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Mr Sani Ibrahim, Saifullahi

Department of Economics and Development Studies, Faculty of Arts,
Management and Social Sciences, Federal University, Dutsinma

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Does Rural Financial Development Spur Economic Growth? Evidence from Nigeria

By

Saifullahi Sani Ibrahim
Economics & Development Studies Department
Faculty of Arts, Managements & Social Sciences
Federal University Dutsin-ma
Katsina State, Nigeria.
E-mail: ssmatazukt@yahoo.com
Tel: 2348035958546

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Abstract

Robust economic development is not possible without financial deepening more especially in rural community where vast majority of the populace of Less Developed Countries (LDCs) resides. This paper analyses the impact of rural financial development on economic growth of Nigeria. The study uses time series data covering 1980 to 2011 periods paving the way for the application of Johansen and Juselius model of cointegration to detect the long-run relation among the variables in question. Accordingly, Dynamic Ordinary Least Square (DOLS) method was applied to unveil relationship between rural financial development and economic growth. The cointegration test result reveals the presence of long run relation between rural financial development and economic growth of Nigeria. Moreover, the DOLS results found a significant positive relationship between rural financial development and the growth of Nigerian economy. It has been confirmed in this study that rural finance serves as an engine of growth in the country. It could therefore be concluded that enhancing productive credit especially in rural areas could free the disadvantaged entrepreneur and thus enable them to contribute immensely toward the growth of Nigerian economy. The study therefore recommends among other things, barriers to the productive credit allocation in rural community should be reduced to the barest minimum.

Keyword: Rural development, credit allocation, financial development,

JEL Classification: E44, O16, O55

I Introduction

Inclusive growth notion compels the economies of third world to initiate and implement variants policies and programmes aimed at transforming the paralysed economic agent into active players towards enhancing the growth of their economy.

Nigerian government is no exception, the government efforts of enhancing inclusive growth is well informed through the campaign of the Central Bank of Nigeria's (CBN) financial inclusion strategies with the twin broad objectives; firstly, to incorporate the vast majority of the unbanked populace more especially in the rural

community into active players of financial system. Secondly, it is also aimed at enhancing availability of credit to rural populace with the paramount emphasis on farmers at affordable cost. Unfortunately, the usufruct of the financial inclusion strategies such as Rural Banking and Agricultural Credit Guarantee Scheme (ACGSF) among others, does not reach the targeted beneficiaries. Some of the problems identified as responsible for poor performance in the development of Africa's rural financial markets include excessive controls, ineffective supervision and dearth of qualified manpower on the one hand (Aliero, 2009). On the other hand, the programmes have at one time or the other been influenced by political considerations (Ibrahim and Aliero, 2012)

Successive governments in Nigeria have introduced several poverty alleviation programmes from Structural Adjustment Programme (SAP) passed through National Economic Empowerment and Development Strategy (NEEDS) down to Transformation Agenda. However, such programmes have not achieved their targeted objectives (Ibrahim and Aliero, 2011). For instance, relevant data from NBS (2011) shows that the national unemployment rate stood at 23.9 percent in 2011 compared to 21.1% in 2010 and 19.7% in 2009 while the rate is higher in the rural area (25.6%) than in the urban area (17.1%). Poverty and unemployment in Nigeria are two sides of the same coin and could be linked to lack of adequate financial access particularly in the rural, among other things (Aliero, Ibrahim and Shuaibu, 2012). It has been argued that financial development has the capacity of reducing unemployment. It is along this line Dromel, Kolakez and Lehmann (2010) contend that development of

private credit (which is a measure of financial development) would significantly lower unemployment persistence. This led Aliero and Ibrahim (2012) to predictably believe that enhancing access to formal financial services especially credit to the rural populace has not only have the capacity of reducing unemployment but also is a mean of reducing poverty in developing countries.

The recent breakthrough in the development finance emphasises that economic development of Less Developed Countries (LDCs) could be best achieved through bottom-top intervention principally due to two reasons. Firstly, the vast majority of the populace of LDCs are dwelling in the rural areas while very small fractions are residing in the cities swimming within overwhelming quantity of national cake. Secondly, history shows that before LDCs opted for urbanisation programmes (top-bottom intervention), development is steadily trickling-down through the entire country paving the way for economic prosperity in simpler format. To my knowledge there is no any study ever conducted using time series techniques of data analysis on the relationship between rural financial sector development and economic growth. This study intends to fill-in the lacuna by unveiling the role of rural financial development on the growth of Nigerian economy. In achieving this objective the paper is divided into five sections including this introduction. Section two presents the empirical literature. Section three contains the methodology of the study. Section four is the empirical result while the last section concludes the paper.

II Empirical Literature

Unlike the empirical study on the relationship between financial development indicators (using numerous proxies ranging from broad money supply, credit to the private sector to market capitalisation) and economic growth, there is dearth of literature on the effect of rural financial sector development on economic growth for both developed and developing economies. The review in this study encapsulates the orthodox measures of financial sector development along which Patrick (1966) made pioneering research to examine the causal relation between financial development and economic growth which reveals a unidirectional causality between financial development and economic growth, the result portrays a supply-leading association but at the later phase the direction of causality is inverted to demand-following relationship.

Economic system upon which country operate do influences the effect of credit market development on economic growth. Caporale, Rault, Sova and Sova, (2009) investigate the relationship between financial development and economic growth in transition economy by estimating a dynamic panel model over the period 1994 -2007. The study found that the contribution financial sector to economic growth is limited owing to a lack of financial depth. Moreover, the Granger causality test indicates that causality runs from financial development to economic growth, but not in the opposite direction. The supply leading and demand following hypotheses was examined by Muhammad and Umer (2010), using annual data between 1973 - 2008 for Pakistan employing bound testing approach for cointegration The result favours that the demand-following hypothesis for Pakistan.

Testing the competing finance-growth nexus hypothesis using Granger causality tests in a Vector AutoRegression (VAR) framework over the period 1960 - 2009 for Nigeria was conducted by Odeniran and Udejaja (2010). Four variables, namely; ratios of broad money stock to Gross Domestic Product (GDP), growth in net domestic credit to GDP, growth in private sector credit to GDP and growth in banks deposit liability to GDP were used to proxy financial sector development. The empirical results suggest bidirectional causality between the proxies of financial development and economic growth variable. The variance decomposition shows that the share of deposit liability in the total variations of net domestic credit is negligible, indicating that shock to deposit does not significantly affect net domestic credit.

In related development, Zaman, Izhar, Khan, and Ahmad, (2012) examines the impact of financial indicators on human development in Pakistan by using annual data from 1975 - 2010. The data was analysed using cointegration test, Granger causality test and variance decomposition. Results indicated that causality runs from financial indicators to human capital except credit to private sector but not vice versa. Financial indicators are closely associated with economic growth and human development in Pakistan. However, variance decomposition analysis shows that among all the financial indicators, broad money supply (M2) has exerted the largest contribution to changes in human capital.

Positive relationship between finance and growth do not necessarily mean that financial development reduces poverty (Beck, Demirgüç-Kunt, Laeven and Makisimovic, 2006). Accordingly, Aliero and Ibrahim (2012) investigate the impact of financial services on poverty reduction in rural areas of Katsina state. A cross sectional primary data was analysed using multinomial logit model and the result reveals a significant negative relationship between financial services and poverty level. The implication of this finding is that financial development has the first order role to play in generating employment thereby paving way for the reduction of poverty in LDCs. Khadraoui and Smida (2012) examines the relationship between financial development and economic growth using panel data of 70 countries over the period 1970-2009 analysed via both fixed effect, Generalized Method of Moment(GMM) -Difference and GMM-System estimators for dynamic panel data. While the finding of a positive correlation between indicators of financial development and economic growth cannot settle this debate, advances in computational capacity and availability of large cross-country data sets with relatively large time dimensions have enabled researchers to rigorously explore the relationship between financial development and economic growth. Empirical results reinforce the idea that financial development promotes economic growth in all econometric approaches used

III Methodology

Time series secondary data for the relevant variables were sourced from CBN statistical bulletin of various issues, National Bureau of Statistics, International Financial Statistics (IFS) and World Development Indicators (WDI). The data covers

1980-2011 period and variables were expressed in their natural logarithm. Logarithmic transformations of variables are very popular in econometrics for a number of reasons; firstly many economic time series data exhibit a strong trend, secondly, taking the natural logarithm of a series effectively linearizes the exponential trend (if any) in the time series data since the log function is the inverse of an exponential function (Asteriou and Price, 2007). Thirdly, advantage is that it allows the regression coefficients to be interpreted as elasticity. In a study dealing with time series data, opting for log of the variables may prevent cumbersomeness in the modelling and inference (Rahaman and Salahuddin, 2010).

Provided all series are $I(1)$, then Dynamic Ordinary Least Square (DOLS) is robust to estimate the single cointegrating vector that characterizes the long-run relationship among the variables (Camacho-Gutierrez, 2010). The Stoch-Watson DOLS model to be effective in estimating long-run parameters, the analysis must be in conformity with the existence a cointegration relation among sets of $I(1)$ variables. Thus, it is pertinent to establish the presence of the unit root and then test the cointegrating relationship. Fortunately, there are variant ways of checking stationarity of series however Augmented Dickey Fuller (ADF) (1981) is the most widely applied econometric method for testing unit root in order to avoid problems of the spurious regression results. A series which is stationary after being differenced once is said to be integrated of order 1 and was denoted by $I(1)$ (Dickey and Fuller, 1979). In general a series, that is stationary after being differenced n times is integrated of order n , denoted by $I(n)$ while a series that appears stationary without differencing, is said

to be I (0) (Shabbir, 2012). ADF (1981) unit root test for stationarity test is based on the following regression model:

$$\Delta Y_t = \beta_0 + \beta_1 T + aY_{t-1} + \sum_{j=1}^k d_j \Delta Y_{t-j} + \varepsilon_t \dots \dots \dots (1)$$

Where Y_t , T and Δ respectively confers a time series, a linear time trend and first difference operator, β_0 is a constant, k is respecting the optimum number of lags on the dependent variable, and ε_t is random error term. The null hypothesis for testing non-stationarity is $H_0: \alpha = 0$ meaning economic series are non-stationary. If the hypothesis of non-stationary is established for the underlying variables, it permits the assessments for co-integration relations.

In econometrics two or more variables are said to be co-integrated if they share common trends i.e. they have long-run equilibrium relationships between them (Aqeel and Butt, 2001; Shahbaz, 2009). There are various methods of detecting these long-run relations between variables. Engle and Granger's (1987) approach for co-integration is simple and popular for its certain agreeable attributes. However, it did not permit the testing of hypotheses on the cointegrating relationships themselves. Contrarily, the Johansen setup does permit the testing of hypotheses about the equilibrium relationships between the variables all provided the variables have same order of integration (Brooks, 2008). Johansen and Juselius (henceforth JJ) (1990) cointegration technique is based on the Vector Autoregressive (VAR) models which involved two test statistics for the number of cointegrating vectors, namely - the trace (λ_{trace}) and the maximum value statistics (λ_{max}). In the trace test, the null hypothesis is that the number of distinct cointegrating vectors is less than or equal to r , where $r = 0$

to 2. In each case the null hypothesis is tested against the general alternatives. The maximum eigenvalue test is similar, except that the alternative hypothesis is explicit. The null hypothesis is that the number of cointegrating vectors is r against the alternative of $r+1$ cointegrating vectors. JJ's method rests the restrictions imposed by cointegration on the unrestricted VAR involving the series. Consider a VAR of order p below:

$$Y_t = A_1 Y_{t-1} + \dots + A_p Y_{t-p} + Bx_t + \varepsilon_t \dots \dots (2)$$

Where Y_t is a K -vector of non-stationary $I(1)$ variables, X_t is a d -vector of deterministic variables, and ε_t is the vector of innovations. Having all series $I(1)$, as well as establishing at least one cointegration equation satisfies the preconditions for the application of the Stock-Watson (1993) DOLS regression. Thus, the model is specified below:

$$\ln RGDP_t = \beta_0 + \vec{\beta} x + \sum_{j=-g}^p \vec{d}_j \Delta x_{t-j} + u_t \dots \dots (3)$$

Where $\ln RGDP$ is the natural log of Real Gross Domestic Product (RGDP), $\vec{\beta}$ is the cointegrating vector, X is vector of log of logRufindev (Rural Financial Development), logFDI (Foreign Direct Investment) and logInflation as explanatory variables. The emphases of the previous studies was measuring financial development using either broad money supply as a ratio to economic growth (M2) or Credit to the Private Sector ratio to economic growth (CPS) irrespective of the extend of degree of development of such economies. Failure to take the degree of economic development of a country into cognisance may led to the selection of bogus measure of financial development and so studies are bound to produces mixed results. It is normal for

financial sector development to support economic growth for the advanced economies with reasonable sophisticated banking sector. On the other hand, in LDCs where not only bank-run occurring only by the month ending but also Mega-banks were not adequate to cater for the financial needs of the populace. In connections to that, over two-third of the populace are dwelling in rural community with dearth financial institution, in such economies the link between financial sector development and economic growth might be very weak. Accordingly, it could be unquestionably argued that the stock of formal credit in the rural can be used as a proxy to financial development in LDCs. For this study to assess the robustness of rural financial development over conventional measures of financial development, a model is set below which lumped the two competing measures together:

$$\ln RGDP_t = \alpha.x_t + \Phi.\ln findev + \mu_t, \dots \dots \dots (4)$$

From the model it shows that *findev* is the vector of financial indicators (M2 and Credit to the Private Sector were added with Rural Financial Development) and *X* is the vector of control variable. Lag and lead terms included in DOLS regression have the purpose of making its error term independent of all past innovations in stochastic regression.

IV Empirical Results

To assess the suitability of the data for cointegration time series econometric for this study, so as to avoid spurious results. The degree of integration of each series involved is determined using the ADF unit root test based on equation 1 and the result is presented in Table 1 below. The lag parameter in the ADF test is selected by Akaike Information Criterion (AIC) to eliminate the serial correlation in residual.

Table1: Result of unit root tests

Variable	Augmented Dickey-Fuller (ADF) Test	
	Levels	First Difference
LORGDP	-3.51006**	-5.05106***
LOGRUFINDEV	-0.91394	-7.36635***
LOGFDI	-3.06194**	-4.41814***
LOGINFLATION	-3.42582**	-5.73094***
LOGM2	-1.47492	-6.035033***
LOGCPS	-1.797105	-4.58896***

*** & ** indicate significance at 1% and 5% level respectively

It could be discerned from the Table 1 above that all the series are not stationary at their level form at 1% level of significance and so unit root tests null hypotheses are not rejected. However, the test rejects the null hypotheses of non stationary for the all series when used in the first differences. This shows that all series are stationary in the first differences and integrated of order one [I(1)]. Therefore, the series satisfies necessary conditions for the application of JJ cointegration technique and paving the way for the credence of DOLS for the study. Accordingly, we used the difference values of the variable to estimate the cointegration regression based on equation 2 and the result of the cointegration is presented in Table 2.

Table 2: Johansen Co-integration Results

Hypotheses	λ_{\max}	5% critical value	Prob. **	Eigenvalue	λ_{trace}	5% critical value	Prob. **
None *	61.88889	40.07757	0.0001	0.939983	146.0501	95.75366	0
At most 1 *	42.03922	33.87687	0.0043	0.852049	84.16119	69.81889	0.0023
At most 2	21.87382	27.58434	0.2269	0.630004	42.12197	47.85613	0.1553
At most 3	10.2003	21.13162	0.7256	0.371016	20.24816	29.79707	0.4062
At most 4	7.397105	14.2646	0.4433	0.285543	10.04786	15.49471	0.2771
At most 5	2.650756	3.841466	0.1035	0.113513	2.650756	3.841466	0.1035

λ_{\max} and λ_{trace} tests indicates 2 cointegrating eqn(s) at the 0.05 level

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

The results of the JJ maximum likelihood tests for λ_{\max} (Maximum statistics) and the λ_{trace} (Trace statistics) was presented in Table 2 above. From results it shows that both the λ_{\max} and λ_{trace} eigenvalue tests result reveals the existence of two unique cointegrating vectors among the test variables, this translate that the variable shares steady long-run equilibrium. The presence of cointegration relationships among the variables permits the running of DOLS for equation 3 and 4 consecutively.

Table 3: DOLS

Variables	Coefficients			
	Equation 3	Prob	Equation 4	Prob.
LOGRUFINDEV	0.928301	0.01***	2.904561	0.0062***
LOGFDI	-3.62038	0.0181***	-8.95696	0.0035***
LOGINFLATION	1.201579	0.1047	2.350427	0.0081***
LOGM2			-3.94478	0.25
LOGCPS			-0.86269	0.7116
R ²	0.730626		0.359986	
Adj R ²	0.461253		0.997256	
Durbin-Watson stat	1.534512		0.591998	
Fixed leads and lags specification (lead=1, lag=1)				
*** indicates significant at 1% level				

The Stock-Watson DOLS estimate for equation 3 and 4 appeared in Table 3 and it could be discern from the Table that the coefficient of rural financial development is statistically significant at 1% probability level and positively related with economic growth in both equations. This finding indicates that stock of formal credit in rural areas of Nigeria has the capacity to spur the growth of the country's economy. Moreover, the coefficient of FDI and inflation were not statistically significant and

possess negative (which dovetails into the findings of Aliero *et al*, 2012) and positive (which disputed the findings Aliero *et al*, 2012 whose reported insignificant negative relation between inflation and economic growth) signs respectively. Introducing M2 and CPS in equation 4 does not change the signs and the level of significance for all the variables but only inflation metamorphosed into significant. The finding in equations 4 shows that M2 and CPS are negative and statistically insignificant. This finding concur the findings of Shen and Lee (2006) which provide evidence that banking development has unfavourable effect on economic growth as well as that Adusei (2012) whom documented an inverse relationship between CPS and economic growth of South Africa for 1965-2010 period.

V Conclusion

This study examines the relationship between rural financial sector developments and economic growth. The study uses time series data covering 1980 - 2011 periods which lend credence for the application of Johansen and Juselius model of cointegration to detect the long-run relation among the variables in question following the examining the series via ADF test of unit root. DOLS method was applied to unveil relationship between rural financial development and economic growth. The cointegration test result reveals the presence of long-run relation between rural financial development and economic growth of Nigeria. Moreover, the DOLS results found that rural financial development spurs the growth of Nigerian economy. It has been confirmed in this study that rural finance serves as an engine of growth in the country. The paper therefore concludes that enhancing productive credit in rural areas of Nigeria could free the disadvantaged entrepreneur and thus enable them to

contribute immensely toward the growth of Nigerian economy. The study therefore recommends that barriers to the productive credit allocation in rural community of Nigeria should be reduced to the barest minimum. More so, alternative financial product that could give choice to the diversity of the rural dwellers should be established. The licence and the subsequent establishment of Islamic banks in Nigeria by CBN is a policy in right direction. However, such initiative needs to be extended to the rural banks branches and microfinance for overall performance.

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