

Estimators and Economic Growth Nexus in Financial Deepening: Perspectives from a Small Open Economy

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Received July 09, 2020; Accepted September 10, 2020

ISSN: 1735-188X

DOI: 10.14704/WEB/V17I2/WEB17045

Abstract

The study covered four (4) selected financial deepening estimators as it affects the economy as a whole. To carry out the study, data were sourced through Statistical Bulletin 2018 and World Bank Development Indicators (2018) from 2003 to 2018. Group of low-income countries have continued to find the need for adequate financial deepening in a bid to enhance their economic growth. Though they are operating a modern type of economy, yet they are mostly mono-economy, relying more on either oil or agricultural products and heavily depending on oil. Hence, Nigeria is a small open economy. In analyzing the data obtained, linear regression analysis was used through SPSS 22.0. The study formulated four (4) hypotheses and the findings showed that the ratio of money supply, credit ratio in private sector, savings ratio and investment have impact significantly on Gross Domestic Product in Nigeria because the p-value t-statistics are 0.0481, 0.027, 0.046 and 0.000 respectively are all less than 5% significant level. The study, therefore, identified the nexus by concluding that financial deepening has significant impact on Nigeria's economic growth. This study recommends that government policies should be geared towards increased money supply and well-organized capital market that can improve general economic efficacy.

Keywords

Financial Deepening, Estimators, Economic Growth, Estimators, Small Open Economy.

Introduction

Financial deepening estimators are those economic provisions which encourage competitive financial market values and non-financial sectors; hence, in recent times, the nexus amid estimators and economic growth in financial deepening has entertained substantial awareness in literature, (Chamalwa and Bakari 2016). Identification of Financial deepening as one of those strategies whose application can hasten the pace of growth. Be that as it may, the effect of this strategy needs to be determined and examined from time to time especially for developing economies especially in SSA. According to Nzotta and Okereke (2014), financial deepening refers to the capability of financial institutions to successfully muster savings purely for investment. Financial deepening robustly creates the pool of savings and unused monies and assigns them to investors, households and government agencies for purpose of investments to make profits which is the base for growth. Group of low-income countries have continued to find the need for adequate financial deepening in a bid to enhance their economic growth. Most of these less developed countries including Nigeria are located in sub-Saharan African (SSA) region. Though they are operating the modern type of economy, yet they are mostly mono-economy, relying more on either oil or agricultural products and heavily depending on exports to feed her economy. Hence, Nigeria is a small open economy.

The Nigeria financial system always embarks on financial restructuring, (Okoli, 2010), (Moore, 2013). CBN do make frantic efforts in ensuring that the financial sector in Nigeria sustains a substantial deepness to stay liquid for global financial market competition. The various restructuring have developed in reaction to many issues presented by improvements in the economy such as general emergency, hi-tech advancement and financial predicament. The variety of restructuring always act upbeat to reinforce the economy, hence, the necessity to deepen the financial sector for growth and economic integration in line with world best practices. Financial deepening estimators for this study are: money supply ratio (M_2), the private sector credit ratio (PSC), the ratio of total savings and investment.

Objective of the Study

This research aims at examining financial deepening estimators and economic growth nexus in small open economy using Nigeria as its focal point. The specific objectives are to:

- 1) Determine the effect of money supply ratio (M_2) to Nigeria economic growth.
- 2) Examine the relationship between private sector credit ratios to Nigeria economic growth.

- 3) Examine the relationship between total savings ratios to Nigeria economic growth.
- 4) Determine the effect of investment to Nigeria economic growth.

Financial Deepening and Measurement

Financial deepening is the capability of institutions of financial status to successfully muster reserves for investment. The growth of domestic savings provides the real structure for the creation of diversified financial claim, (Markowitz, 2015). Again, it assumes dynamic functions of financial institutions which involve the supply of (financial) instruments and financial services. Measuring financial deepening is viewed from aggregating M_1 , M_2 and M_3 to real GDP in relation monetarily and financially. Financial deepening can, therefore, be defined as the ratio of money supply to RGDP; a function of credit to private sector as a ratio of RGDP, financial savings to RGDP, inflation rate, real lending rates, deposit money bank assets to RGDP, currency outside banks to money supply. Scholarships which linked financial deepening to financial development selected some measurable proxies coming up with dissimilar findings (King and Levine, 2013). Consequently, studies applying dissimilar estimators of monetary expansion will conclude that the development of bank credit is impactful economically in addition to strong connect between growth and financial sector.

Financial Deepening and Growth

Economic growth means the increase in real GDP (a boost in an economy's tangible and intangible products) or the economy material expansion of the nation (Antwi, Mills and Zhao, 2013). In the view of Ndebbio (2014), financial deepening means an increase in the supply of financial assets. Thus, the summation of all the proxies for financial assets equals the estimated volume of financial deepening. Hence, the widest arrays of broad money, share values, money market finance, etc, are all measures of financial deepening. In this study, Ndebbio (2014) noted that industrial nations are known by soaring financial deepening leading to the growth and development of the entire economy.

According to Fisher (2013), financial deepening refers to the greater financial resource mobilization in the formal financial sector and the simplicity with which banks' illiquidity is eased out for project financing.

Theoretical Framework

We have always seen money supply as credit loan to investors. Central Banks of most industrialized nations, especially that of the United States of America (USA) are in tune

with this understanding; hence, it was christened “Central Bank Approach”. The USA prefers this view point in their definition of money which comprises short-term treasury bills (securities), M_3 plus non-bank public holding of U.S. savings bonds, commercial paper, banker’s acceptance and assets of net money market mutual holdings.

Greenwald and Stiglitz (2017) provides a simple model describing bank behaviour, showing how lending is related not just to the treasury bill rate, but to their net worth, their risk perception, their existing portfolio of existing assets, and the constraints provided by regulators. They describe too how banks adjust not only their lending rate, but the other terms of the contract in response to changes in these variables. Thus, credit (money) supply is determined not just by conventional monetary instruments (open market operations, reserve requirements), but also by macro and micro prudential requirements indeed, the two aspects of central bank policy (regulatory and macro-control cannot and should not be separated).

When examining savings and retirement behaviour of older persons, we readily use life-cycle hypothesis. It started by observing that consumption and income are time and again disproportionate at many occasions in the life cycle. At youthful age, one is likely to have needs that go beyond his income. These needs are often from accommodation and education, hence, the little savings. Earnings usually rise at middle age, amassed debts are settled and savings are encouraged. At retirement, earnings falls while the individual consume out of previously accumulated savings.

Collection divergence concept according to (Calvet 2014), assimilates return maximization and risk reduction motives and hypothesises that when a firm is in position to choose among alternative investment portfolios, rates of return and opportunities to reduce risk through diversification becomes the determining factors. Reduction of risk by firm can be by undertaking investment in projects in more than one country since the returns on activities in different countries are likely to be less than perfectly co-related. As identified by Chow (2013), a standard principle about portfolio choice usually is futuristic towards returns in discounted values.

Empirical Review

Rioja and Valev (2014), Benhabib and Spiegel (2013), Levine, Loayza and Beck (2014) all pointed to similar conclusion upholding that monetary growth has an affirmative association with economic growth. Though, these extensive relative evaluation done at the summative level do not explain the intricacies of financial milieu and précised

institutional perspectives of each economy. Darrat (2017), used the multivariate Granger causality tests within an error-correction framework for Saudi Arabia, Turkey, and the United Arab Emirates. The study was set to categorize some alternative theoretical hypotheses by singling out financial deepening and economic growth causal link. The finding generally supports financial deepening as an indispensable causal variable for economic growth. It should be noted that the potency results across countries and across the measures employed differed. Causal associations were majorly long-term in character; therefore, he recommended unrelenting and sustainable government policies at advancing economic development and financial deepening.

Nang (2016) employed the neoclassical augmented growth structure aimed at the provision of assessment on sectorial impact financially on economic development and growth as well as the ARDL-Auto regressive Distributed model limits procedure to examine the degree at which financial development contributes to output growth from 1960 to 2015. The researcher found that aggregate output and its determination are co-integrated in the long run, suggesting that financial sector expansion and economic growth are highly correlated, whereas the public capital accumulation ordinary checks long run of an expanded output. A further long run investigation, empirically with Ghana's financial deepening revealed a controlled variable with an indicator at a time (Moore, 2013). The ratios of private sector GDP to credit, money supply ratio to GDP, domestic credit ratio to GDP as well as total liabilities bank deposits to GDP were the financial deepening variables used. Similarly, variables like inflation rate, real gross government expenditure with trade openness. The ordinary least square method was used by the study revealed that all financial deepening proxies in the study on the growth of Ghana, had a positive effect but money supply to GDP ratios.

Model Specification

GDP is the explained variable (y) while ratios of money supply, ratios of private sector credit, ratio of savings and investment are the explanatory variables $X_1 - X_4$

$$Y = F(X_1, X_2, X_3, \dots, X_n)$$

$$RGDP = F(RMS, RPSC, RSVS, INV)$$

Econometrically, the model is specified as follows:

$$y = a_0 + a_1RMSP + a_2RPSC + a_3RSs + a_4INV + e$$

Where:

GDP = Real Gross Domestic Product; RMS = Ratios of Money Supply; RPSC = Ratio of Private Sector Credit; RSs = Ratio of Savings; INV = Investment; e = Error term

Apriori Expectation

$a_1, a_2, a_3, a_4 > 0$

Data Presentation

Table 1 Financial Deepening and RGDP Data

YEAR	Explained Variable RGDP ₦' Billion	Explanatory Variables			
		RMSP %	RPSC %	RSVS ₦' Billion	INVUS\$
2003	23,688.28	13.1	7.9	5.74	1,140,138,042
2004	25,267.54	18.4	11.1	7.08	1,190,632,489
2005	28,957.71	19.3	11.9	7.60	1,874,042,655
2006	31,709.45	19.7	12.1	7.61	2,005,390,923
2007	35,020.55	18.7	12.5	6.99	2,874,033,035
2008	37,474.95	18.1	12.4	7.01	3,782,533,943
2009	39,995.50	20.5	12.3	9.37	4,854,416,867
2010	42,922.41	24.8	17.8	13.04	6,034,971,231
2011	46,012.52	33.0	28.6	16.95	8,196,606,673
2012	49,856.10	38.0	36.9	23.25	8,554,840,769
2013	54,612.26	20.2	18.6	10.90	6,048,560,266
2014	57,511.04	19.3	16.9	10.37	5,841,952,775
2015	59,929.89	19.0	16.4	11.24	7,101,031,884
2016	63,218.72	18.9	19.7	10.81	7,671,492,330
2017	67,152.79	19.9	19.2	13.49	7,480,776,221
2018	69,023.93	20.1	19.8	12.13	7,776,134,276

Source: CBN Statistical Bulletin 2018 and World Bank Development Indicator (2018).

Discussion of Data

The explained variable economic growth is proxied by RGDP while the explanatory variables include money supply ratio (M_2), ratios of the sector (private) credit, ratios of savings, and investment from 2003 to 2018. There have been notable increases so far in the variables due to factors that may have affected them in one way or the other. Between 2003 and 2006, there was a remarkably sustained increase in both the explained and explanatory variables, (except for the ratios of money supply and ratio of savings) which could be as a result of adjustments in government policies towards increased money supply and well-organized capital market to promote general economic value. In the year 2007 and 2008, the economic indices decreased except for the RGDP from the figures presented, but that does not imply that there are no opportunities for economic improvement especially if government decides to increase money supply for investment purposes.

In year 2009 to 2012, there was also an increase in the worth of the variables, which could be as a result of sustenance of macroeconomic stability and enhancement of governance in the financial system. RGDP continued to increase which shows that the governmental policies were working efficiently. Money supply also increased but met a turnaround in year 2013 with about 47% and continued fluctuating before it increased by 5% in 2017. For private sector variable, there was increase from 2003 to 2007, then followed by a reduction between 2008 and 2009 only to increase from 2010 to 2012 but by 2013, it fell by about 50% and continued to fluctuate till 2018. Savings also recorded an increase from year 2003 to 2012, and then began to reduce and fluctuate in consistent years, same as investment variable.

Test of Hypothesis

Decision Rule: Accept the Null hypothesis (H_0) if the t-statistics of the P-value is $> P$ -value tabulated at 0.05 level of significant which is $> 95\%$ degree of confidence, otherwise reject H_0 .

H_{01} : There is no significant difference between ratios of money supply and real grossdomestic product in Nigeria

Table 2a

Model Summary ^b					
Prototypical	R	R Square	Square Adjusted R	Std. Error of the Estimate	Durbin-Watson
1	.890 ^a	.740	.725	15186.45563	2.014
a. Predictors: (Constant), RMS					
Dependent Variable: RGDP					
Source: SPSS Output 22.0					

Table 2b

Coefficients ^a						
Prototypical		Coefficients Not standardised		Coefficients standardised	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	35724.126	14379.983		6.153	.0001
	RATIO OF MONEY SUPPLY	470.907	650.017	.490	8.013	.0481
a. Dependent Variable: RGDP						
Source: SPSS Output 22.0						

Table 2a shows the summary table of RMS and RGDP in Nigeria. The table revealed that the overall coefficient of correlation (R) is 0.890 which indicates an affirmative association between RMS and RGDP in Nigeria. The constant of determination (R^2) is

0.740 that processes the variation of proportion in RGDP that can be explained by RMS, which shows that the model is accurate and fit for prediction and that a 1% increase in RMS will increase RGDP by about 74%. The $AdjR^2$ is .725 applies that about 73% of the dependent variable is accounted for by RMS and the remaining 27% is not accounted for due to some financial errors. The DW is 2.014 showed that there is no serial auto correlation between RMS and RGDP; thus, the result is good enough for prediction. Table 2b is the coefficient table of RMS and RGDP in Nigeria; it shows the level of significance for RMS. The t-statistics of the p-value for RMS is 0.0481 which is less than 5% level of significance and greater than 95% confidence level.

H₀₂: There is no significant difference between ratios of private sector credit and real gross domestic product in Nigeria

Table 3a

Model Summary ^b					
Prototypical	R	R Square	Square Adjusted R	Estimate of the Std. Error	Durbin-Watson
1	.761 ^a	.636	.554	12903.84352	2.081
a. Predictors: (Constant), RPSC					
b. Dependent Variable: RGDP					

Source: SPSS Output 22.0

Table 3b

Coefficients ^a						
Prototypical		Coefficients not Standardized		Coefficients Standardized	T	Significance.
		B	Std. Error	Beta		
1	(Constant)	26259.738	8522.785		3.459	.002
	RATIO OF PRIVATE SECTOR CREDIT	1125.849	455.170	.661	5.023	.0027
a. Dependent Variable: RGDP						

Source: SPSS Output 22.0

Table 3a shows the summary table of RPSC and RGDP in Nigeria. The table revealed that the overall coefficient of correlation (R) is 0.761 which indicates an affirmative association between RPSC and RGDP in Nigeria. The coefficient of determination (R^2) is 0.636 which measures the proportion of variation in RGDP that can be explained by RPSC, and shows that the model is accurate and fit for prediction and that a 1% increase in RPSC credit will increase RGDP by about 64%. The $AdjR^2$ is 0.554 means that about 55% of the dependent variable is accounted for by RPSC and the remaining 45% could not be accounted for due to some financial errors. The DW is 2.081 shows that there is no serial auto correlation between RPSC and RGDP. Table 3b is the Coefficient table of

RPSC and RGDP in Nigeria, and it shows the level of significance for RPSC. The p-value of the t-statistics for RPSC is 0.027 and is less than 5% level of significance and greater than 95% confidence level.

H₀₃: There is no significant difference between ratios of savings and real gross domestic product in Nigeria

Table 4a

Model Summary ^b					
Prototypical	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.686 ^a	.607	.543	13348.87652	2.032
a. Predictors: (Constant), RATIO OF SAVINGS					
Dependent Variable: GROSS DOMESTIC PRODUCT					
Source: SPSS Output 22.0					

Table 4b

Coefficients ^a						
Prototypical		Coefficients Not Standardised		Coefficients Standardised	t	Sig.
		B	Std. Error			
1	(Constant)	27164.519	9126.115		4.359	.000
	RATIO OF SAVINGS	1705.358	778.468	.505	6.053	.000
a. Dependent Variable: GROSS DOMESTIC PRODUCT						

Source: SPSS Output 22.0

Table 4a shows the summary table of RSs and RGDP in Nigeria. The table revealed that the overall coefficient of correlation (R) is 0.686 which indicates an affirmative association between RSs and RGDP in Nigeria. The constant of determination (R²) is 0.607 processes the variation of proportion in RGDP that can be explained by RSs, and shows that the model is accurate and fit for prediction and that a 1% increase in ratio of savings will increase RGDP by about 61%. The AdjR² is 0.543 means that about 54% of the accounted variable dependent for by RSVS and the remaining 46% is not accounted for due to some financial errors. The DW is 2.032 shows that there is no serial auto correlation between RSs and RGDP. Table 4b is the Coefficient table of RSs and RGDP in Nigeria; it shows the level of significance for RSs. The p-value of the t-statistics for RSVS is 0.000 which is less than 5% level of significance and greater than 95% confidence level.

H₀₄: There is no significant difference between ratio of investment and real gross domestic product in Nigeria

Table 5a

Model Summary ^b					
Prototypical	R	R Square	Square Adjusted R	Estimate of the Std. Error e	Durbin-Watson
1	.883 ^a	.780	.765	7249.32389	2.965
a. Predictors: (Constant), INV					
Dependent Variable: RGDP					
Source: SPSS Output 22.0					

Table 5b

Coefficients ^a					
Prototypical	Coefficient not standardized		Coefficients Standardized	t	Significance
	B	Std. Error	Beta		
1 (Constant)	21108.083	3938.757		5.359	.000
INVESTMENT	4.555E-6	.000	.883	7.053	.000
a. Dependent Variable: RGDP					
Source: SPSS Output 22.0					

Table 5a shows the summary table of INV and RGDP in Nigeria. The table revealed that the overall coefficient of correlation (R) is 0.883 and shows an affirmative association between INV and GDP in Nigeria. The constant of determination (R^2) is 0.780 that processes variation proportion in RGDP that can be explained by INV, reveals accurate model and fit for prediction and that a 1% increase in INV will increase RGDP by about 78%. The $AdjR^2$ stood at 0.765 that implies a 77% accountability reliant variable by INV and the remaining 23% is not accounted for due to some financial errors. The DW is 2.965 is 2.0 and shows that there is no serial auto correlation between INV and RGDP. Table 5b is the Coefficient table of INV and RGDP in Nigeria and it shows the level of significance for INV. The t-statistics in terms of p-value of the for INV stood at 0.000 and is less than 5% level of significance and greater than 95% confidence level.

Summary of Findings

In hypothesis one the result of RMS revealed that the coefficient relates meaningfully to the explained factor (GDP) because significantly p-value level of 0.0481 is smaller than 0.05 significance level and greater than 95% confidence level. We, therefore, accept the alternate hypothesis that RMS is statistically significant to RGDP in Nigeria.

In hypothesis two the result of RPSC revealed that the coefficient is significantly related to the explained variable (GDP) because calculated t-statistics of the p-value for RPSC berthed at 0.027 and is less than 5% level of significance and greater than 95% confidence

level. We, therefore, accept the alternate hypothesis that RPSC is statistically significant to RGDP in Nigeria.

In hypothesis three the result of RSs revealed that the coefficient is significantly related to the explained variable (GDP) because calculated statistics of the p-value for RSs berthed at 0.000 and is less than 5% level of significance and greater than 95% confidence level. We, therefore, accept the alternate hypothesis that RSs is statistically significant RGDP in Nigeria.

In hypothesis four the result of INV revealed that the coefficient is significantly related to the explained variable (GDP) because p-value of the t-statistics for INV is 0.000 and is less than 5% level of significance and greater than 95% confidence level. We, therefore, accept the alternate hypothesis that INV is statistically significant to RGDP in Nigeria.

Conclusion

Financial deepening estimators are those economic provisions which encourage competitive financial market values and non-financial sectors; hence, in recent times, the nexus among monetary extending estimators and growth of the economic entertained substantial awareness in works This study, therefore, settles on the premise that monetary excavating holds considerable affirmative association with economic growth as the p-value t-statistics of all the four explanatory variables (ratios of money supply, ratios of private sector credit, ratios of savings and investment) were all significant.

Recommendations

We recommend as follows:

- 1) Policies of government must be tailored to boost supply of money and well-organized market (capital) will enhance confidence for investors, grow the financial systems cooperate governance that will trigger at the long run improved economic growth.
- 2) Macro-economic stability requires immediate sustainability in Nigeria, issues of nonperforming credits will reduce so that real sector will have more funds to utilize. This again will boost financial system which will in the long run improve economic growth.
- 3) In spite of the considerable affirmative association of GDP savings ratio, some work and adjustment has to be made. Savings stimulation policy has to be made that will grow funds before the commercial banks to inject to developers who need them. Reasonable lending rates has to be put in place in order not to deter fund seekers.
- 4) Reduction of interest rates by Central Bank of Nigeria will give a double advantage to both depositors and boost output financially of investments.

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