

SMEs FINANCING AND ECONOMIC DEVELOPMENT IN NIGERIA: A CAUSALITY APPROACH (1990-2014)

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Abstract

The study employed various sophisticated econometric tools to empirically examine the pattern of relationship between SMEs performances and economic development in Nigeria; economic development was proxy by domestic product per capital while SMEs performances was also proxy by loans to small scale enterprises and values of loan under agricultural credit guarantee scheme finance; the data was extracted from World Bank and CBN statistical bulletin 2015, the following econometric tools were used to perform the analysis such as: OLS multiple regression, Brusch Pagan- Godfrey serial correlation LM, Homoscedaticity, cholesky multivariate normality, Dick fuller statistics, Philip Perron statistics, Johanse and Engle – Granger co-intergration, Wald – coefficient statistics and Granger causality test. The results revealed strong and positive relationship between SMEs performances and economic development in Nigeria, it is therefore recommended that Government should promote the various establishments of SMEs, reduce the hurdle to accessing facility with relatively lower interest rate and invest in social and economic overheads to promote the smooth operations of SMEs in Nigeria.

Keywords: Domestic product per capital, Wald – coefficient, cholesky multivariate Normality, Homoscedaticity, value of loan under agricultural credit guarantee scheme finance.

Introduction

Small and medium scale enterprises (SMEs) are extremely significant to the development of every economy as they possess great potentials of employment generation, distribution of incomes, improve balance of payment, diversification of the economy, improve local manufacturing, increase in export earnings etc. in Nigeria, there have been gross under-performance of small and medium scale enterprises sector and this has undermine its contribution towards the development of the economy. FSS 2020 SME sector report, 2007 posit that the major hindrance to performance of SME subsector in Nigeria is: poor funding by the government, lack of social and economic overhead, low managerial skills etc.

However, the government has increased her effort towards financing SMEs due to its relevance towards the development of the economy; to compliment such effort, the central bank (CBN) has established 200 billion small and medium Enterprises credit Guarantee scheme, to increase access to credit by SMEs in Nigeria, Agricultural Credit Guarantee Scheme was also established to guarantee credit facilities offered to farmers, the government secured \$270 million facility to further compliment other SME financing sources and the intervention fund of N500 billion was established to further improve access to credit by SMEs etc.

Research Questions

The following research questions will be relevant to the study

- What is the relationship between commercial loans to small scale enterprises and economic development?
- How can the relationship between the value of loans under agricultural credit guarantee scheme finance and economic development be empirically determined?

Research Hypothesis

H₀: There is no relationship between value of loans under agricultural credit guarantee scheme finance and economic development.

H₀: There is no relationship between commercial loans to small scale enterprises and economic development.

Theoretical and empirical review

The big push theory of economic development advocates that every developing economy requires high minimum amount of investment to overcome the obstacles of development and to launch it in the path of progress; such high minimum investment involves investment in social and economic overhead as health, power supply, communication, roads, education etc. the theory was first credited to professor Paul Rosenstein .N. he assume that the stages of development requires gestation period and every stage requires capital investment by the state.

The loan pricing theory advocates that deposit money banks should consistently and always set moderate interest rate to avert the problem of adverse credit selection among borrowers. This problem existed when banks set high interest rate in order to improve her profit potentials; the high risk borrowers will still be attracted to receiving such loan in order to increase the bad and doubtful debts of banks.

Akingunola (2011) examined the performances of small and medium scale enterprises to economic growth using granger causality and regression analysis, the result of the analysis revealed insignificant relationship between SMEs and economic growth; he therefore recommend that easy access to relative low interest rate will enhance the performance of SMEs towards economic developments.

According to Beck, Demirguc-Kunt, and Levine (2005), the relationship between SMEs, economic growth and poverty alleviation were empirically examined using OLS regression. The data was extracted from the manufacturing labour force for a sample of 45 developed and less developed countries. The result revealed strong and positive relationship between SMEs and economic growth.

Balling, Bernet and Gnan (2009), advocates that SMEs are the centre piece of economic development in Europe. They attributed low limited size, low credit worthiness, low access to financial market as the major hindrances to the performances of SMEs.

In furtherance to ACCA (2012), access to finance by SMEs should be a priority to policy makers in the country. Therefore, recommendations on easy access to finance were made.

Mazanai and Fatoki (2012) observed that low access to finance by SMEs has been the major hindrances to economic growth in South Africa. The result revealed that SMEs are victims of

credit rationing of finance service provider and hence face difficulties in attempt to access credit facilities.

Various studies have been conducted to determine the pattern of relationship between SMEs performances and economic development in Nigeria; Ifionu & Nnamdi (2014) concluded that low access to credit facilities hinders the performances of SMEs, Beck et' al (2005) revealed a strong and positive relationship between small and medium scale enterprises and economic growth. However, this study will employ various sophisticated econometric tools to determine whether the relationship between SMEs and economic development is either demand following (DPPC → SMEs) or supply leading (SMEs → DPPC).

Methodology

The study employed time series data between 1990-2014 and was extracted from world bank and CBN statistical bulletin; various econometric tools were employed such as regression analysis, cholky normality test, heteroskedasticity, Lagrange multiplier serial correlation test, Philip perron test, johansen co-intergration, Walt – coefficient test and granger causality to determine the nature of relationship between SMEs financing and economic development in Nigeria.

Model specification

The model to capture the relevant relationship of our variables is thus specified

$$DPPC_t = \sigma + \beta_1 LSCE_t + \beta_2 ACGSF_t + \theta_t$$

Where, DPPC is domestic product per capital, LSCE is commercial loans to small and medium enterprises, ACGSF is the value of loans under agricultural credit guarantee scheme finance and θ is the stochastic error term.

Apriori Expectation

$$\beta_1 < 0, \beta_2 > 0$$

Data Presentation

The time series data below was extracted from World Bank and Central Bank statistical bulletin 2015; the table represent domestic product per capital (DPPC), commercial loans to small scale enterprises (LSCE) and values of loans under agricultural credit guarantee scheme finance (ACGSF) respectively from the period of 1990 – 2014.

Table 4.1

Years	DPPC	LSCE	ACGSF
1990	23,913.8	13,114.71	103,395.2
1991	24,365.6	21,653.63	80,859.6
1992	25,466.8	20,400	93,391.8
1993	26,441.6	15,462.9	81,273.8
1994	27,755.8	20,552.5	106,901.0
1995	28,762.7	32,374.5	166,645.1
1996	30,047.3	42,302.1	227,664.5
1997	31,553.6	40,844.3	242,028.3
1998	32,929	42,260.7	220,288.5
1999	34,601.7	46,824.0	241,839
2000	36,432.5	44,542.3	361,449
2001	37,241.3	52,428.40	728,545.4
2002	38,113.9	82,368.4	1,050,982.3
2003	39,591.9	90,176.5	1,151,015
2004	41,838.5	54,981.2	2,083,744.7
2005	44,218.3	50,672.6	9,493,854.5
2006	46,351.7	25,713.70	4,262,430.3
2007	47,954.5	41,100.4	4,425,461.5
2008	48,302.3	13,512.2	6,497,958.9
2009	46,909.4	16,366.49	8,328,565.8
2010	48,309.5	12,550.30	7,840,496.6
2011	49,725	15,611.70	10,029,488.8
2012	51,384	13,863.46	9,332,484.2
2013	52,607.9	15,353.04	832,612.8
2014	53,708.6	16,069.27	1,453,360.8

Source: World Bank and CBN statistical bulletin 2015

Empirical Result

There are various ways to examine the pattern of relationship between economic development proxy by domestic product per capital and SME performances in Nigeria, such methods among others include but not limited to OLS regression, Cholesky multivariate normality, heteroskedasticity, LM serial correlation, stationary test, johansen co-integration and Granger causality. We will start by first examining the short long relationship between the variables.

Test for short run relationship

Here we employed ordinary least square regression analysis to determine the short run relationship between the variables; the output result is shown in table 4.2

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACGSF	0.002117	0.000370	5.715540	0.0000
LSCE	0.077351	0.062447	1.238680	0.2291
C	29461.89	2936.207	10.03400	0.0000

$R^2 = 0.573109$, Durbin Watson = 1.064912, F-statistic = 16.43894.

The R^2 of 57.3% explained variations in domestic product per capital are caused by changes in the independent variables; it also shows that the model is a good fit, devoid of autocorrelation and can be relied upon for future forecast. The individual coefficient shows that ACGSF is positive and significance to economic development while LSCE is positive but insignificant to economic development; these implies that SMEs performances under the umbrella of ACGSF has impacted greatly to the development of the economy while LSCE is yet to contribute actively to the development of the economy.

Multivariate Normality Testing

We employed cholesky of covariance (lutkepohi) method in testing for normality among the stochastic error term of the variables; the result is shown below in table 4.3

Null Hypothesis: residuals are multivariate normal

Included observations: 22

Component	Skewness	Chi-sq	df	Prob.
1	-0.353998	0.459487	1	0.4979
2	-0.516887	0.979631	1	0.3223
3	-0.007754	0.000220	1	0.9882
Joint		1.439338	3	0.6963
Component	Kurtosis	Chi-sq	df	Prob.
1	4.082982	1.075112	1	0.2998
2	3.860958	0.679479	1	0.4098
3	3.899437	0.741571	1	0.3892
Joint		2.496162	3	0.4760
Component	Jarque-Bera	df	Prob.	
1	1.534598	2	0.4643	
2	1.659109	2	0.4362	
3	0.741792	2	0.6901	
Joint	3.935500	6	0.6854	

The result follows chi square distribution methods, the joint chi-square of 3.935500, degree of freedom of 6 and the probability figure of 0.6854 respectively revealed that the null hypothesis of “residuals are multivariate normal” can be accepted; we therefore conclude that the residuals of multivariate are normally distributed.

Homoscedasticity Testing (Equal Variance)

Here we employed Breusch – Pagan – Godfrey method to test for the presence of heteroscedasticity in the residuals; the result is given in table 4.4

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.808821	Prob. F(2,21)	0.4588	
Obs*R-squared	1.716509	Prob. Chi-Square(2)	0.4239	
Scaled explained SS	3.835772	Prob. Chi-Square(2)	0.1469	
Included observations: 24				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	78637587	39505638	1.990541	0.0597
ACGSF	-3.619425	4.983359	-0.726302	0.4757
LSCE	-1017.697	840.1966	-1.211260	0.2393

Breusch –Pagan-Godfrey test follows the chi-square distribution; the F-statistic, obs*R-squared, and F. probability shows that the null hypothesis of heteroscedasticity can be rejected; we conclude therefore that the residuals have equal variances (Homoscedasticity).

Serial correlation testing.

Here we employed Breusch –Pagan-Godfrey serial correlation Lagrange Multiplier test to examine the absence of serial correlation; the output is presented in table 4.5

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.811237	Prob. F(5,16)	0.5586	
Obs*R-squared	4.853785	Prob. Chi-Square(5)	0.4340	
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ACGSF	-0.000860	0.000595	-1.446493	0.1673
LSCE	-0.063890	0.075043	-0.851377	0.4071
C	5916.835	4319.840	1.369688	0.1897
RESID(-1)	0.571577	0.392672	1.455608	0.1648
RESID(-2)	0.220364	0.383055	0.575280	0.5731
RESID(-3)	0.302515	0.379743	0.796632	0.4373
RESID(-4)	0.190703	0.389229	0.489950	0.6308
RESID(-5)	0.258588	0.382585	0.675898	0.5088

The result shows that the null hypothesis of serial correlation can be rejected at 5% level of significance; therefore, the residuals are devoid of the presence of serial correlation.

Stationary Test

We employed both Philip Perron and Augmented Dick Fuller statistic to test for the stationarity of the residuals. The output is shown in table 4.6 below

Level of significance @ 5% Dick Fuller Statistics

VARIABLES	ADF	T-STAT	PROB.	ORDER	REMARK
ACGSF	-5.517803	-2.998064	0.0002	1(1)	STATIONARY
DPPC	-3.154880	-3.004861	0.0370	1(1)	STATIONARY
LSCE	-5.015436	-2.998064	0.0006	1(1)	STATIONARY

Level of significance @ 5% Philip Perron Statistics

VARIABLES	PP	T-STAT	PROB.	ORDER	REMARK
ACGSF	-5.6828806	-2.998064	0.0001	1(1)	STATIONARY
DPPC	-3.213913	-3.004861	0.0328	1(1)	STATIONARY
LSCE	-5.014054	-2.998064	0.0006	1(1)	STATIONARY

The Dick Fuller Statistics and Philip Perron statistics in line with the various probability figures indicates that the null hypothesis can be accepted at the different levels of significance.

Testing for co-integration

We employed Johanse co-integration and Engle – Granger co-integration methods to determine the long run relationship between the performance of SMEs and economic development in Nigeria; the result is shown in table 4.7 below

Engle- Granger co-integration

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
ACGSF	-3.966281	0.0669	-25.95218	0.0035
DPPC	-2.196599	0.6532	-14.36293	0.2101
LSCE	-1.973919	0.7497	-8.376984	0.6363

*MacKinnon (1996) p-values.

Engle-Granger co-integration test indicates one con-integration equation at 0.05 level of significance.

Johanse co-integration

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.649818	32.90698	29.79707	0.0212
At most 1	0.310589	9.822353	15.49471	0.2946
At most 2	0.071842	1.640178	3.841466	0.2003

Normalized cointegrating coefficients (standard error in parentheses)

DPPC	ACGSF	LSCE		
1.000000	-0.003077	-0.207241		
	(0.00017)	(0.03070)		

Trace test indicates one co-integration equation at 0.05 level of significance; the normalized coefficient result indicates that beyond the equilibrium rate of economic development, increase in SMEs performances will contribute negatively to economic growth. Therefore, we conclude that there exists equilibrium relationship among our variables in the model.

Hypothesis Testing

Wald – coefficient statistics is used to determine the relationship between SMEs performances and economic development in Nigeria; the result is shown in table 4.8 below: Wald Test.

Test Statistic	Value	df	Probability
t-statistic	-1.932543	21	0.0669
F-statistic	3.734724	(1, 21)	0.0669
Chi-square	3.734724	1	0.0533
Null Hypothesis: C(2)=1			
Null Hypothesis Summary:			
Normalized Restriction (= 0)	Value		Std. Err.
-1 + C(2)	-42.60181		22.04443
Restrictions are linear in coefficients.			

The Wald coefficient test result indicates that the null hypothesis of “no significance relationship between SMEs performances and economic development” can be rejected at 0.05 level of significance. Wald coefficient follows the chi-square distribution and the rule of thumb is given as when the calculated x^2 is greater than tabulated x^2 , the null hypothesis can be rejected ($x^2_c > x^2_t$).

Cause – Effect relationship

Here, we employed Granger causality techniques to determine the pattern of flow between the variables; the result is shown in table 4.9 below

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
ACGSF does not Granger Cause DPPC	23	0.00392	0.9507
DPPC does not Granger Cause ACGSF		4.44163	0.0479
LSCE does not Granger Cause DPPC	23	4.99811	0.0369
DPPC does not Granger Cause LSCE		1.52133	0.2317
LSCE does not Granger Cause ACGSF	24	0.13063	0.7214
ACGSF does not Granger Cause LSCE		4.03805	0.0575

The result revealed a demand following relationship between DPPC and ACGSF (DPPC→ACGSF) while the relationship between LSCE and DPPC indicates supply leading (LSCE → DPPC) at lagged 1 and 0.05 level of significance respectively; therefore, we conclude that there is a symbiotic relationship between SMEs performances and economic development in Nigeria.

Conclusion and Recommendation

The result of small and medium scale enterprises performances in accelerating economic development revealed that SMEs is the pivotal point in any economic; different under developed economy neglect the vital roles in accelerating economic development which has hinder the rapid growth of the economy. We therefore hypothesis that the performance of SMEs has overriding influence in accelerating economic development in Nigeria; the activities of SMEs leads to employment opportunities which in turn promote national product per capital in the country.

The government should always intensify efforts towards reducing the hurdles to accessing financing at low interest rate at various stages of growth in SMEs, investing in social and economic overheads such as good road, power supply, education, irrigations etc will boost the performance of SMEs in Nigeria. The finding also revealed that government should concentrate more effort towards increasing SMEs as the relationship shows supply leading which implies that increase in SMEs performances leads to rapid growth in economic development.

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