.9559
4	33.52025	0.1186
5	14.70105	0.9481
6	29.70152	0.2357
7	22.35184	0.6154
8	32.24212	0.1511

Probs from chi-square with 25 df.

Table 7 Results of VAR Residual Heteroscedacity Tests

Joint test:

Chi-sq	df	Prob.
167.5795	150	0.1548

Individual components:

Dependent	R-squared	F(10,25)	Prob.	Chi-sq(10)	Prob.
res1*res1	0.230651	0.749502	0.6732	8.303452	0.5992
res2*res2	0.293233	1.037234	0.4426	10.55639	0.3931
res3*res3	0.319910	1.175986	0.3515	11.51677	0.3187
res4*res4	0.303717	1.090492	0.4058	10.93380	0.3627
res5*res5	0.349564	1.343576	0.2622	12.58431	0.2479
res2*res1	0.165424	0.495533	0.8768	5.955268	0.8190
res3*res1	0.199101	0.621492	0.7814	7.167632	0.7095
res3*res2	0.375133	1.500852	0.1972	13.50479	0.1968
res4*res1	0.203849	0.640106	0.7660	7.338550	0.6931
res4*res2	0.232732	0.758314	0.6657	8.378356	0.5919
res4*res3	0.247057	0.820304	0.6129	8.894047	0.5422
res5*res1	0.125015	0.357193	0.9539	4.500558	0.9220
res5*res2	0.422087	1.825911	0.1078	15.19513	0.1251
res5*res3	0.351066	1.352471	0.2580	12.63837	0.2446
res5*res4	0.205677	0.647334	0.7600	7.404372	0.6868

11.0 IMPULSE RESPONSE FUNCTION RESULTS

The outcome of the impulse response functions test is presented below (figure 1). As depicted in the figure, non-oil export revenue respond positively to shocks from itself, broad money/GDP (LM2G) and market capitalization/GDP (LMCG) in the years considered. The shock of saving as ratio of GDP (LTSRG) induces negative response in non-oil revenue in the 2nd year and become positive in the subsequent years. This suggests that increasing money supply rate, market capitalization and savings will enhance investments in and consequently performance of non-oil export. Meanwhile, the shock of private sector credit/GDP (LCSG) induces negative reaction in revenue from non-oil export. This response could be ascribed to insufficient provision of financial services to the private sector by banks in Nigeria. As observed by Obamuyi (2009) cited in Ogbonna (2018), Nigerian banks most of the time utilize large proportion of their deposits to trade in foreign exchange and government securities rather than channeling the mobilized funds to the nation's productive sectors. This result affirms the findings of Ogbonna (2018) which connects the negative response of the economy to shock from private sector credit to slow pace of private investments in Nigeria.

Figure 1 Result of Impulse Response Functions of the VAR Model

Response to Cholesky One S.D. Innovations ± 2 S.E.
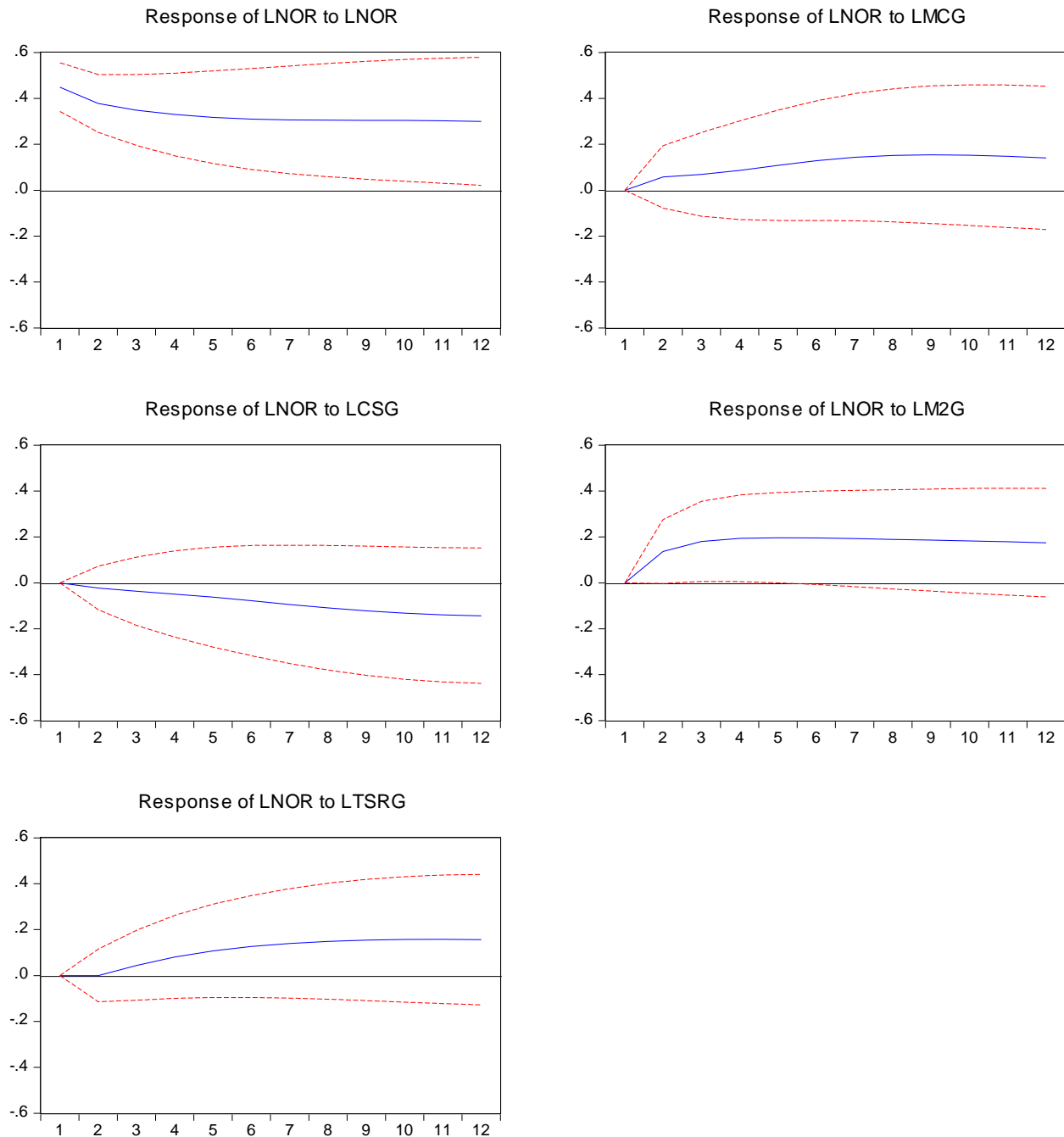
Source: Authors' Computation, 2019

12.0 VARIANCE DECOMPOSITION OF NOR RESULTS

The fraction of forecast error variance in non-oil export that is contributed by its own innovation and innovations of other endogenous variables over the horizon of 12 years are depicted in table

8. Own shock form the major source of variation in non-oil export forecast error. The variation ranges from 100% in the short term to 61.5 % over 12 quarters. The results further indicate that the forecast error variance of non-oil export accounts for by own shock declines from 100% in the short term to 74.8% and 61.5% in the 6th and 12th quarters respectively. Considering that other variables exhibit exogenous impact in the 1st quarter of the short term, the relative strength of their shock increased gradually from the 2nd quarter of the short term through the medium term horizon up to the long term. The innovations of broad money supply as ratio of GDP (LM2G) accounts for 5% variations in the forecast error of non-oil export in the 2nd quarter, 16% in the 6th quarter in the 12th quarter. Market capitalization as ratio of GDP (LMCG) equally accounts for 0.9% variations in the 2nd quarter, rise to 4.2% in the 6th quarter and 8.1% in the 12th quarter. The innovations of total saving as ratio of GDP (LTSRG) also accounts for 0.3% in the 3rd quarter, 3.5% in the 6th quarter and 8.1% in the 12th quarter. Bank credit to private sector as ratio of GDP (LCSG) explains only 0.1% variations in non-oil export in the 2nd quarter, rise marginally to 1% in the 6th quarter and eventually to 4% in the 12th quarter. The implication of this result is financial deepening, even though it might be insignificant in the short run. They can be significant predictors of non-oil export over a long period in Nigeria.

Table 8 Results of Forecast Error Variance Decomposition of LNOR

Period	S.E.	LNOR	LMCG	LCSG	LM2G	LTSRG
1	0.448365	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.605049	93.87743	0.904757	0.141796	5.075988	2.68E-05
3	0.726637	88.10273	1.512133	0.354528	9.665536	0.365074
4	0.831070	83.10724	2.230354	0.616181	12.81965	1.226573
5	0.925830	78.71286	3.169710	0.951912	14.83033	2.335193
6	1.014836	74.83498	4.245935	1.382299	16.04282	3.493961
7	1.099854	71.46562	5.312986	1.907211	16.72411	4.590078
8	1.181347	68.60643	6.251985	2.506102	17.06731	5.568169
9	1.259134	66.23664	7.002360	3.146396	17.20631	6.408292
10	1.332811	64.31086	7.554733	3.793335	17.22983	7.111242
11	1.401996	62.76895	7.930991	4.417142	17.19405	7.688866
12	1.466437	61.54663	8.166173	4.996422	17.13290	8.157871

Chloesky Ordering: LNOR LMCG LCSG LM2G LTSRG

13.0 CONCLUSION

The study investigated the role played by financial deepening to stimulate production of non-oil products for export in Nigeria. The analytical methods deployed are unit root, co integration, impulse response functions and forecast error variance decomposition. The study confirm that financial deepening impart on non-oil export performance positively. Furthermore, the level of

significance of each measure of financial deepening differs with the broad money supply as ratio of GDP (LM2G) being the highest. The study therefore concludes that broad money supply, total saving, credit to private sector and market capitalization all as ratio of GDP are strong influencers of export from non-oil sector in Nigeria.

Going by the results obtained, the regular reform of the financial sector should be sustained to further enhance financial deepening and consequently give development of non-oil export sector a boost.

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