

THE IMPACT OF COMMERCIAL BANKS' CREDIT ALLOCATION ON ECONOMIC GROWTH IN NIGERIA

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Abstract: This paper analyses the impact of Commercial Banks' Credit Allocation on economic growth in Nigeria. The data for the study cover from 1986 to 2014. The variables for the analysis are commercial bank allocations to agricultural sector, manufacturing sector, and mining sector as the dependent variables while gross domestic product is the independent variable. The result shows that there exist a positive linear relationship among credit allocation to Agriculture, manufacturing, mining and gross domestic product but an inverse relationship exist between others and gross domestic product. The t-tables shows that it is credit allocation to Agriculture and manufacturing that is statistical significant, based on these, we recommend that in granting loans, preferred sectors like manufacturing and agriculture should be favored. The legal framework should be strong and comprehensive which will help in monitoring the performance of credit to private sector and recovery of debts owed to banks; concerning bad debt, banks should not fail to share information among them. A better and stronger credit culture should be sustained and promoted by banks.

Key words: Commercial bank, credit, economic growth, variable, sector.

I. INTRODUCTION

Financial Institutions all over are meant to play an intermediary role by channeling credit from surplus unit to the deficit unit. The Commercial Banks through their credit policy, act as catalyst and encourage growth in different sectors of the economy especially the most preferred sectors of the system.

A theoretical literature exploring the nature of the correlation between the banking sector and economic growth shows that commercial banks could affect real economic performance by affecting the composition of savings [1] and affecting the scope of credit rationing [2]. [3] have showed that commercial banking development can improve economic growth, by improving savings, promoting capital accumulation and raising allocative efficiency of credit.

Financial institutions being able to transfer financial resources from idle deposit sector to deficit real sectors for investment, growth and development, makes financial intermediation a more exciting process, and so the reason for the financial sector to be regulated periodically.

According to [4], Sectoral Distribution of Commercial Banks' Loans and Advances (₦ Million) in fourth quarter 2014 stood at ₦1607.6 million for Agriculture, forestry and fishery ₦92.5m for Mining and Quarrying ₦5857.5 M, for manufacturing ₦6512 M for Oil and gas ₦1014.3M for power and Energy, ₦3216.8M for Trade General Commerce etc. [5] observed that in making credit available, banks are rendering a great social service because through their action production is increased, capital investment are expended and a higher standard of living is realized.

With the above mentioned in mind and given the go-between role of Commercial banks in economic growth, this study intend to examine the impact of Commercial Banks' Credit on economic growth in Nigeria.

II. LITERATURE REVIEW

2.1 CONCEPTUAL FRAMEWORK:

In this context, the principle of bank credit and economic growth is going to be talked about. Credit according to [6] is known to be the money from the lender to the borrower. [7] noted that credit implies a promise by one party to pay another for money borrowed or goods and services received. Credit cannot be separated from the banking sector as banks serve as a conduit for funds to be received in form of deposits from the surplus spending unit of the economy and passed on to the deficit spending units who need funds for productive purposes. Therefore Banks are debtors to Depositors and to the borrowers of funds from banks are seen as creditors. Loans by the banking system is the form of bank credit which is the borrowing capacity provided to an individual, Organization or government by the banking sector.

Credit directs savings into productive investment therefore improves economic growth. So, the presence of credit gives room for the role of mediator to be executed, which is necessary for economic growth.

[8] viewed the concept of economic growth as an increase in the net national product in a given period of time. Furthermore, he stated that economic growth is generally termed as a quantitative change in economic variables, normally persisting over successive period.

[9] saw it as an increase in output, he also said that it is related to a quantitative sustained increase in the per capital income or output of a nation accompanied by expansion in its labour force, consumption, capital and volume of trade. Economic growth is defined by [10] as a steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income.

We can move forward to measure economic growth in the form of Gross Domestic Product (GDP) and Human Development Index (HDI), which is an index that values national growth based on values of life expectancy at birth, adjusted real per capital income, literacy and education attainment. The signs of economic growth as viewed by [11] are mainly the following; High rate of growth of per capital income or output, high rate of productivity, high rate of structural transformation, international flows of labour, goods and capital.

From the definition above we can summarize that economic growth is when there is sustained increase in the actual output of goods and services per head.

2.2: THEORETICAL FRAMEWORK:

Commercial Banks operate within the business environment and more importantly transact business on the mobilized deposits in addition to other related sources.

Commercial Banks are net liability takers. Despite this, the possible effects of their credit related transactions on the economy could be routed in the theory of financial mediator and associated hypotheses that attempt to explain the interactions between economic growth and financial development in the process of advancing the nation. [12] relates financial mediator to the way of rallying deposited resources from surplus deposit units in the economy by financial go betweens (bodies) at the market established rates and forward lending of same or part of it, to efficient spending units for productive investment purposes. Moreover, the works of [13], [14] among others recommended that effective management of interest rates would truly provide basis for encouragement of additional savings out of current income. Based on the way the interest rate takes the quality and quantity of investible funds through the rallying of deposit will be affected directly. Therefore, economic growth will be correspondingly advanced or stagnated. The theories rest strongly on supply leading and growth inducing potentials of commercial banks. They relate differences in economic

growth among nations to the gap in the levels of development and being more experienced in things pertaining to financial institutions..

2.3 EMPIRICAL REVIEW:

[15] investigated the recent Banking Reforms in Nigeria, its implications on sectoral Credit allocation and Economic growth using Ordinary Least square, found out that despite the drastic reduction in the number of Commercial banks during the reform, credit allocated to the activity sectors (Agriculture, Mining and Quarrying, Manufacturing, Communication ,Oil and Gas) has improved.

[16] carried out the study on Bank Credit to Private Sector, potency and Relevance in Nigerian Economic Growth process using Autoregressive Distributed lag Bound (ARDLB) and Granger Causality Techniques. The result indicated that a long run relationship exist between Gross Domestic Product and Bank Credit to the Private sector and no causality between the variable.[17] Analyzed Commercial Banks Credit on Economic Growth in Nigeria using the Private Sector of the economy to estimate its impact on Nigeria's economic growth which is proxied by gross domestic product. Using the Ordinary Least Square (OLS), they found out that Commercial Bank Credit has significant effect on economic growth in Nigeria.)[18] in their study determined how Commercial bank credit can influence manufacturing sector in Nigeria, it shows that commercial bank credit if well channeled to the sector or good creditors will increase and encourage economic growth in the country. The aim was to find out the effect of commercial bank credit on productive sector.

[19], looked at the relationship between bank lending and output growth in Nigeria using annual data obtained from secondary sources. Strictly, the analysis looked at the impact of sector level bank lending on output growth of three selected sectors measured by index of production. Using the Johansen-Fisher combined Panel cointegration methodology and Panel Fully Modified Ordinary Least Squares (FMOLS) as a method of estimation, it shows evidence of a negative significant relationship between bank lending and output growth of the sectors under consideration that is, agriculture, manufacturing and mining and quarrying. But a positive significant relationship is found between human capital measured by secondary school enrolment and output growth of the sectors. It went on to stress that the expansion needed to increase output growth in these sectors is hindered by financial constrains made possible by high interest rates charged by financial institutions and that output growth is not only function of finance but also a function of human capital (namely, labour accompanied with knowledge).

[20] encouraged by the desire to avoid any certain parameter bias related with former works, looked into the impacts of private sector credit on economic growth in Nigeria using the Gregory and Hansen (1996) cointegration test that accounted for structural breaks and endogeneity

problems. This style was applied to quarterly data spanning 2000: Q1 to 2014: Q4, while the fully modified ordinary least squares procedure was used to measure the model coefficients. They observed a cointegrating relationship between output and its selected determinants, although; with a structural break 2012 Q1. In addition to other investigation from the error correction model confirmed a positive and statistically significant effect of private sector credit on output, whereas increased prime lending rate was preventing growth. Furthermore, the effort of CBN to the lowering in interest rates is encouraging for the nation's growth aims.

[21] tried in their paper to show how banking system credits have prompted economic activities in the Nigerian economy. They used the Johansen Co-integration test, in their first differences, which shows one co-integrating equation at 0.05 level, so they maintained that there exists a long-run relationship between GDP, production and commercial activities in Nigeria. But, these is no causation from commerce to GDP as from production to GDP. The findings are to some point steady with former studies on Bank Credits as it relates to economic growth.

[22] investigated the impact of bank credit on economic growth in Nigeria using the reduced form of vector autoregressive (VAR) techniques. The stationarity of the variables were examined using the Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. It was observed that there is significant positive relationship between bank credit to the private sector, broad money and economic growth.

[23] examined the effect of sectoral allocation of Deposit Money Banks Loans and Advances on economic growth in Nigeria during intensive regulation, deregulation and guided deregulation regimes. For each of the three regimes, regression analysis of the ordinary least square is used. The findings revealed that only credit allocated to government, personal and professional have significant positive contribution on economic growth during intensive regulation. It was also observed that bank credits normally do not add significantly to economic growth during deregulation.

[24] analysed the significance of bank credit in encouraging output within the real sector and the factors that bring financial intermediation at the exact time within the economy. The study shows that real output causes financial development but not in other way round. It was also seen that export of oil and non-oil export are not significant in driving financial development rather foreign capital flows greatly depended highly on it.

III. METHODOLOGY

The research will employ secondary data collected from Central Bank of Nigeria statistical bulletin spanning from 1986 – 2014 and will be analyzed using ordinary least square.

	0	1	2	
variable	at	At first	At 2nd	Level of
	Level	Difference	Difference	Integration
GDP	3.143635	-3.666971	-9.113610	1(0)
AGRIC	3.365803	-5.194571	-6.424759	1(0)
MANU	2.084768	-3.880106	-7.257750	1(1)
MINING	2.625121	-2.893421	-3.906565	1(2)
OTHER	2.474944	-7.664211	-6.392226	1(1)
CRITICAL				
Variables 5%	-2.971853			

3.1: MODEL SPECIFICATION:

The model for this research is specified below:

$$GDP = f(AGRIC, MANU, MINING, OTHERS)$$

$$GDP = b_0 + b_1 AGRIC + b_2 MANU + b_3 MINING + b_4 OTHERS + U$$

Where GDP =Gross Domestic Product

AGRIC = Commercial Bank Credit to Agricultural Sector

MANU= Commercial Bank Credit to Manufacturing Sector

OTHERS= Commercial Bank Credit to Other Sectors

b^{δ} = The Parameters to be estimated

U =Error Term

Table I Test for stationarity using augmented dickey-fuller test statistics

The result of the ADF shows that GDP, Agriculture are stationary at level, MANU, others are stationary at first difference while mining is stationary at second difference because they are greater than the 5% critical values.

TABLE II TEST FOR LONG RUN RELATIONSHIP USING UNRESTRICTED COINTEGRATION RANK TEST.

The trace test indicate 4 co-integration by Equation at 0.05 level, 'this shows that there exist a long run relationship among the variables of the model.

Variable	coefficient	Std.Error	t-stat	Prob
C	-2082525	1371407	-1.5185	0.1419
AGRIC	168822.9	25121.36	6.7203	0.0000
MANU	18368.47	8229.379	2.2321	0.0352
MINING	2997.518	3251.074	0.9220	0.3657
OTHERS	-630.2876	536.9796	-1.174	0.2520
R-squared	0.961010	Mean dependent var	1825	
Adj R- Sqd	0.954511	S.D. dependent var	2634	
S.E of regr	5618825	Akaike info criterion	34.08	
Sum sqd re	7.58+14	Schwarz criterion	34.31	
Log likhd	-489.113	Hannan-Quin crit	34.15	
F-stat	147.885	Durbin-Wat stat	2.094	
Prob(F-sta)	0.000000			

$$GDP = -2082525 + 168822.9 AGRIC + 18368.47 MANU + 2997.518 MINING - 630.2876 OTHERS$$

3.2: INTERPRETATION, DISCUSSION and FINDINGS:

From the regression model, there exist a positive linear relationship between Commercial Bank Credit to Agricultural Sector, Manufacturing Sector, Mining Sector and Gross Domestic Product.

This implies that as these independent variables increase, Gross Domestic Product will increase. While there is an increase linear relationship between other sectoral allocation of credit and Gross Domestic Product: *meaning as credit is allocated to other sectors, GDP will decrease*. The test to goodness of fit using adjusted R-squared shows that the explanatory variables included in the model accounted for 95.5% variations in dependent variable while the remains unexplained variations are taken care of by the error term shown in the model by U.

The test for individual significance using “t” test shows that credit to manufacturing and Agriculture are statistical significant at 5% level of significance because the probability values are less than 0.05 probability value.

While the test to joint significance using analysis of variance (ANOVA) shows that the R-Statistic value (147.8847) with prob value of 0.0000 which is less than 5%, show that the explanatory variables jointly affect the dependent variable GDP.

The test for the violations of the assumptions of the model using Durbin- Watson test: The result shows that the Durbin Watson stat revolves around two than zero: Meaning that there is the absence of positive autocorrelation with the model.

Table III; Table for granger causality Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
AGRIC does not Granger Cause GDP	27	0.34503	0.7120
GDP does not Granger Cause AGRIC		31.7319	3.E-07
MANU does not Granger Cause GDP	27	108.542	4.E-12
GDP does not Granger Cause MANU		0.79019	0.4662
MINING does not Granger Cause GDP	27	18.3663	2.E-05
GDP does not Granger Cause MINING		1.38564	0.2712
OTHERS does not Granger Cause GDP	27	3.07055	0.0667
GDP does not Granger Cause OTHERS		3.45471	0.0496
MANU does not Granger Cause AGRIC	27	2.98103	0.0715
AGRIC does not Granger Cause MANU		4.45555	0.0237
MINING does not Granger Cause AGRIC	27	10.2630	0.0007
AGRIC does not Granger Cause MINING		1.00848	0.3810
OTHERS does not Granger Cause AGRIC	27	0.00040	0.9996
AGRIC does not Granger Cause OTHERS		5.75187	0.0098
MINING does not Granger Cause MANU	27	3.74622	0.0398
MANU does not Granger Cause MINING		8.12771	0.0023
OTHERS does not Granger Cause MANU	27	0.79070	0.4660
MANU does not Granger Cause OTHERS		6.22790	0.0072
OTHERS does not Granger Cause MINING	27	1.23492	0.3102

This is so because their probabilities Value are less than 0.05 (5%).

IV.CONCLUSION and RECOMMENDATIONS:

The paper analyzes the role of commercial bank credit on economic growth in Nigeria. From the observations made, it was seen that Bank Credit has powerful effect on the growth of Nigeria economy, so, bank should go on to extend credit to private sector of the economy as it has powerful effect on Nigeria’s GDP growth. To make the above effect stronger and for continuity sake, the following Recommendations are made; In granting loans, preferred sectors like manufacturing and agriculture should be favored.

The legal framework should be strong and comprehensive which will help in monitoring the performance of credit to private sector and recovery of debts owed to banks; concerning bad debt, banks should not fail to share information among them.

A better and stronger credit culture should be sustained and promoted by banks.

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APPENDIX

Variable Coefficient Std. Error t-Statistic

C -2082525. 1371407. -1.518531

GDP 168822.9 2512136 6.720293

MANU 13460382 8229379 2.232060

MINING 19312620 3251074 0.922009

OTHERS 26329448 5369796 -1.173765

R-squared 0.961010 Mean dependent var

Adjusted R-squared 0.954511 S.D dependent var

S.E of regression 5618825. Akaike info criterion

Sum squared resid 7.58E+14 Schwarz criterion

Log Likelihood 10896792.1126 Hannan-Quinn criter.

F-statistic 13997045847 Durbin-Watson stat

Prob(F-statistic) 0.000000

49.10 4032300.34

254.30 4189249.77

125.90 3989450.28

151.30 4679212.05

293.70 6713574.84

463.00 6895198.33

591.10 7795758.35

11647.60 9913518.19

988.30 1411066.91

1403.60 14610881.45

1777.60 18564594.73

3685.60 20657107.67

5913.30 24296329.29

6598.10 24794238.66

5412.30 54612260.00

4709.00 62980400.00

3087.98 701390.00

5772.62 80092560.00

9588.28 89045620.00

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=2)

Augmented Dickey-Fuller test statistic

Test critical values: 1% level

5% level

10% level

t-Statistic

Augmented Dickey-Fuller test statistic

Test critical values: 1% level

5% level

10% level

t-Statistic

Augmented Dickey-Fuller test statistic

Test critical values: 1% level

5% level

10% level

t-Statistic

*MacKinnon (1996) one-sided p-values.

	YEAR	AGRIC	MANU	MINING	OTHERS
1	1986	1.80	4.50	0.20	11.50
2	1987	2.40	5.00	0.20	13.50
3	1988	3.10	6.10	0.20	14.90
4	1989	3.50	6.70	0.30	15.50
5	1990	4.20	7.90	0.40	17.80
6	1991	5.00	10.90	0.50	19.50
7	1992	7.00	15.40	0.80	30.40
8	1993	10.80	23.10	1.40	41.80
9	1994	17.80	34.80	0.00	49.10
10	1995	25.30	58.10	12.10	48.90
11	1996	33.30	72.20	15.00	254.30
12	1997	27.90	82.80	20.60	125.90
13	1998	27.20	96.70	22.80	151.30
14	1999	31.00	115.80	24.70	293.70
15	2000	41.00	141.30	32.30	463.00
16	2001	55.80	206.90	70.50	591.10
17	2002	59.80	233.50	70.20	11647.60
18	2003	62.10	294.30	96.00	988.30
19	2004	67.70	332.10	131.10	1403.60
20	2005	48.60	352.00	172.50	1777.60
21	2006	49.40	445.80	251.50	3685.60
22	2007	149.60	487.60	490.70	5913.30
23	2008	106.40	932.80	846.90	6598.10
24	2009	135.70	987.60	1190.70	5412.30
25	2010	128.40	987.60	1178.10	4709.00
26	2011	255.20	1053.20	1295.30	3087.98
27	2012	291.32	1087.35	1537.80	5772.62
28	2013	348.15	1106.58	1884.85	9588.28
29	2014	401.90	1464.38	23.12	

SOURCE: CENTRAL BANK OF NIGERIA STATISTICAL BULLETIN 2009, 2010, - 2014.

Dependent Variable: GDP
 Method: Least Squares
 Date: 02/21/16 Time: 16:16
 Sample: 1986 2014
 Included observations: 29

Exogenous: Constant
 Lag Length: 2 (Automatic - based on SIC, maxlag=2)

UNIT ROOT TEST ON GDP AT SECOND DIFFERENCE

Null Hypothesis: D(GDP,2) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	-6.425759
Test critical values: 1% level	-3.737853
5% level	-2.991878
10% level	-2.635542

	t-Statistic
Augmented Dickey-Fuller test statistic	-9.113610
Test critical values: 1% level	-3.711457
5% level	-2.981038
10% level	-2.629906

UNIT ROOT TEST ON MANUFACTURING AT LEVEL
 Null Hypothesis: MANU has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	2.084768
Test critical values: 1% level	-3.689194
5% level	-2.971853
10% level	-2.625121

UNIT ROOT TEST ON AGRIC AT LEVEL

Null Hypothesis: AGRIC has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	3.365803
Test critical values: 1% level	-3.699871
5% level	-2.976263
10% level	-2.627420

UNIT ROOT TEST ON MANUFACTURING AT FIRST DIFFERENCE
 Null Hypothesis: D(MANU) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	-3.880106
Test critical values: 1% level	-3.699871
5% level	-2.976263
10% level	-2.627420

UNIT ROOT TEST ON AGRIC AT FIRST DIFFERENCE

Null Hypothesis: D(AGRIC) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	-5.194571
Test critical values: 1% level	-3.699871
5% level	-2.976263
10% level	-2.627420

UNIT ROOT TEST ON MANUFACTURING AT SECOND DIFFERENCE
 Null Hypothesis: D(MANU,2) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	-7.257750
Test critical values: 1% level	-3.711457
5% level	-2.981038
10% level	-2.629906

*MacKinnon (1996) one-sided p-values.

UNIT ROOT TEST ON AGRIC AT SECOND DIFFERENCE

Null Hypothesis: D(AGRIC,2) has a unit root

UNIT ROOT TEST ON MINING AT LEVEL

Null Hypothesis: MINING has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

Augmented Dickey-Fuller test statistic		-2.474944
Test critical values:	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.878873	0.3368
Test critical values:		
	1% level	-3.689194
	5% level	-2.971853
	10% level	-2.625121

UNIT ROOT TEST ON OTHERS AT FIRST DIFFERENCE

Null Hypothesis: D(OTHERS) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

UNIT ROOT TEST ON MINING AT FIRST DIFFERENCE

Null Hypothesis: D(MINING) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	-7.664211
Test critical values:	
	1% level
	5% level
	10% level

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.893421	0.0593
Test critical values:		
	1% level	-3.699871
	5% level	-2.976263
	10% level	-2.627420

UNIT ROOT TEST ON OTHERS AT SECOND DIFFERENCE

Null Hypothesis: D(OTHERS,2) has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=2)

UNIT ROOT TEST ON MINING AT SECOND DIFFERENCE

Null Hypothesis: D(MINING,2) has a unit root
 Exogenous: Constant
 Lag Length: 2 (Automatic - based on SIC, maxlag=2)

	t-Statistic
Augmented Dickey-Fuller test statistic	-6.392226
Test critical values:	
	1% level
	5% level
	10% level

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-3.906565	0.0068
Test critical values:		
	1% level	-3.737853
	5% level	-2.991878
	10% level	-2.635542

Date: 02/21/16 Time: 16:22
 Sample (adjusted): 1988 2014
 Included observations: 27 after adjustments
 Trend assumption: Linear deterministic trend
 Series: GDP AGRIC MANU MINING OTHERS
 Lags interval (in first differences): 1 to 1

UNIT ROOT TEST ON OTHERS AT LEVEL

Null Hypothesis: OTHERS has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=2)

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	No. of CE(s)	Eigenvalue	Trace Statistic	Trace Critical Value
None*	0	0.983593	240.0515	69.81889
At most 1*	1	0.946337	129.0808	47.85613

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.878873	0.3368

At most 2 *	0.609404	50.10477	29.79707	0.0001
At most 3 *	0.599214	24.72255	15.49471	0.0016
At most 4	0.001323	0.035734	3.841466	0.8500

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Pairwise Granger Causality Tests

Date: 02/21/16 Time: 16:23

Sample: 1986 2014

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
AGRIC does not Granger Cause GDP	27	0.34503	0.7120
GDP does not Granger Cause AGRIC		31.7319	3.E-07
MANU does not Granger Cause GDP	27	108.542	4.E-12
GDP does not Granger Cause MANU		0.79019	0.4662
MINING does not Granger Cause GDP	27	18.3663	2.E-05
GDP does not Granger Cause MINING		1.38564	0.2712
OTHERS does not Granger Cause GDP	27	3.07055	0.0667
GDP does not Granger Cause OTHERS		3.45471	0.0496
MANU does not Granger Cause AGRIC	27	2.98103	0.0715
AGRIC does not Granger Cause MANU		4.45555	0.0237
MINING does not Granger Cause AGRIC	27	10.2630	0.0007
AGRIC does not Granger Cause MINING		1.00848	0.3810
OTHERS does not Granger Cause AGRIC	27	0.00040	0.9996
AGRIC does not Granger Cause OTHERS		5.75187	0.0098
MINING does not Granger Cause MANU	27	3.74622	0.0398
MANU does not Granger Cause MINING		8.12771	0.0023
OTHERS does not Granger Cause MANU	27	0.79070	0.4660
MANU does not Granger Cause OTHERS		6.22790	0.0072
OTHERS does not Granger Cause MINING	27	1.23492	0.3102
MINING does not Granger Cause OTHERS		5.42439	0.0122