Impact of Financial Development on Investment in Government Treasury Bills in Nigeria

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ABSTRACT

This study was to examine the impact of financial sector development on investment in government treasury bills in Nigeria. Financial sector development was proxied by the ratio of money supply to GDP (M2/GDP; private sector credit to GDP (CPS/GDP) and lending interest rate while the dependent variable was measured by the outstanding treasury bills in money market in Nigeria. The study adopted the ex-post facto research design. The study applied multiple regression technique while the result of the regression coefficient was subjected to diagnostic tests. The result of the study revealed that the level of intermediation and lending interest rate had significant effect on investment in treasury bills in Nigeria as a unit increase in interest rate resulted in 52 percent increase in treasury bills. Also a unit increase in lending rate of banks led to 11 percent increase in investment in treasury bills in Nigeria. Based on these results, the study recommended among other things a systematic reduction in lending interest rates and increase in savings rate to stimulate high investment returns to savers and reduce the credit risk on lending.

Keywords: Financial sector, development and Treasury Bills

INTRODUCTION

The financial sector of any economy plays a crucial role in the growth and development of that economy whether is developed or developing one. Financial literature is replete with empirical evidence that countries with well-developed financial system tends to grow faster than their counterparts in less developed economies. This claim draws support from the earlier work of Schumpeter (1911) cited in [1] that a well-developed financial system engenders technological innovation and economic growth through the provision of financial services and resources to entrepreneurs who have the highest probability of implementing innovative products and processes. According to [2], financial system is not just institutions that facilitate payment and extend credits but encompasses various elements and functions that direct real resources to their ultimate users. It is a central nervous system of a market economy and contains a number of separate, yet co-dependent and components, all of which are essential to its functioning. These components include financial intermediaries such as commercial banks and insurance companies which act as principal agents for assuming liabilities and acquiring claims. This system vigorously seek out and attract the reservoir of savings and idle funds and allocate same to entrepreneurs, businesses, households and government
for investment projects and other purposes with a view of getting returns which forms the bases for economic activities [3]. It has been argued in various financial literatures that the very essence of financial development is to achieve efficiency in the financial sector that will engender financial deepening and economic growth.

Among these components of financial system, commercial banks stand out as major catalysts that connect the savers and the borrowers towards facilitating efficient intermediation process that promotes private investment and lead to growth and development of the economy. This efficiency can only be achieved through regular financial reforms in order to strengthen the financial system to be able to play its crucial role in the economy. According to Kehinde and [4], reforms generally evolve in response to challenges in the system such as systemic crises, globalization, technological innovation, financial crises; and often seek to act proactively to support the system’s growth potentials for the overall development of the economy.

It is important to reiterate the fact that financial sector development involves the nurturing and expansion of the institutions, markets and all the processes that support financial intermediation. In pursuit of this line of thinking, the Central Bank of Nigeria had in the past introduced a number of reforms aimed at repositioning the financial systems, especially the banking sector, to be able to perform intermediation role in the economy. According to [5], most of the reforms which include deregulation of interest and foreign exchange rates designed to make the economy more market oriented; Debt Management Office of year 2000, the banking consolidation of 2004 that raised commercial banks’ capital base from N2b to N25b, pension reform act of 2005, among other reforms.

However, these reform policies have not yielded the desired result as the financial subsector has been periodically punctuated by several factors which have made it vulnerable to systemic distress, macro-economic volatility and policy fine tuning [6].

It is a common knowledge that commercial banks have, among others, two key sources of revenue which include: loans to private sector of the economy to support economic activities that impact positively on growth and development of the economy; loans to the government through purchases of Treasury Bills and other government marketable securities for the purposes of financing fiscal deficits and control of money supply to the economy. This assertion was supported by [7] who averred that the attractive Treasury bills rate in a non-competitive market inform commercial banks’ shift of asset portfolios towards relatively risk-free quality assets which has continued to diminish their major role of financial intermediation.

**STATEMENT OF THE PROBLEM**

Unfortunately however, in the recent time, the loan books of commercial banks are shrinking by the day as the lenders step up investment in government securities and money market assets at the expense of private sector lending which had been empirically found as a major factor that generate growth activities in the economy. It is therefore imperative that while seeking lower risk investments opportunities, commercial banks do not relegate to the background their fundamental role of making financial resources available to the private sector through financial intermediation process. It has been argued in the literature as expressed by [8], that the increasing trend of treasury bills in the commercial banks’ asset portfolios was because commercial banks are affected by economic volatility, and as such, they need to manage strong portfolios in order to counter potential liquidity threats in the course of their operations. Some argued that the
attractive treasury bills rate and its risk-free nature might be a good motivation for commercial banks to switch portfolio to Treasury bills; the resultant effect to the economy leaves a sour taste in the mouths of so many investors. Equally, it has been argued in various financial literatures that the very essence of financial development is to achieve efficiency in the financial sector that will engender financial deepening and economic growth. In the light of the foregoing, the expected growth and development of the economy is highly jeopardized due to the diminishing supply of funds to the private sector required to generate economic activities. It is also evident that the Nigerian financial system is not yet fully developed to be able to attract the huge funds that abound in the Treasury bill market through creation of other alternative investment windows. It is against this background that the researcher seeks to empirically investigate the impact of financial development on investment in government Treasury bill in Nigeria using time series data from 1981 to 2016. In other words, based on these arguments, this study is embarked upon to ascertain the true position of the association between the financial sector development and investment in government treasury bills in Nigeria.

The broad objective of this study is to determine the extent to which financial sector development impacted on Treasury Bills returns in Nigeria. Therefore the study hypothesized that financial sector development has not impacted positively and significantly on government investment in government treasury bills in Nigeria.

Review of Related Literature Conceptual Review

A sound financial system is critical to economic growth of a nation. It enhances economic performance of the players by improving the overall welfare of the people. Financial system provides a platform for financial infrastructure to help allocate resources to individuals/units that are potentially more productive to invest those resources. It is a system designed to effectively mobilize financial resources which are transformed into loans to businesses, government, households in order to galvanize economic activities that engender growth and development in the economy. [9], describe financial system as a system that provides an enabling environment for economic growth and development, productive activity, financial intermediation, capital formation and management of the payments system. This system vigorously seek out and attract the reservoir of savings and idle funds and allocate same to entrepreneurs, businesses, households and government for investment projects and other purposes with a view of getting returns which forms the bases for economic development [3]. The significance of financial systems in an economy has become even more pronounced in recent years because of its ability to improve access to financial services by the poorer segment of the population [10]

Commercial banks are the key operators in the Nigerian financial system and act as agents for mobilization of savings and allocation of resources. Through economies of scale and expertise, banks are able to rewards savers with relatively high yield to encourage them to save more. Schumpeter in [11] highlighted the impact of commercial banks as vital agents in the process of development. They play dynamic role in stimulating investment and channeling such investments to the different sectors of the economy through the process intermediation. As noted by [12], the efficiency and effectiveness of financial intermediation is dependent on the level of financial system development. This concept was further buttressed by [13] who averred that financial development
enhances growth by promoting the efficient allocation of investment through funds pooling; Risk diversification; liquidity management; investment screening and monitoring.

The Nigerian financial system is broadly divided into two sub-sectors namely formal and informal sector. The informal sector which is without formalized institutional framework includes thrifts, local money lenders, savings and loan associations and all forms of ‘Isusu’ union, all of which have limited scope. Conversely, the formal financial sector consists of money and capital markets where short and long-term funds, respectively, are traded through exchange of financial assets between market participants. The operations in this formal sector are being supervised by various regulatory authorities namely Central Bank of Nigeria; Nigeria Deposit Insurance Company; Security and Exchange Commission; Nigerian Deposit Insurance Company etc. One of the notable instruments traded in the Nigerian money market is Treasury bills (NTB) while the CBN, as banker and financial adviser to the federal government, is charged with the duty of managing the issuance of the instrument to investor through auction system. Alison et al (2003) cited in [14] reveal three principal reasons often advanced for government domestic borrowing and these include budget deficit financing; implementation of monetary policy and development of instruments so as to deepen the financial market.

It is useful to note that commercial banks have, among others avenues, two key sources of revenue namely loans to private sector of the economy to support economic activities that impact positively on growth and development of the economy and loans to the government through issuance of Treasury Bills and other marketable securities.

The Nigeria Treasury bill takes its origin from the Treasury Bills ordinance of 1959 and the first bill was issued in April 1960. Nigerian Treasury bills (NTB) are short-term debt instruments that mature in one year or less and are issued by the CBN on behalf of the Federal Government, to raise surplus funds from both banks and non-bank publics.

[15], has described Treasury bill as short-term debt securities issued at discount by CBN on behalf of Federal government with maturity dates of one year or less in order to raise funds from both banks and non-bank publics. It is a risk-free short term money market instrument usually redeemed at maturity of 91 days, 182 days or 365 days while interest income is paid up-front.

However, in the recent time, the loan books of commercial banks are on the decrease while the lenders step up investment in government securities and money market assets in preference for private sector lending that had long been proven as a key element that generate growth activities in the economy. [16] had argued that the increasing trend of treasury bills in the commercial banks’ asset portfolios was because economic volatility affects commercial banks more, and as such, they need to manage strong portfolios in order to counter potential liquidity threats in the course of their operations. Although the attractive treasury bills rate and its risk-free nature might be a good motivation for commercial banks to switch portfolio to Treasury bills.

Theoretical Framework

The theoretical framework that underpins this study is the “Lazy Bank Model” promoted by [16]. The theory relates to commercial banks behavior to domestic government borrowing which tends to crowd out private sector borrowing by reducing the resources available to them. The situation creates a moral hazard and discourages banks from lending to the risky private sector, thus stifling their incentives to seek for new profitable investment opportunities in the private
sector. The hypothesis attributes the risk-averse behavior of banks to be the major factor that dampened credit to the private sector. In other words, this view highlights the idea that a Naira lent to the government is a Naira less to the private economy [17].

Empirical Review

There have been some empirical studies relating to the financial development on one hand and investment in Treasury bills in Nigeria in the other hand, some of which are highlighted in this work. [17], empirically examined the impact of Deposit money banks’ investment on treasury Bills and the impact thereof on the amount of credit extended by these banks to the private sector in Nigeria. A Vector Error Correction (VEC) technique was used to estimate the model using quarterly data for the period of 2003-2013. The result of the study shows that a negative relationship exists between loans to the private sector and treasury bills holding of commercial banks in Nigeria. In this case, the spread between credit to private sector and Treasury Bills returns determined their demand in the short run. The result of the empirical study of [18] revealed that government bonds had a more significant negative effect on financial intermediation than Treasury Bills. The study concludes that demand for government’s deficit financing instruments reduced financial intermediation in Nigeria but the effect runs more through FGN Bonds than through Treasury Bills. Nigerian money market has lagged behind in its performance of intermediation role in providing such needed funds to companies thus, limiting their operation.

Against this background, [19] empirically examined the impact of money market instruments on liquidity of 10 selected quoted banks from 2005 - 2014. Secondary data were used and multiple regression econometric technique was adopted to analyze the data. The study found that firms’ working capital and profitability have significant impact on money market instruments.

The study of [20], examined the impact of financial intermediation and economic growth in Nigeria from 1994 to 2013. The study adopted ex-post facto research design using time series secondary data for 20 years and the result showed that bank deposits, bank credits and bank liquid reserves exert positive and significant impact on economic growth for the period under study.

[21], empirically examined the impact of private credits on economic growth in Nigeria using [9], cointegration test that accounted for structural breaks and endogeneity problems. The method was applied to quarterly data spanning 2000 to 2014, while the fully modified ordinary least squares procedure was employed to estimate the model coefficients. The test found a co-integrating relationship between output and its selected determinants, although, with a structural break in 2012 first quarter. Amongst others, findings from the error correction model confirmed a positive and statistically significant effect of private sector credit on output, while increased prime lending rate was inhibiting growth. In view of the financial intermediation roles of deposit money banks, the study supports the ongoing efforts of the Central Bank of Nigeria in promoting a sound and real sector-friendly financial system.

[4], conducted empirical study on the impact of domestic debt on credit to private sector on Nigeria’s economic growth between the periods of 1970 to 2015 adopting the Structural VAR technique of estimation to investigate the response of credits to private sector to innovations from domestic debt. The study concludes that since domestic debt induces prolonged crowding out effect on the credits to private sector in Nigeria,
the federal government should carry out fiscal reforms in order to stem the current crowding out effect of domestic debt policy through restructuring and rescheduling of domestic debt.

The study of [21] examined the comparative efficacies of bank credits allocated to private and public sectors in relation to economic growth in Nigeria. The Augmented Dickey Fuller (ADF), Johansen’s cointegration, error correction model and the standard pair-wise Granger Causality tests were employed in processing data sourced from Central Bank of Nigeria’s Statistical Bulletin over the period 1981 to 2011. The results revealed a significant long run relationship between credits allocated to the public and private sectors of the economy and Nigeria’s GDP. The Granger Causality tests indicate significant bi-directional causality only between credits to private and government sectors. Significant unidirectional causalities are observed between gross domestic product and credits to both private and public sectors with causality flowing from GDP to those economic sectors. The study concludes that irrespective of the prevailing long run relationship between Nigeria’s economic growth and bank credits to the private and public sectors of the economy.

METHODOLOGY

The study aimed at examining the impact of financial intermediation on investment in Treasury bill in Nigeria covering the period 1981-2016. The ex post facto research design was employed with the application of the Ordinary Least Squares econometric technique. In order to empirically determine the case in Nigeria, the empirical analysis began by checking the unit root properties of the data. Data for the study were sourced from the Central Bank of Nigeria Statistical Bulletins and Annual Reports, the Debt Management Office (DMO), the National Bureau of Statistics (NBS), and other reputable sources. The main tool of analysis was the Ordinary Least Squares (OLS) using the multiple regression technique.

MODEL SPECIFICATION

The model for the study was based on the empirical work of Sheyin (2015). Treasury bill money market instrument outstanding was used as the dependent variable while ratio of money supply to GDP (M2/GDP), private sector credit to GDP (CPS/GDP) and lending interest rate were the independent variables. Thus, the functional model is given as follows:

\[ \log(TBILL) = f(M_2/GDP, CPS/GDP, INTR) \]

where all coefficients of the variables are as defined. The theoretical basis is that the higher the rate of intermediation the lower the investments in treasury bills; thus, there is a negative relationship between treasury bills and intermediation variables. Lending rate is used here as control variable and higher lending rate by commercial banks increases investment in treasury bills. Where: \( \beta_0, \beta_1, \beta_2, \text{ and } \beta_3 \) are the parameter estimates of

\[ \log(TBILL_t) = \beta_0 + \beta_1 \frac{M_2}{GDP_t} + \beta_2 \frac{CPS}{GDP_t} + \beta_3 \text{INTR}_t + \epsilon_t \]

The above equation is the estimable equation for the hypothesis of the study,
constant term and regressors to be estimated.

**Estimation Techniques**

This study adopted the quantitative method of data analysis. First, The Augmented Dickey-Fuller (ADF) test was conducted for stationarity i.e. to determine the order of integration as well as satisfying the economic theory which says certain variables must be integrated, random walk or martingale process. The rule of thumb for unit root tests is that t-statistics must be greater than the critical values for stationarity to be attained. This could be realized at level ‘I (0)’ or at 1st difference ‘I (1)’ of the data. Following this, a cointegration test was conducted to ascertain if the time series variables have a long-term or equilibrium relationship among them.

**Results and Discussion of Results**

**Tests for Stationarity**

In a bid to establish the existence or non-existence of an equilibrium relationship among variables in our model, we must first ascertain whether the variables are integrated to the same order, to achieve this, the following stationarity tests were undertaken:

<table>
<thead>
<tr>
<th>Variables</th>
<th>Test Statistics</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log(TBILL)</td>
<td>ADF 5%: -2.727231 - - 4.89347 2.951125</td>
<td>I(1) Stationary</td>
</tr>
<tr>
<td>M₂/GDP</td>
<td>0.992171</td>
<td>1.950687</td>
</tr>
<tr>
<td>CPS/GDP</td>
<td>1.148639</td>
<td>1.950687</td>
</tr>
<tr>
<td>INTR</td>
<td>-2.361074</td>
<td>2.954021</td>
</tr>
</tbody>
</table>

**Source:** Authors’ Computation, 2017 using Eviews 9

* connotes stationary at both 5%

From table 1, it could be observed that ADF test showed that all variables are non-stationary at levels, that is, there is existence of unit root in the data. Contrarily, when taking the 1st difference of the data all variables are integrated of order one I (1). This means that they (variables) are stationary at 1st difference which satisfies the condition for Engel-Granger cointegration application.

**TESTS FOR COINTEGRATION**

The two step Engel-Granger co-integration approach was used in this study, which involves testing if the residual of the level form regression result is stationary at levels for there to be cointegration. If the residual is stationary at levels, it implies the existence of a long run relationship amongst the variables, but if not there is no cointegration. The cointegration test result presented in table 2 below based on the 5% critical value shows that there is no cointegration among the variables.
Table 2: Residual based cointegration test

<table>
<thead>
<tr>
<th>Variable</th>
<th>ADF test statistics</th>
<th>5% critical value</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual</td>
<td>-1.939528</td>
<td>-2.948404</td>
<td>Not Cointegrated</td>
</tr>
</tbody>
</table>

Source: Researcher’s computation based on Eviews 9

Thus, as the value of our ADF-statistic did not exceed the 5% critical value, we can conclude that there is no evidence of a long-run relationship among the variables in the series. Thus, the analysis will be done in the level form of the variables and not in differenced form as shown below.

Table 3: Estimated Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Dependent Variable Log (TBILL)</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>T-statistics</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONSTANT</td>
<td></td>
<td>5.318836</td>
<td>1.312249</td>
<td>4.053223</td>
<td>0.0003</td>
</tr>
<tr>
<td>M2/GDP</td>
<td></td>
<td>0.523050</td>
<td>0.173856</td>
<td>3.008524</td>
<td>0.0024</td>
</tr>
<tr>
<td>CPS/GDP</td>
<td></td>
<td>-0.039007</td>
<td>0.129953</td>
<td>-0.300163</td>
<td>0.7660</td>
</tr>
<tr>
<td>INTR</td>
<td></td>
<td>0.112703</td>
<td>0.041790</td>
<td>2.696919</td>
<td>0.0111</td>
</tr>
<tr>
<td>R-squared</td>
<td></td>
<td>0.658232</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td></td>
<td>0.626191</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F-stat</td>
<td></td>
<td>20.54355</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prob. (F-stat)</td>
<td></td>
<td>0.000000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td></td>
<td>1.561674</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Researcher’s computation based on Eviews 9

INTERPRETATION OF SHORT RUN TEST

The result of the regression presented above shows the effect of financial intermediation on investment in Treasury bill in Nigeria. The estimated result revealed that the rate of intermediation and lending interest rate have significant impact effect on investment in Treasury bill in Nigeria. A unit increase in rate of intermediation will increase investment in Treasury bill in Nigeria by 52 percent. Also, a unit increase in lending rate of banks will lead to 11 percent increase in Treasury bills investment in Nigeria. From the value of the R-squared ($R^2$), it would be concluded that the regressors in the model explain over 65% of the systematic variations in Treasury bill in Nigeria during the 1981-2016 period. This is complemented by the adjusted R-square of 63%. The probability value of the F-statistic of 0.0000 is highly significant. This implies that there exists a significant linear relationship between Treasury bill and the independent variables. The Durbin-Watson (DW) statistic of 1.5616 suggests the absence of autocorrelation in the regression model.

TEST OF HYPOTHESES

This test is carried out in order to test the various hypotheses of the study based on the probability value of the result in table 3 above. In other words it tests the statistical significant of the estimated parameters at 5 percent level of significance ($\alpha = 5\% (0.05)$).

DECISION CRITERIA

If the probability of the independent variable is less than the chosen probability level of significance, then reject the null hypothesis and accept the
alternative hypothesis and conclude that the variable in question is statistically significant at 5% level and is a good explanatory variable of the dependent variable. If otherwise, then the variable is not statistically significant at 5% level and is not a good explanatory variable of the dependent variable.

**HYPOTHESIS AND RESULT**

H0: Financial intermediation has no significant and positive effect on investment in Treasury bill in Nigeria.

The coefficient of \( \frac{M_2}{GDP} \) is positive and significant with a probability value of 0.0024 which is less than the 0.05 probability level of rejecting the hypothesis.

**SUMMARY OF FINDINGS**

The regression result shows that \( \frac{M_2}{GDP} \) has a positive significant impact on investment in Treasury bill in Nigeria but not credit to private sector. It was discovered that they were all I (1), meaning that the data needed to be differenced once to become stationary. Given that the data was I (1), a test for co-integration was carried out to test for the long run properties of the variables and the result showed no evidence of co-integration which necessitated the analysis of the long-run form of regression.

**CONCLUSION**

From the foregoing, the study concludes that shocks in the credit extended to the private sector has increased the public sector investment with the government which would limit to a great extent the availability of banking sector credit to the private sector in the future.

**RECOMMENDATIONS**

Based on the findings of the study, the following recommendations were proffered:

1. Reduction in lending interest rates and increase in savings interest rate in order to stimulate high investment returns and reduce the credit risk on lending.
2. Government should reduce drastically the use of money market instruments like treasury bills to fund government fiscal operations in order not to crowd out private sector borrowing.
3. Government through the Central Bank of Nigeria should encourage commercial banks to increase lending to private sector instead of holding large stock of government securities especially treasury bills.

**CONTRIBUTION TO KNOWLEDGE**

The result of the study will be of significant to both policy makers and drivers of the private sector of the economy in Nigeria, as they would hopefully add to the list of objective criteria for formulation of new policies and/or modification of existing ones. Having dealt with the introductory part, the rest of this study is divided into four sections. Section 2 provides the theoretical framework and literature review while section 3 deals with the methodology of investigation. Section 4 presents the result and the analysis while section 5 deals with the discussions, conclusions and recommendations.
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