A Study of Financial Deepening and Capital Accumulation in Nigeria

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**Abstract**  
  
Low capital accumulation or savings due to financial shallowness instead of financial deepening is a worrisome situation that needs to be addressed. Data, which are relevant to variables of study like financial deepening and total savings (which was used to capture capital accumulation), and spanning 46 years from 1970 to 2016 were gathered from secondary sources and analyzed using the ARDL model. The result proved that savings accumulation has a long-term positive and significant impact on financial deepening. The paper recommends amongst others that banking habits should be encouraged to every Nigerian so as to increase total savings and hence, capital accumulation.

**Keywords**: Capital Accumulation; Gross Fixed Capital Formation; Financial Deepening     
  
**Introduction**  
Financial deepening is the increase in the provision of financial products with broader choices pitched towards economic development. This means that contribution of any country’s financial sector to economic development is a function of good of financial products rendered, plus also the effectiveness of providing the services.

Nnanna (2004) opined that deepening represented a system free from repression and that repression policy, which was aimed at motivating local investments through suppressed interest rates, developed negative outcomes. Hence, banks were encouraged to be quicker to lend.

A study by Somoye (2014) discovered that the Nigerian financial market stayed shallow up until 2003. The financial deepening index increased from 2007 to 2010 due to the introduction of mobile banking, but fluctuated downwards a little bit in 2013 due to fraud and fear of some financial services by the populace.

Somoye (2014) also suggested that the financial system is the engine growth of any economy, that is, as the financial system lends to other sectors at moderate costs, the total economy grows comprehensively. However, empirical data of the Nigerian economy shows an opposite direction. The World Bank (2014) revealed that Nigeria deposit money banks’ credit to the private sector (% of GDP) was 12.59 in 2013 compared to that of South Africa whose deposit money banks’ credit to the private sector (% of GDP) was 67.38 in 2013. The maximum and minimum values for Nigeria’s deposit money banks’ credit to the private sector over the past 48 years was 38.35 registered in 2007 and 3.86 recorded in 1970 respectively. This compared to South Africa who’s highest and lowest values for deposit money banks’ credit to the private sector over the past 48 years was 78.29 in 2007 and 42.76 in 1980 respectively.

Capital accumulation is seen as a catalyst for countries to escape low level equilibrium investment trap. According to Adekunle and Aderemi (2012), the process of economic growth involves transforming an economy from being a 5% savings and investing economy to that of an economy that saves and invests at least 12% of its net income. Hence, to achieve and sustain economic growth, a nation must dedicate a substantial part of her national income to savings, which is reinvested to accumulate capital (Adekunle and Aderemi, 2012).

However, this has not been the case with Nigeria as her capital accumulation figure has been fluctuating from available empirical data. Hence, this study intends to examine how financial deepening has impacted and made effective capital accumulation in Nigeria.

**Financial Deepening Theory**

Financial deepening theory states that financial deepening is induced by increase in total savings or capital accumulation as well as increase in total investment in an economy.

McKinnon (1973) and Shaw (1973) asserted that “allowing market forces to determine real interest rates can exert a positive effect on growth rates as interest rates rises to its competitive market equilibrium”. They argued that financial repression leads to interest rates that force out profitable investments, produce a penchant for capital projects, deter future savings, and all these lower total investments in an economy.

Capital accumulation happens due to the fact that large real money stock produces larger amount of loanable funds available to borrowers (Busari, 2007). Wide financial intermediation between savers and investors widens the motivation to save and invest, improving the profitability of investments. Therefore, low deposit interest rate lowers the liability of the banking sector, thereby hindering the supply of investment finance. Therefore, increasing deposit rate of interest to equilibrium levels should push economic growth upwards, (Isibor, Ojo, and Ikpefan, 2017).

***Empirical Framework***

Karimo and Ogbonna (2017) investigated the impact of deepening on economic growth in Nigeria using the Toda–Yamamoto augmented test. The result revealed that financial deepening leads to economic development. This was due to the fact that credit to the private sector was minimal. However, the study should have used other econometric technique like the OLS to analyze the data for the study.

Ewubare and Ogbuagu (2015) used the Autoregressive Distributed Lag model to evaluate the short-run and long-run impact of gross fixed capital formation and capital accumulation on economic growth in Nigeria. The result showed evidence of short-run impact of both gross fixed capital formation and capital accumulation on economic growth due to lack of enabling environment for domestic investment growth. Theoretically, both gross fixed capital formation and capital accumulation have a long-term impact on economic growth since they both cause investment growth. Therefore, the researcher should use other econometric technique to examine if a short-term impact truly exists or not.

Ibrahim and Shuaibu (2013) in their study discovered that financial development significantly impacts economic growth. The result was confirmed by the causality test, which proved that financial development causes development. Theoretically, financial development impacts economic development in the long run due to the fact that finance is a necessity for economic growth and development.

**METHODOLOGY**

The model to be estimated is culled from the financial deepening theory which states that financial deepening which is very vital for economic development is impacted by increase in total savings or capital accumulation as well as increase in total investment in an economy Darrat and Al-Sowaidi (2010). The model is:

*ΔLFDEEPt = α0 + α1 ΔLFDEEPt-1 + α2 ΔLGFCFt-1 + α3 ΔLSAVt + α4 ΔLSAV t-1 + V t-1*

Where *ΔLFDEEPt* represents financial deepening in the current year and *ΔLFDEEPt-1* represents lag one or past financial deepening, *ΔLGFCFt-1* represents past investment, and finally *ΔLSAVt* and *ΔLSAVt-1* represents both past and present total savings in the economy, and finally *Vt-1* represents the error term.

The data for this study are from 1970 to 2016. The data was tested for stationarity using the Zivot-Andrews unit root test and it would be analyzed using the Auto-regressive Distributive Lag (ARDL) econometric approach so as to test for long run impact between the endogenous variable and the exogenous variables.

**DATA ANALYSIS AND INTERPRETATION**

***Zivot-Andrews Stationary Test***

This was used to examine the stationarity of the data. At 5% significance levels, trend and intercept, the value of the Zivot-Andrews test statistics must be higher than the value of its critical values at 5% whether at level or at first difference. Using the table below:

**Table 1:** Result of Zivot-Andrews unit root test at trend and intercept with maximum lag of 4

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **Zivot-Andrews test statistics** | **5% Test Critical Values** | **Remark** |
| LFDEEP | -6.481905 | -5.08 | Stationary at 1st Difference |
| LFDEEP1 | -5.757131 | -5.08 | Stationary at 1st Difference |
| LSAV | -7.571954 | -5.08 | Stationary at 1st Difference |
| LSAV1 | -6.596547 | -5.08 | Stationary at 1st Difference |
| LGFCF | -5.204057 | -5.08 | Stationary at level |
| LGFCF1 | -5.411681 | -5.08 | Stationary at level |

**Source:** Author’s computation using Eviews 9 (2017)

From the table above, it can be seen that all the variables were stationary at 5% critical value, trend and intercept. While gross fixed capital formation and its lag (LGFCF and LGFCF1) were stationary at levels, all other variables were stationary at first difference.

***Auto - Regressive Distribution Lag Result***

**Model:** *ΔLFDEEPt = α0 + α1 ΔLFDEEPt-1 + α2 ΔLGFCFt-1 + α3 ΔLSAVt + α4 ΔLSAV t-1 + Ut*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| LFDEEP3(-1) | -0.018381 | 0.151240 | -0.121537 | 0.9039 |
| LGFCF3 | 0.015338 | 0.011427 | 1.342199 | 0.1871 |
| LSAV | 0.358612 | 0.200897 | 2.785051 | 0.0818 |
| LSAV(-1) | 0.350424 | 0.198175 | 3.768252 | 0.0846 |
| C | -0.153468 | 0.134832 | -1.138216 | 0.2618 |
| R2 = 0.10 | Adjusted R2 = 0.01 | F-statistics = 1.142615 | Durbin-Watson Test = 2.16 |  |

**Source:** Researcher’s computation using Eviews 9 (2017)

From the table above, R2 was 0.10 to show that all the exogenous variables cause 10% changes in the endogenous variable FDEEP. After adjusting for degree of freedom, the adjusted R2 becomes 0.01 to show that all the coefficients now explain 1% changes in FDEEP while holding other factors constant.

Using the probability value to test for the significance of the parameter of the coefficients at 10% significance level, the result shows that total savings (SAV) and lag one total saving SAV (-1) are all statistically significant in impacting financial deepening, thus leaving other variables insignificant. This proves that capital accumulation (total savings) is a necessity for financial deepening.

The next step is to examine if there is the presence of co-integration in the model. The co-integration will show whether a short-run or long-run relationship exists between the exogenous variables and the endogenous variable. The Bounds F test will be used to examine this fact. The value of the F Statistics from the ARDL Bounds Test must be greater than all the Critical Value Bounds (whether at I0 or at I1 Bound) to prove the presence of co-integration in the model. The result of the F Statistics test is shown below:

***ARDL Bounds Test***

|  |  |  |
| --- | --- | --- |
| F-statistic | I0 Bound | I1 Bound |
| 14.51903 | 3.17 | 4.14 |
| 3.79 | 4.85 |
| 4.41 | 5.52 |
| 5.15 | 6.36 |

**Source:** Researcher’s computation using Eviews 9 (2017)

From the result above, the F Statistics value of 14.51903 is greater than all the values of the Critical Value Bounds (both I0 bound and I1 bound) to establish the fact that there is the presence of co-integration in the model.

Hence, the next step is to conduct the co-integration to determine whether a short-run or long-run relationship exists among all the variables using the ARDL Cointegrating and Long Run Form test. The coefficient value of the co-integration equation (CointEq (-1)) must be negative and its probability value significant at 10% significance level to show a long run relationship. If the coefficient value of the co-integration equation is positive and insignificant, then a short-run relationship exists in the model. Also, for other variables, the coefficient must be positive and the probability value significant at 10% significant level to also establish a long run relationship between the variables and the dependent variable. The result is shown below:

***ARDL Co-integration and Long Run***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| D(LGFCF3) | 0.015338 | 0.011427 | 1.342199 | 0.1871 |
| D(LSAV) | 0.358612 | 0.200897 | 3.785051 | 0.0818 |
| CointEq(-1) | -1.018381 | 0.151240 | -6.733559 | 0.0000 |

**Source:** Researcher’s computation using Eviews 9 (2017)

From the result above and starting from the last variable which is co-integration equation (CointEq(-1) to the first variable, the coefficient value of (CointEq(-1) is negative and significant at 10% significance level to show that a long run relationship exists in the model. The value of total savings [D (LSAV)] is significant at 10% significance level from the probability value to show that it has a long run positive and significant relationship between total savings and financial deepening. The value of D (LGFCF3) proves insignificant in explaining the endogenous variable financial deepening from its probability value.

***Heteroskedasticity Test***

This test also be carried out to examine if the error term has a constant variance (Heteroskedasticity) or not. If the probability value and probability chi-square values are significant at 10% significance level, then the null hypothesis is rejected and there is significant evidence of Heteroskedasticity in the data. The result is shown below:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.683003 | Prob. F(4,40) | | 0.6079 |
| Obs\*R-squared | 2.877013 | Prob. Chi-Square(4) | | 0.5786 |
| Scaled explained SS | 3.594657 | Prob. Chi-Square(4) | | 0.4636 |
|  |  |  |  |  |

**Source:** Researcher’s computation using Eviews 9 (2017)

From the result above, none of the probability values are significant at 10% significance level; hence, there is no case of Heteroskedasticity in the data.

***Variance Inflation Factor (VIF) Test for Multicollinearity***

It checks for Multicollinearity in an equation. If the coefficient variance value for all the variables is approximately 1, then there is no Multicollinearity in the model. If the coefficient variance result is approximately between 2 and 5, then all the exogenous variables are moderately correlated. Finally, if the coefficient variance result is approximately greater than 5, then there is a high level of Multicollinearity among the exogenous variables. Examining the result below:

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Coefficient Variance | Uncentered VIF | Centered VIF |
| LFDEEP3(-1) | 0.022873 | 1.026309 | 1.015494 |
| LGFCF3 | 0.000131 | 1.074515 | 1.026861 |
| LSAV | 0.040360 | 7419.587 | 443.1810 |
| LSAV(-1) | 0.039273 | 6986.170 | 442.8317 |
| C | 0.018180 | 23.75328 | NA |

**Source:** Researcher’s computation using Eviews 9 (2017)

From the above result, the value of all the coefficient variance is approximately one; hence there is no Multicollinearity in the model.

**RECOMMENDATIONS**

1. Since an increase in lending rate would reduce the level of capital accumulation, therefore through financial deregulation policy, lending rate would be reduced in order to attract savings in order to boost financial deepening through increase in investment.
2. Banking habits should be encouraged to every Nigerian through various means like seminars, advertisement, and so on. This would increase total savings that will promote investment and this would deepen and improve the financial sector.
3. Financial inclusion should be an agenda that the government should push. Financial inclusion allows the low-income earners and the disadvantaged public to have access to banking services, and this would encourage savings and financial deepening.
4. The informal financial institutions should be developed with strong regulatory framework to cater for the rural area dwellers and small-scale depositors in order to increase total capital accumulation and impact financial deepening positively for economic development.

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