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REVISITING THE SECTORAL IMPACT OF DOMESTIC PRIVATE SECTOR CLAIMS IN NIGERIA: LOOKING BEYOND THE BANKING SYSTEM

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Abstract:
This paper took exception from previous studies by looking beyond private sector credit extended by deposit money banks and includes other typologies of repayable facilities extended by non-bank financial institutions to the private sector. The study assessed how these broad financing channels have impacted on the disaggregated economy namely; the manufacturing sector and the agricultural sector. The findings showed that private sector credit had negative impact on the manufacturing sector. When private sector credit increase by 1 percent, the manufacturing sector output decrease by 4.7 percent over the period covered by the study. Similarly, agricultural output was found to be negatively related to private sector credit. A unit change in credit to the private sector lead to 9.5 percent in agricultural output. Our moderating variables – real interest rate and inflation rate both has relative negative effect the manufacturing and the agricultural sectors. This study has implication on the real sectors of the Nigerian economy.

JEL: G21; Q10; L60

Keywords: private sector claims; manufacturing sector; agricultural sector

1. Introduction

Output effects of credit have been vigorously debated empirically. However, the focus of most of the studies are mainly on banking sector credit and growth (see Banu, 2013; Iwedi et al., 2015; Akpansung and Gidigbi, 2014; Olowofeso, *et al.,* 2015; Osman, 2014; Ahmed and Basshir, 2016; Emecheta and Ibe, 2014; Ananze, 2016; Oluwasogo, 2017). Though a

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number of works examined banking system advances vis-à-vis manufacturing sector growth (Bada, 2017; Ume, *et al.*, 2017; Obamuyi and Edun, n.d; Olusegun, *et al.*, 2014; Oladapo and Adefemi, 2015) whereas a few other empirical studies assessed the banking sector advances in relation to the agricultural sector growth (Ogbuabo and Nwosu, 2017; Ammani, 2012; Ayeomoni and Aladejana, 2016; Nwokoro, 2017; Agunuwa, *et al.*, 2017), what they have in common is that the context of credit as used in these studies are strictly credit provided by the banking sector.

In a broad context, it would be understood that beyond the banking system, other financial corporations extend credit to the private sector in various forms. Therefore, failure to capture this critical private sector credit channels, and the diverse typologies of credit provided creates a gap in literature. The desire to fill this yawning gap motivated this study, as we also extend the coverage period beyond the years captured in existing studies. Hence, contextually, domestic private sector claims are financial resources provided to the private sector by financial corporations, and include loans, purchases of nonequity securities, and trade credits and other accounts receivable, for which there is a claim for repayment. In addition, claims as shall be used in this paper encompasses such repayable credits provided by the monetary authorities and the deposit money banks, including corporations that incur time and savings deposits liabilities but do not accept transferable deposits. Such other financial corporations is composed of finance and leasing companies, insurance corporations, pension funds, money lenders and foreign exchange companies. Capturing these credit channels presents a broader perspective on the private sector claims and their expected impacts on priority sectors of the Nigerian economy namely, manufacturing sector and the agricultural sector.

Credit extension by the financial system is widely recognised as necessary oil to the wheels of growth and development. This very aim is achieved through the intermediary roles of both banking and non-banking financial institutions, which underlie strict policies that regulate and guide the operations of such institutions (Modebe and Ezeaku, 2016). The intermediation role drawn upon the credit creation mechanism involves the transfer of resources from the surplus economic unit to the deficit unit. The former comprises individuals and corporation with idle investible funds while the latter includes group economic units that have viable investment opportunities but do not have adequate fund to exploit them. Investing the intermediated funds into the real sectors of the economy promotes economic activities and boosts the output level in the economy. Adu, Marbuah and Mensah (2013) opine that credit to the private sector is critical for economic growth. Agada (2010) argues that availability of credit boosts the capacity of the active sectors of the economy through the increase in production output and efficiency of firms. Akintola (2004) contends that the efficient exercise of financial intermediation roles will significantly promote economic growth. It is evident that the Central Bank of Nigeria (CBN) plays a leading role as far as credit extension is concerned. The CBN in many occasions exercise direct control to influence both the sectoral allocation of credit to high priority sectors of the economy (Akpansung and Babalola, *n.d*).

2. Review of Related Literature

2.1 Literatures Relating to Economic Growth

Emecheta and Ibe (2014) evaluated the impact of bank credit on economic growth in Nigeria using the reduced form of vector autoregressive (VAR) technique on time series data from 1960 to 2011. The findings reveal that there is a significant positive relationship between bank credit to the private sector, broad Money and economic growth. In a related study, Yakubu and Affoi (2014) examined the impact of the commercial banks credit on economic growth in Nigeria from 1992 to 2012. The study used the ordinary least square technique and found that commercial bank credit has significant effect on the economic growth in Nigerian. Olowofeso *et al*., (2015) came to a similar conclusion in the Nigerian context. The study established the existence of long-run equilibrium relationship between private sector credits and output (see also Adediran *et al.,* 2017) and further revealed that private sector credit statistically significant effect on output. This result corroborates the finding in Akpansung and Babalola (n.d) and Okafor, et al., (2016). Mushtaq (2016) assessed the causality between bank's major activities and economic growth in Pakistan using time series data from 1961 to 2013. The Granger causality test result shows that there is a unidirectional causality running from economic growth to banking sector credit and confirms the demand-following hypothesis for Pakistan. Oluitan (2012) and Okafor, *et al.,* (2016) evidenced the supply-leading hypothesis in the Nigerian case and indicate that bank credit granger causes output. In the case of Obradovic and Grbic (2015) also confirmed unidirectional causality running from both private and household credit to economic growth.

2.1 Literature Relating to the Manufacturing and the Agricultural Sectors

Bada (2017) examined the effect of banks' credit on agricultural and manufacturing outputs on the Nigerian economy from 1984 to 2014. The study employs annual time series data covering the period 1984 -2014. Vector Auto-regressive Technique was employed in analyzing the data. The findings indicate that that banking sector credits have significant impact on the agricultural and manufacturing sector in Nigeria. Ume, et al., (2017) observed a long-run relationship between bank credit and manufacturing sector growth in Nigeria (see also Agunuwa, *et al.,* 2015). However, the results in Obamuyi, et al., (*n.d*) could not establish the nature of relationship between the variables but did find that bank lending significantly affects growth. Ayeomoni and Aladejana (2016) employed the Auto-Regressive Distributed Lag (ARDL) approach to examine the relationship between agricultural credit and economic growth in Nigeria. The results revealed that both long-run and short-run associations exist between the variable, and further observed that private sector credit has significant effect on economic growth while bank lending rate has inverse relationship with economic growth. Similarly, Nwokoro (2017) investigated the relationship between banks' credit and agricultural sector performance in Nigeria and also found the existence of both long-run and short-run relationships between the variables. The Error Correction Model Estimation further

indicated that private sector credit has significant positive influence on the agricultural output while lending rate had a reverse effect (see also Ammani, 2012). Ogbuabor and Nwosu (2017) argue that while banks' credit to the agricultural sector has positive and significant impact in the long-run, the influence in the short-run is quite negligible.

3. Data and Methodology

Data for this study are time series, and were obtained from the world economic indicator database of the World Bank for 55 years, from 1960 to 2015. The independent variable is the credit to the private sector by banks and non-bank financial institutions. The dependent variables are the contribution of the manufacturing sector and the agricultural sector to the gross domestic product. Real interest rate and the inflation rate will be our moderating variables. The time series will be subjected to unit root test to ascertain if the variables are stationary. The vector error correction (VEC) will be employed to estimate our model. The VEC granger causality test will also be adopted to test for possible causal links between our time series. Diagnostic tests will also be carried out on our outputs for validation purposes. The baseline models for this study are specified as follows:

$$MSG_t = \beta_0 + \beta_1 CPS_t + \beta_2 RIR_t + \beta_3 INF_t + \varepsilon_t \quad (1)$$

$$ASG = \beta_0 + \beta_1 CPS_t + \beta_2 RIR_t + \beta_3 INF_t + \varepsilon_t \quad (2)$$

Where t denotes time, MSP manufacturing sector growth, and is measured as the percentage change in manufacturing sector output (annual growth rate), ASP is agricultural sector growth, proxied by the percentage change in agricultural sector output, CPS is the total credit to the private sector provided by the monetary authorities, the deposit money banks, and non-bank financial institutions. β_0 is constant term, β_1-β_3 are parameter estimates, and ε is error term. Equations 1 and 2 will be modified to adjust for error correction term. The error correction model (ECM) can be therefore represented as follows:

$$\Delta MSG_t = \beta_0 + \sum_{i=0}^{n} \beta_1 \Delta MSG_{t-1} + \sum_{i=0}^{n} \beta_2 \Delta CPS_{t-1} + \sum_{i=0}^{n} \beta_3 \Delta RIR_{t-1} + \sum_{i=0}^{n} \beta_4 \Delta INF_{t-1} + \beta_5 ECT_t + \varepsilon_t \quad (3)$$

$$\Delta ASG_t = \beta_0 + \sum_{i=0}^{n} \beta_1 \Delta ASG_{t-1} + \sum_{i=0}^{n} \beta_2 \Delta CPS_{t-1} + \sum_{i=0}^{n} \beta_3 \Delta RIR_{t-1} + \sum_{i=0}^{n} \beta_4 \Delta INF_{t-1} + \beta_5 ECT_t + \varepsilon_t \quad (4)$$

Where Δ is first differencing and ECT is the error correction term and speed of adjustment.

3.1 Granger Causality Test

We shall bring in the granger causality setup which is aimed at determining the nature/direction of causality between the variables say Yand X, and where Y causes X if Y increases the predictability of X. The direction of causal link can be on-way (or unidirectional), two-way (or bidirectional).The bivariate linear forecast models for CPS(t) and MSG(t) in AR representations thus,

$$CPS(t) = b_1 + \sum_{j=1}^{\bar{\upsilon}} b_{11,j} CPS(t-j) + \sum_{j=1}^{\bar{\upsilon}} b_{12,j}\, MSG(t-j) + \varepsilon_1 : 2(t) ------ (5)$$

$$MSG(t) = b_2 + \sum_{j=1}^{\bar{\upsilon}} b_{21,j} CPS(t-j) + \sum_{j=1}^{\bar{\upsilon}} b_{22,j}\, MSG(t-j) + \varepsilon_2 : 1(t) ------ (6)$$

On the other hand, the bivariate prediction setup for*ASG(t)* and *CPS(t)* can be expressed thus:

$$CPS(t) = b_1 + \sum_{j=1}^{\bar{\upsilon}} b_{11,j} CPS(t-j) + \sum_{j=1}^{\bar{\upsilon}} b_{12,j}\, ASG(t-j) + \varepsilon_1 : 2(t) ------ (7)$$

$$ASG(t) = b_2 + \sum_{j=1}^{\bar{\upsilon}} b_{21,j} CPS(t-j) + \sum_{j=1}^{\bar{\upsilon}} b_{22,j}\, ASG(t-j) + \varepsilon_2 : 1(t) ------ (8)$$

If past values of $CPS(t)$ help to predict$MSG(t) and ASG(t)$ respectively.The test of H_o: $b_{12} = 0$;H_o: $b_{21} = 0$ can be carried out with the F test.

4. Results and Discussions

Table 1: Unit Root Test

Variables	ADF-Stat	5% critical value	P value	Inference
CPS	-5.147668	-2.957110	0.0002	I(1)
MSP	-6.030340	-2.957110	0.0000	1(1)
ASP	-6.457309	-2.960411	0.0000	I(1)
RIR	-5.694184	-2.954021	0.0000	1(0)
INF	-5.156373	-2.957110	0.0002	I(1)

Augmented Dickey-Fuller unit test result in Table 1 indicates that our time series are stationary. However, while CPS, MSP, ASP, and INF are stationary after first differencing (i.e. at order one) RIR became stationary at level (i.e. at order zero). This shows that our time series are not integrated of the same order. In other words, our series have varied order of integration. We shall adopt the Vector Autoregressive (VAR) approach for our estimation. The lag length selection criterion suggests one lag length. This means that in

our VAR procedure, our variables will be lagged by one period. The result of the lag selection criteria is presented in Table 2.

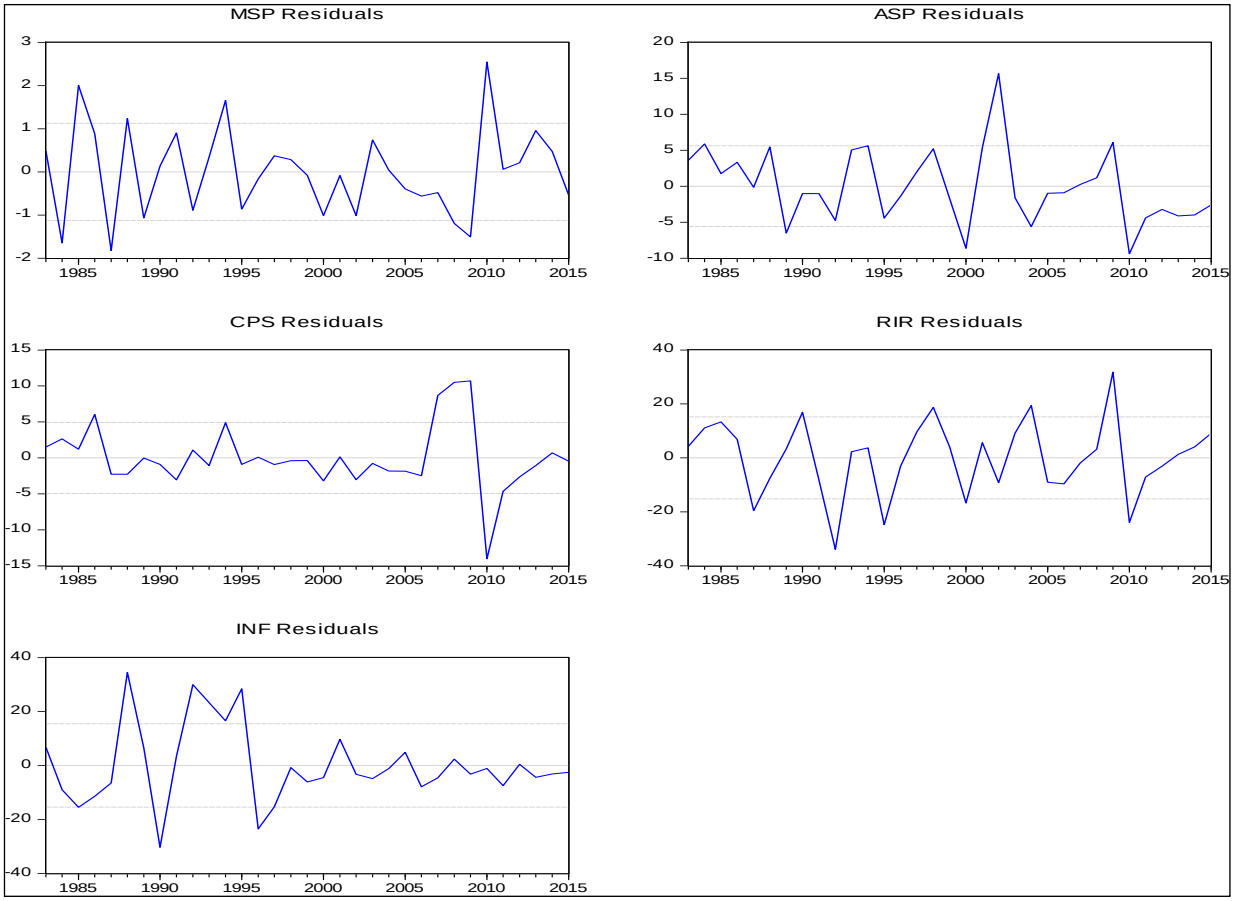

Figure 1: Series Residual Graph

Figure 1 shows the dynamic movements in our series which evidently reveals quite unsteady trends within the observation period.

Table 2: VAR Lag Order Selection Criteria

Endogenous variables: MSP CPS RIR INF
Sample: 1982 2015
Included observations: 30

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-417.8183	NA	19188294	28.12122	28.30805	28.18099
1	-367.1071	84.51872*	1920672.*	25.80714*	26.74127*	26.10597*
2	-351.8433	21.36924	2149768.	25.85622	27.53766	26.39413
3	-341.6656	11.53473	3753304.	26.24437	28.67312	27.02135
4	-321.4563	17.51477	4072237.	25.96375	29.13980	26.97980

Notes:
* 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 3: Vector Autoregression Estimates

Dependent Variable: Manufacturing Sector Performance			
Variables	**Coefficient**	**Standard errors**	**t-statistics**
C	0.083194	0.91417	0.09100
CPS(-1)	0.047497	0.03539	1.34213
RIR(-1)	-0.003745	0.01424	-0.26299
INF(-1)	-0.009150	0.01316	-0.69513
R-squared	0.792332		
Adj. R-squared	0.762665		
Prob. [F-statistic]	0.0000		

Source: Authors, 2017.

VAR results in Table 3 reveal that credit to the private sector has a positive impact on the manufacturing sector output. A unit change in CPS leads to 4.7% increase in output. The t-statistic however indicated that this impact is insignificant. On the other hand, in line with theory, real interest rate and inflation rate both have negative effect on manufacturing output, but the effect so established were not significant.

Table 4: Vector Autoregression Estimates

Dependent Variable: Agricultural Sector Performance			
Variables	**Coefficient**	**Standard errors**	**t-statistics**
C	10.73575	5.33752	2.01137
CPS(-1)	-0.094829	0.16339	-0.58039
RIR(-1)	-0.010771	0.06631	-0.16242
INF(-1)	-0.010023	0.06222	-0.16108
R-squared	0.744756		
Adj. R-squared	0.715436		
Prob. [F-statistic]	0.0000		

Source: Authors, 2017.

VAR estimate for the Agricultural sector in Table 4 reveals that credit to the private sector (CPS), real interest rate (RIR) and the inflation rate (INF) have relative negative impact on the agricultural output (ASG). When CPS increases by 1 percent, Agricultural output decrease by 9.5%. This contradicts our *a priori* expectation that CPS should be directly related to ASG.

4.1 VAR-Granger Causality Test Results

From the VAR Granger causality test results in Table 5, there is no evidence of any causal relationship between private sector credit and manufacturing sector output. Credit to the private sector was also found to have no causal link with agricultural sector performance.

Table 4: VAR Granger Causality/Block Exogeneity Wald Tests

Series	Chi-sq	df	Prob.
Dependent variable: **MSP** **CPS**	1.801304	1	0.1796
Dependent variable: **CPS** **MSP**	1.514326	1	0.2185
Dependent variable: **ASP** **CPS**	0.336852	1	0.5617
Dependent variable: **CPS** **ASP**	0.185728	1	0.6665

Source: Authors, 2017.

4.2 Diagnostic Test

Table 5: VAR Residual Serial Correlation LM Tests

Null Hypothesis: no serial correlation at lag order h
Included observations: 33

Lags	LM-Stat	Prob
1	22.82813	0.1184
2	17.74099	0.3393
3	14.68331	0.5479
4	11.16890	0.7989
5	14.38265	0.5702

Table 5 presents the serial correlation test result and shows that our model has no autocorrelation problem. The inverse rootAR characteristics polynomial is presented in Figure 2 below, which confirms that there is no specification error in our model. In other words, our model is well specified.

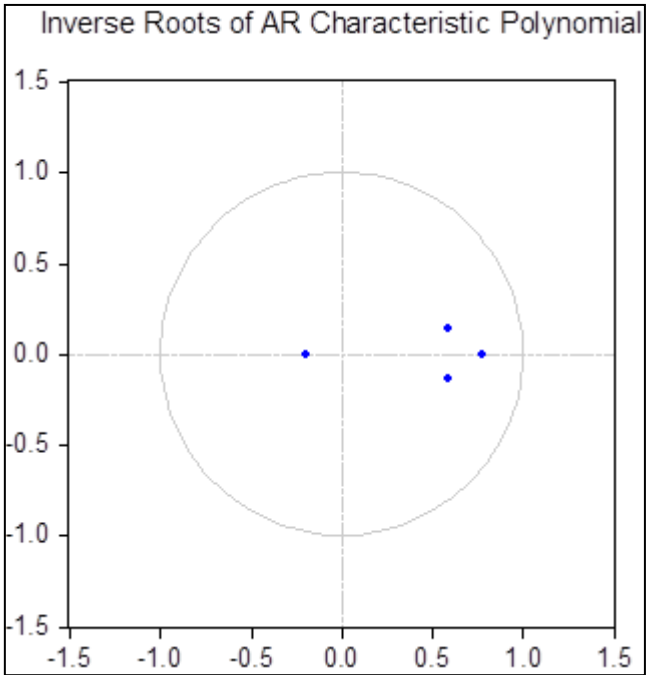

Figure 2: The inverse rootAR characteristics polynomial

5. Conclusion

The role of private sector credit sector credit to Growth and development cannot be overemphasised. As a key factor of production, availability of credit (or capital) stimulates economic activities thereby leading to increase in the output level in within the economy. This paper took exception from previous studies by looking beyond private sector credit by banks and includes other typologies of repayable facilities extended by non-bank financial institutions to the private sector. We therefore attempted to determine how these broad financing channels have impacted on the disaggregated economy namely; the manufacturing sector and the agricultural sector. These two sectors are very critical to the growth of the Nigerian economy. The findings show that private sector credit had negative impact on the manufacturing sector. When private sector credit increase by 1 percent, the manufacturing sector output decrease by 4.7 percent over the period covered by the study. Similarly, agricultural output was found to be negatively related to private sector credit. A unit change in credit to the private sector lead to 9.5 percent in agricultural output. Our moderating variables – real interest rate and inflation rate both has relative negative effect the manufacturing and the agricultural sectors. This study has implication on the real sectors of the Nigerian economy. We recommend that credit as monetary policy transmission channel be given needed attention. Policy measures should emphasis the credit channel should be increased while measures should be taken to ensure that credit advanced is used for the right purpose.

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