Risk to Economic Growth in Nigeria: Focus on Money Market Instruments

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ABSTRACT

Money market instruments play crucial role in financial intermediation with a knock-on on economic growth. However, evidence on the evaluation of risk to economic growth of specific money market instruments in an emerging economic such as Nigeria is limited. Interestingly, availability of such evidence is significant to policy and practice in the money market to enhance effectiveness and economic growth. This paper therefore evaluates risk to economic growth by examining the relationship between money market instruments and economic growth in Nigeria for the period 1986 to 2021. Annual time series data for the real gross domestic product, GDP, a measure of economic growth, as well as selected money market instruments of treasury bills, certificate of deposit and commercial papers was extracted from 2021 CBN bulletin for the study. Autoregressive distributed lag, ARDL, model was adopted for data analysis in the study. The result indicated a statistically significant negative relationship between treasury bills and economic growth in the short run and an insignificant positive relationship in the long run. However, certificate of deposit demonstrated a positive significant relationship with economic growth in the short run and a negative insignificant relationship with economic growth in the long run. Also, commercial papers showed a negative significant relationship with economic growth in the short run and a positive insignificant long run relationship. These findings indicate that the money market does not support economic growth in Nigeria with a conclusion that the market shows signs of inefficiency. A cautious use of these money market instruments to manage liquidity on both short and long run is therefore recommended. Further study can focus on examining the impact of treasury bills bought by Deposit Money Banks and Non-Bank public on Real Gross Domestic Product of Nigeria to provide specific evidence that can guide policy and practice on a specific instrument.

Keywords – Financial market; Money market: Economic growth; ARDL; Nigeria

INTRODUCTION

The money market is crucial to financial intermediation in any economy (Onodugo, Kalu & Anowor, 2013). The key intermediation role of the money market is that it facilitates the trading of short and medium term financial instruments in the financial market of a given economy (Kizito, 2013). This role makes the money market the most liquid in the financial sector (Nyborg & Östberg, 2014). Therefore, the money market mitigates business liquidity risk, controls money supply, influences demand-pull inflation and short-run interest rate (Ekmekcioglu, 2013; Iwedi & Igbanibo, 2015). For these reasons and more, the money market plays a pivotal function in liquidity management and in the implementation of the monetary policy of the apex bank of any country (Bech & Malkhozov, 2016). Thus, an effective money market has the potential to support economic growth. More so, the understanding of the economic growth support role of the money market is even more important in emerging economies that are still on the development trajectory.

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In developed economies, the money market is a lot efficient in creating liquidity for government, companies and individuals (Ikpefan & Osabuohien, 2012). The key supporting factors of the money market in advanced economies for efficiency are the highly organized commercial banking system, presence and effectiveness of central bank, availability of appropriate credit instruments, existence of relevant sub- markets, availability of sufficient resources, stable political environment and huge volumes of
international trades (Raja & Mahalakshmi, 2015). The existence of these factors enhances the volume as well as the value of transactions of money market instruments which impacts the sustainability of the developed state of these economies in general. However, the money market in developing economies are inadequate and constrained by the absence of sub-markets and availability of adequate credit instruments required for the smooth operations of the market (Pavtar, 2016)

Like other emerging economies, the money market in Nigeria is still undergoing development (Oriavwote & Eshenake, 2014). The work-in-progress state of the money market in Nigeria no doubt may pose a challenge to the mobilization of large funds to finance business activities in the private sector of the economy with a knock-on on economic growth. However, evidence on the impact of the money market in Nigeria on economic growth is crucial to guide policy and practice for expansion and effectiveness of the market. Therefore, on the background of financial intermediation theory as posited by Goldsmith (1969), McKinnon (1973), Senbet and Otchere (2005) that the financial market plays a pivotal role in economic development based on the quality and quantity of services provided by the financial service providers, this study sets out to provide knowledge on the impact of the money market on economic growth in Nigeria. Specifically, the study examines the relationship between the traded value of selected money market instruments – treasury bills, certificate of deposits and commercial papers – and economic growth in Nigeria with the real gross domestic product, GDP, as proxy for the period 1986 – 2021. The specific objectives are:

1) To examine the effect of the total traded value of treasury bills on economic growth in Nigeria

2) To investigate the impact of total traded value of certificate of deposit on economic growth in Nigeria

3) To access the effect of the total traded value of commercial paper on economic growth in Nigeria

Amongst other significant of the study to the operators of the money market as well as researchers in this area of specialisation, the finding of this study will be particularly significant to the Central Bank of Nigeria as it will provide evidence that will support policy implementation and evaluation in managing liquidity.

The remainder of the paper is arranged as follows; the next section presents the empirical review followed by the methodology, empirical model specification, presentation and discussion of the results and conclusion.

THEORETICAL AND EMPIRICAL REVIEW.

Theoretical Review

Financial intermediation theory

Financial intermediation theory was first proposed by Goldsmith, (1969) and later modified by McKinnon, (1973). Theory centrally states that the financial markets, with the money and capital markets as the key components play a significant role in economic development. However the theory attributes the differences in economic growth between countries to the quantity and quality of services
provided by financial institutions. Particularly Goldsmith (1969) posits that the positive relationship between financial development and economic growth can be explained by a more efficient allocation and

use of capital funds made possible by the efficiency of the financial market which further incentivizes financial development. In a related study McKinnon draws credence from complimentarity hypothesis, which contrasts the Neo-classical monetary growth theory to submit that there is a complimentarity between money and physical capital that reflects in the demand for money. Mckinnon further argues that since the condition for money supply has a first order impact on savings and investment decisions then the complimentarity links the demand for money positively and directly with the process of physical capital accumulation. Furthermore,
McKinnon (1973) posited that policies with adverse effect on the financial markets will adversely affect the incentive to save and cause repression of the financial markets with high reserve requirements on deposits; legal ceilings on bank lending and deposit rates; directed credit; restriction on foreign currency capital transactions; and restriction on entry into banking activities as the key elements of the financial repression.
This theory is applicable in this study as the main objective of the study is to establish the effect of the value of selected money market instruments and economic growth in Nigeria.

Empirical Review

Review of Empirical Literature

The critical role of the money market in the economy of nations with particular interest to developing economies has continued to draw the attention of researcher to studies in the area. A Nigerian study by Iwedi and Igbanibo (2015) on the Nexus between Money Market Operations and Economic Growth employing ordinary least square and Johansen cointegration test as methods for data analysis showed a positive significant relationship between money market instruments and economic growth in Nigeria for the period 1980-2013 in the short run and long run. The authors concluded that the money market is significantly connected to the level of economic activities in Nigeria and that any improvement in the operations of the market will lead to corresponding improvement on the economy. Iwedi and Igbanibo (2015) therefore recommended effective information dissemination within the money market to support its functionality.

A study by Kizito, (2013) that examined the impact of money market on economic growth in Nigeria for the period 1980-2012 using Ordinary Least Squares Method, Johanson's Co-integration Test and Vector Error Correction Model provided evidence on the existence of a long run negative significant relationship between the money market and economic growth in Nigeria. The author submitted that the result is indicative of the underdeveloped nature of the money market in Nigeria and recommended the creation of appropriate macroeconomic policies and legal framework to promote productive activities and investment which will have a knock on effect on economic growth.

Marshal & Solomon, (2015) examined the nexus of money market operations on economic growth in Nigeria for the period 1980-2013 adopting vector auto-regressions (VAR), Johansen Co-integration, and Granger causality tests for the analysis of the data and found a positive significant short-run and long-run relationship between money market operations and economic growth in Nigeria and that causality flows from economic growth with GDP as proxy to money market operations but not vice versa. The authors thus concluded that money market operations delivers short term growth tendencies and can help to ensure long run impressive and steady growth rates in Nigeria as a key component of the financial system. Prioritizing policies geared towards increasing and developing money market operation in Nigeria was recommended by the authors.

A study by Pavtar (2016) investigated the nexus between money market and Nigerian economic growth from 1985-2014 using ordinary least square in the data analysis and found that treasury bill, treasury certificate, commercial paper did not have any significant impact on the
gross domestic product of Nigeria while certificate of deposits was found to significantly impact on the

gross domestic product of Nigeria. The authors concluded that the result shows that the Nigeria money market is not developed enough to produce the needed growth that will propel the economy and recommended improvement in the macroeconomic policies and legal system to inform reforms in the market that will develop and deepen its effectiveness.

A study that examined the effect of financial integration and development on economic growth in Nigeria was conducted by Wasiu & Temitope, (2015) for the period 1981 to 2012. The results obtained from the autoregressive distributed lag (ARDL) indicated the presence of a significant negative long run relationship between financial integration and economic growth in Nigeria. However financial development was found to have both short run and long run positive effect on economic growth in Nigeria. The authors recommended increase in the level of competition improvement in the quality of financial information disseminated and reduction in the level of corruption in the financial system as the drivers of benefits from the money market in Nigeria.

Maduka & Onwuka, (2013) investigated the relationships between financial structure and economic growth in Nigeria for the period 1970-2008 using Johansen and Juselius (1990) maximum likelihood procedure for the estimation and revealed that financial market structure has a negative and significant effect on economic growth in Nigeria. The authors concluded that the result indicates the low level of development of the financial sector of Nigeria and recommended that appropriate financial policies be put in place to encourage the growth per capita GDP.

Hassan, Babafemi & Jakada, (2016) investigated the impact of financial market development on economic growth in Nigeria for the period 1981-2014 employing the Vector Error Correction Model (VECM) in analysing the data and found money market had a significant positive impact on economic growth. On the basis of the findings the authors recommended a comprehensive financial reform and the establishment of effective legal framework to complement the regulatory and supervisory institutions as well as directing the financial reform and credit policy of the apex bank towards improving credit to private sector.

Gap in Empirical Literature

a) Data Currency Gap: All the studies reviewed lack currency of data used in the data analysis. The upper bound year for latest data used in the studies reviewed was almost a decade ago. Therefore this study uniquely fills the data currency gap as the data used in the study covers the period 1986-2021.

b) Methodology Gap: None of the studies reviewed used autoregressive distributive lag ARDL model for data analysis. This study thus fills this gap by employing autoregressive distributive lag ARDL model for data analysis.

MATERIALS AND METHOD

Research Design and Data

The study adopted an ex-post facto research design. This study design was considered the most appropriate as annual historical data on the total traded value of the selected money market instruments for this study was used for the analysis.

The annual time series secondary data was extracted from 2021 CBN statistical bulletin to cover the period 1986 to 2021. Thus annual data for the period considered in this study for such variables as real gross domestic product, a measure for economic growth, and total traded values of treasury bills, certificate of deposit and commercial papers, the selected money market instruments, was gathered for the study. The selection of treasury bills, certificate of deposit and commercial papers as the money market instruments for

the study and a period of 36 years that the study covered, was informed by availability of data.

Empirical Model Specification.

Autoregressive distributive lag ARDL model was used in the study. The ARDL model for the estimation of level relationships in a time series data functions on the assertion that a relationship can be estimated using ordinary least square, OLS, method once the order of integration is established (Lawal, Nwanji, Asaleye & Ahmed, 2016). Uniquely, ARDL model offers the flexibility in analyses as variables that are integrated at order (1) or (0) or both can be incorporated in the model as behavioral variable (Ada, Agu & Umunna 2016). Therefore ARDL does not lay emphasis on a specific order of the data of interest in its application. ARDL is also preferable when dealing with small sample size as in this study (Owusu & Odhiambo, 2014). According to Pesaran, Shin and Smith (2001), ARDL can be specified thus:

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta GDP_{t-1} + \sum_{i=1}^{n} \beta_2 \Delta TBills_{t-1} + \sum_{i=1}^{n} \beta_3 \Delta Codep_{t-1} + \sum_{i=0}^{n} \beta_4 \Delta Compaper_{t-1} + \beta_5 GDP_{t-1} + \beta_6 TBills_{t-1} + \beta_7 Codep_{t-1} + \beta_8 Compaper_{t-1} + \varepsilon_t \quad (1)$$

where is the first difference operator, is the stochastic term and GDP, TBills, Codep and Compaper are the real gross domestic product, treasury bills, certificate of deposit and commercial papers respectively in billion naira. and capture the short run dynamics while ?, ? and ? represent the long run relationship. Simply, equation (1) is the ARDL model that indicates that GDP is influenced and explained by its past values as well as the selected money market instruments, that is TBills, Codep and Compaper in the model. The Akaike information criteria is used in determining the maximum lag of each of the variables which supports the lag structure of the model as practice demands. The Wald test (F-statistic) is computed after the estimation of equation (1) to establish existence of long run relationship between the variables of interest. In line with Pesaran (2001), if F-statistics is greater than the critical value of the upper bound at 5% significant level the null hypothesis of no long run relationship is not rejected meaning that there is a long run relationship between the selected money market instruments and economic growth. However, if the F-statistics is less than the critical value of the lower bound at 5% significant level, then the hypothesis of no long run relationship is not rejected. Existence of a long run relationship means that the variables of interest are cointegrated which will require ARDL error correction (EC) model in the analysis. The ARDL (EC) model is specified thus:

$$\Delta GDP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta GDP_{t-1} + \sum_{i=1}^{n} \beta_2 \Delta TBills_{t-1} + \sum_{i=0}^{n} \beta_4 \Delta Compaper_{t-1} + \varphi_1 ECM_{t-1} + u_t \quad (2)$$

Where ? is the coefficient of the error correction model ECM while other parameters are the same as defined in equation (1). A statically significant negative will indicate that any short run disequilibrium between the dependent and independent variables will converge back to long run equilibrium.

RESULTS AND DISCUSSION OF FINDINGS

Table 1 presents the summary statistics of the variables used in the study. Data from the 36 years that is 1986 to 2021 considered in the study was used in the computation. The mean of the GDP, treasury bills,

certificate of deposit and commercial paper, expressed in billion naira, were 42744.07, 1123.22, 16.07, 79.35 indicating treasury bills as the money market instruments with the largest value traded and certificate of deposit as the instruments with the least in value traded annually in the period considered in the study. The summary statistics also indicates the minimum value of certificate of deposit as zero suggesting that there was at least a year within the period of this study that commercial paper was not traded. The standard deviations of 51764.80, 1207.49, 27.31 and 169.68 for GDP, treasury bills, certificate of deposit and commercial papers, which are all higher in value than the corresponding mean values of the variables, suggest high variability in the individual annual values in the period of this study. Also, table 1 shows that all the variables are positively skewed except commercial paper with zero value of skewness and are equally leptokurtic as the kurtosis estimates suggest that the series is not normally distributed and may be exhibiting random walk revealing the need to stationarized the series.

TABLE 1 SUMMARY STATISTICS OF THE VARIABLES

Variable	Obs.	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis	P-value
GDP	36	42744.07	51764.80	198.12	176075.50	0.0064	0.6102	0.0316
TBills	36	1123.22	1207.49	16.98	3786.14	0.0249	0.3456	0.0602
Codep	36	16.05	27.31	0	82.46	0.0017	0.5407	0.0130
Compaper	36	79.35	169.68	0.26	822.70	0.0000	0.0000	0.0000

Source: Author's Computation

Augmented Dicken Fuller (ADF) unit root test was carried out to stationarize the random walk exhibited by the series and the results of the test are presented in table 2. It is worthy of note that the lag length applicable was automatic based on Akaike Information Criteria (AIC) with the maximum lag length of 4. The results in table 2 indicate that GDP and treasury bills become stationary after differencing once I(1) while certificate of deposit and commercial papers were stationary without differencing I(0). The results shows a combination of orders zero I(0) and one I(1) indicating autoregressive distributive lag ARDL approach the most suitable analysis method for this study. At this point the understanding of the relationship that exists between the selected money market instruments in the study and economic growth is necessary to guide the parameterization of the ARDL model for the study.

TABLE 2 ADF UNIT ROOT TEST RESULT

Variable	ADF Statistics	5% critical value	~I(d)
GDP	-3.321	-2.975	I(1)
TBills	-3.321	-2.975	I(1)
Codep	-10.229	-2.975	I(0)
Compaper	-5.338	-2.975	I(0)

Source: Author's Computation

ARDL bound test was used to estimate the relationship between the market instruments in the study with economic growth and the result is presented in table 3. The ARDL bound test is precedence on the null hypothesis of a non-existence of a long run relationship between the dependent and independent variables if F-statistics is less than the critical value of the upper bound at 5% significant level. However, the results in table 3 indicates a greater F-statistics of 41.43 than the critical value of the upper bound I(1) of 4.35 at 5% level of significance leading to the rejection of the null hypothesis of the test. Thus, a long run relationship exists between the money market instruments in the study and economic growth in Nigeria. The existence of

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a long run relationship equally indicates that the variables are cointegrated making ARDL error correction (EC) model the most appropriate estimation model for the study.

TABLE 3 ARDL BOUND TEST RESULT

Test statistics	Value	K
F-statistics	41.433	3
		Critical Value Bound
Significance	I(0) Bound	I(1)
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Author's Computation

Table 4 presents the ARDL estimates. The speed of adjustment of the model to long term equilibrium is measured by the value of GDP lagged in the first period and as it normally should be, it is negative and statistically significant at 5% level. The significant GDP estimate lagged in the first period of negative 0.15 shows that if economic growth deviates from its equilibrium path due to short run fluctuations it will return at the speed of 15% per annum. The result indicates approximately five months period return to equilibrium path of the GDP if it wanders away due to short term fluctuations. A statistically significant coefficient at 5% level of -28.32 for treasury bills in the short run suggests a negative effect of treasury bills on economic growth on the short run indicating that a billion naira increase in the value of treasury bill traded retards the GDP by 28.82 billion naira all things being equal. However, a positive 170.71 coefficient of treasury bills on the long run suggests that a billion naira increase in treasury bills traded increased the GDP by 170.71 billion naira in the long run even though the effect is not statistically significant. Even though the relationship between treasury bills and economic growth appears to be positive in the long run, the effect fades out until it becomes insignificant and this shows that treasury bills cannot be regarded as an effective monetary policy instrument in Nigeria. This result is inconsistent with the finding of Obi, (2021) of a positive relationship between treasury bills and economic growth in the short and long run in Nigeria. Furthermore, all the lagged difference short run estimates of treasury bills are negative and statistically significant at 5% level meaning that treasury bills exhibit a decreasing effect on economic growth with time lag. The results also reveal the coefficient of certificate of deposit to be +561.77 meaning that a billion naira increase in the value of certificate of deposit traded is related to 561.77 billion naira increase in the GDP. This relationship is statistically significant at 5% level. This implies the existence of a positive relationship between certificate of deposit traded value and economic growth. The coefficients of the lag difference of certificate of deposits are all positive and statistically significant at 5% level. However, an increase in the value of certificate of deposit traded exhibits a negative relationship with economic growth in the long run even though it is not statistically significant at 5% level. This suggests a supportive effect of certificate of deposit on economic growth in the short run which diminishes over time until it disappears in the long run. This finding is in line with the finding of Ayebaemi & Francis, (2018) and Obi, (2021) of a positive significant relationship between certificate of deposit and economic growth in Nigeria. The results in table 4 equally indicate that the value of commercial paper traded is negatively related to economic growth in the short run but positively related in the long run. The effect of commercial paper on economic growth is statistically significant in the short run and insignificant in the long run at 5 % level. The coefficient of -47.88926 in the short run shows that a billion naira increase in the value of the commercial paper traded reduces the GDP by 47.89 billion naira in the short run. This indicates that commercial paper retards economic growth in Nigeria in the short run. Also, all the lag difference estimates are negative and

statistically significant indicating that commercial paper impacts economic growth negatively with time lag in Nigeria. This finding opposes the finding of Ayebaemi & Francis, (2018) and Obi, (2021) of positive relationship between commercial papers and economic growth in the short run and a negative relationship in the long run in Nigeria.

The R squared value of 0.98 shows that 98% of the behavior of the GDP is explained by explanatory variables in the model indicating the goodness of fit of model. The overall model is statistically significant as explained by the probability of F-statistics of 0.000. The Correlogram of Residuals statistics show no evidence of auto or partial correlation as the probability values are not statistically significant at the 5% level (See appendix for details).

TABLE 4 ARDL RESULTS

Variable	Coefficient	Standard error	P-value
Short-run estimates			
D(GDP(-1))	-0.1497565	0.1205951	0.023
D(GDP(-2))	-1.556113	0.2427016	0.000
D(Tbills)	-28.3243	6.44878	0.001
D(Tbills(1))	-28.82915	5.079082	0.000
D(Tbills(2))	-28.27358	6.725754	0.001
D(Tbills(3))	-25.57749	5.459052	0.000
D(Codep)	561.7707	72.32329	0.000
D(Codep(1))	458.2702	65.08808	0.000
D(Codep(2))	248.8519	53.33886	0.000
D(Compaper)	-47.88926	9.616876	0.000
D(Compaper(-1))	-63.72435	11.67292	0.000
D(Compaper(-2))	-55.15126	13.15131	0.001
D(Compaper(-3))	-21.06821	9.743283	0.047
Long-run estimates			
$GDP_t = 666.7916 + 170.7072*Tbill_t - 3431.404*Codep_t + 231.353*Compaper_t + ?_t$			
Tbills	170.7072	105.6587	0.127
Codep	-3431.404	2969.613	0.266
Compaper	231.353	137.796	0.114
Constant	666.7916	369.1777	0.091

R^2 = 0.98, Adjusted R^2 = 0.97, N = 36, Prob > F = 0.0000

SUMMARY CONCLUSION AND RECOMMENDATIONS

This study examined the relationship between selected money market instruments and economic growth in Nigeria for the period 1986 -2021. The money market instruments used in the study were treasury bills, certificate of deposits and commercial papers and the GDP was used as a measure of economic growth. Autoregressive distributive lag model was used in the analysis. The result indicated a negative relationship between treasury bills and economic growth which was statistically significant in the short run and an insignificant positive relationship in the long run. Certificate of deposit demonstrated a positive statistically significant relationship with economic growth in the short run and a negative insignificant relationship with

economic growth in the long run. Commercial papers showed a negative significant relationship with economic growth in the short run and a positive insignificant long run relationship that is statistically insignificant. It can be concluded from the findings that treasury bills retarded economic growth, certificate of deposit supported economic growth on short term and was detrimental to economic growth on a long term application while commercial papers did not enhance economic growth in Nigeria. Over all, these results indicate that the money market in Nigeria did not really support economic growth in the country which may be attributed to inefficiency in the market. It is therefore recommended that the central bank of Nigeria should be cautious in using treasury bills and commercial papers as a tool to manage liquidity as the use of these tools in a short term retards economic growth while the prolonged use of the tools render them ineffective. In addition certificate of deposit should be used on a short term basis to guard against its negative impact on economy on prolonged use. Furthermore future research in the area can focus on examining the impact of treasury bills bought by Deposit Money Banks and Non-Bank public on Real Gross Domestic Product of Nigeria to provide specific evidence that can guide policy and practice on a specific instrument**.**

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APPENDIX

CORRELOGRAM RESIDUAL STATISTICS

LAG	AC	PAC	Q	Prob>Q	[Autocorrelation]	[Partial Autocor]
1	-0.0419	-0.0422	.06158	0.8040		
2	-0.2944	-0.3007	3.2047	0.2014		
3	-0.0384	-0.0714	3.26	0.3532		
4	-0.2185	-0.3542	5.1153	0.2757		
5	0.0617	-0.0247	5.2686	0.3840		
6	0.1781	-0.0393	6.5956	0.3599		
7	-0.0409	-0.0577	6.6683	0.4642		
8	-0.1809	-0.2732	8.1516	0.4188		
9	0.0108	-0.0594	8.1571	0.5184		
10	-0.0283	-0.1688	8.1967	0.6096		
11	-0.0482	-0.2330	8.3172	0.6846		
12	0.1408	-0.2080	9.3958	0.6688		
13	0.0290	-0.2609	9.4439	0.7387		
14	-0.0087	0.0295	9.4484	0.8013		