International Digital Organization for Scientific Research ISSN: 2550-7974
IDOSR JOURNAL OF ARTS AND MANAGEMENT 3(3): 1-11, 2018.

Effect of Banking Sector Reforms on Money Demand in Nigeria

Nwachukwu, Patricia Ngozi

Department of Banking and Finance, Faculty of Management Sciences,
Enugu State University of Science and Technology Enugu, Nigeria.

ABSTRACT

The study investigated the effects of banking sector reform on money demand in Nigeria. Interactive dummy variable error correction model approach was employed to investigate the effects of banking sector reform on money demand in Nigeria. The indicators of banking sector reforms used are the ratio of commercial bank assets to GDP representing bank size and the number of bank branches. To separate the pre-and post-consolidation periods, a dummy was attached to the periods before and after the 2005 bank consolidation, with pre-consolidation period (1980-2004) taking 0 and post-consolidation period (2005-2015) taking 1. The study established that there is a structural change in money demand as a result of the recent banking sector reforms introduced in the country. Thus, post-consolidation money demand performed better than the pre-consolidation money demand in Nigeria. Thus, the study concluded that banking sector reform was found to have positively impacted on money demand in Nigeria.

Keywords: Banking, money, variable error and Nigeria.

INTRODUCTION

Nigeria recently has been undergoing many reforms in the banking industry. The recent and most outstanding banking reforms which began in 2004 with the consolidation programme were necessitated by the need to strengthen the banks and financial sector in general [1, 2, 3]. The policy thrust at inception, was to grow the banks and position them to play pivotal roles in driving development across the sectors of the economy. As a result, banks were consolidated through mergers and acquisitions, raising the capital base from N2 billion to a minimum of N25 billion, which reduced the number of banks from 89 to 25 in 2005, and later to 24 [4, 5]. However, this led to the expanded use of branches by existing and new banks. The expansion of branch banking in Nigeria has occurred with the development of new technologies to deliver financial services, such as Automated Teller Machines (ATMs). These cost effective innovations and products that have become available, have the purpose of reducing the pressure on over-the-counter services to

bank customers [6, 7]. Beyond the need to recapitalize the banks, the regulatory reforms also focused on the following: risk-focused and rule-based regulatory framework, zero tolerance in regulatory framework in data/information rendition/reporting and infractions; strict enforcement of corporate governance principles in banking; expeditious process for rendition of returns by banks and other financial institutions through Electronic Flight Assistance (e-FASS); as well as the introduction of a flexible interest rate based framework that made the monetary policy rate the operating target [8, 9, 10]. The new framework has enabled the banking sector to be proactive in countering inflationary pressures and has helped to check wide fluctuations in the interbank rates and also engendered orderly development of the money market segment and payments system reforms, among others [11, 12, 13]. Moreover, in 2010, the Asset Management Corporation of Nigeria (AMCON) was established following the promulgation of its enabling Act by the National Assembly. It is a special purpose vehicle aimed at addressing the problem of non-performing loans in the Nigerian banking industry, among others. And in 2011, the financial sector introduced a new policy "Cash less Policy" as part of ongoing reforms to address currency management challenges in Nigeria, as well as enhance the national payments system [14, 15]. All these changes in the banking system ought to affect money demand in Nigeria. This is in line with the fact that the stability of money demand function was at the centre of monetarist claims that financial reforms should be the backbone of a non-inflationary policy stance [16, 17, 18]. Generally, the stability of the demand for money function has profound implications for the conduct of monetary policy particularly in this era of economic/financial reforms in Nigeria. Meanwhile, the use of monetary policy as a tool for macro-economic stabilization depends largely on the behaviour of the demand for money or real cash balances in the hands of economic agent, [19, 20, 21, 22]. This brings in the demand for money function which expresses a mathematical relationship between the quantity of money demanded and its various determinants like interest rate, income, price level, credit availability, frequency of payments etc. The stability of these relationships is vital in determining the appropriateness and effectiveness of the tools or instruments of monetary policy. In recent times, the instability of the previously stable demand for money function has thrown up new studies at its various determinants and several other fronts have been explored by economists and econometricians alike [23,24]. One of these fronts is financial policy reforms which has blurred the distinction between M1 and other assets. Earlier on [25] cited in [26] posited that it has

blurred the various definitions of money – M1, M2, M3 etc. In Nigeria, it has begun to hit home with the recent recapitalization of the banking sector, with the banks now bringing in new financial products that have combinations of savings features, higher interest earnings, easy withdrawals and transfers, with increasingly close substitutes for money being introduced by the day, good news for customers but a hellish nightmare for monetary authorities [27].

REVIEW OF RELATED LITERATURE

Banking reforms can be referred to as regular or irregular interception in rules and

regulations guiding the operation of financial institution, toward attainment of international best standard, and sufficient backing of economic growth and development in a country. Many inextricable factors may warrant reform in the sector, but majorly prompted with hope of regulating milieu of macroeconomic variables. In addition, it is generally recognized that need to deepen the financial sector and its reposition for growth equally propelled banking sector reform [28]. Financial sector reforms in Nigeria and elsewhere have mainly been motivated by the financial repression paradigm promulgated by the [29] and [30] who emphasized the role of government failures in the sector. Accordingly, the objective of financial reforms is to reduce or reverse this 'repression'. According to the McKinnon-Shaw hypothesis, financial repression arises mainly when a country imposes ceilings on nominal deposit and lending interest rates at a low level relative to inflation. The resulting low or negative real interest rates discourage savings mobilization and the channeling of the mobilized savings through the financial system. While the low and negative interest rates facilitate government borrowing, they discourage saving and financial intermediation, leading to credit rationing by the banking system with negative impacts on the quantity and quality of investment and hence on economic growth [3, 30].

Theoretical framework

Theory on Financial Reforms

The intellectual framework for financial reforms in developing countries in the 1980s was provided by the works of [30]. The Mckinnon-Shaw (M-S) paradigm asserts that extensive government controls imposed on the financial sector prevents financial deepening and impedes the contribution of the sector to development. The McKinnon-Shaw thesis is systematically detailing the efficiency and output costs associated with direct state intervention in the financial system labelled "financial repression". [30] presented their views by saying that the poor performance of most developing economies (LDC'S) is due to interest rate ceilings, high reserve requirements, and quantitative restrictions in the credit allocation mechanism caused by financial repression leading to low

savings, credit rationings and low investments. However, the general notion from their debate is that the functions of financial institutions in the savings-investment process were spelt out as being an effective element for the mobilization and allocation of capital by equilibrating the supply of loan-able funds with the demand for investment funds and the transformation and distribution of risks and maturities. However, the arguments in favour of incorporating a role for financial innovation or technological change in the demand for money has long been considered in the money demand literature [5]. The demand for money is considered a function of the prevailing institutional and technological framework and thus sensitive to changes in these underlying forces. The quantity of money demanded in any economy and indeed, the set of assets that have monetary status is dependent upon the prevailing institutions, regulations, and technology [7].

Theory on Money Demand

The theoretical underpinnings of the demand for money have been well established in the economic literature with widespread agreement that the demand for money is primarily determined by real cash balances.

Keynesian Liquidity Preference Theory

[8] built upon the Cambridge approach to provide a more rigorous analysis of money demand, focusing on the motives of holding money. Keynes postulated three motives for holding money: transactions, precautionary and speculative purposes. He also formally introduced the interest rate as another explanatory variable in influencing the demand for real balances. The main proposition of the Keynesian analysis is that when interest rates are low, economic agents will expect a future increase in interest rates; thus, preferring to hold whatever amount of money is supplied. Therefore, the aggregate demand for money becomes perfectly elastic with respect to the interest rate (liquidity trap).

Post-Keynes Theory

Following Keynes, a number of models were developed to confirm the relationship between the demand for real money, income and interest rates. These models can be classified into three separate frameworks, namely transactions, assets and consumer demand theories of money. Under the transactions theory of money demand framework, the inventory-theoretic approach by [8, 9] and the precautionary demand for money of [9] models were introduced. These models were derived from the medium-of-exchange function of money. The asset function of money led to the asset or portfolio approach where major emphasis is placed on risk and expected returns of assets [10].

METHODOLOGY

The econometrics research design was adopted for the analysis of the study, with a study population comprising of aggregate population of money demand from all commercial bank operations in the Nigerian economy. Time series yearly secondary data was used for this study, and the data were sourced from the 2015 Central Bank of Nigeria's statistical bulletin. The technique of data analysis that was adopted for this study is OLS (ordinary least square regression). Multiple Regressions was used to find out whether banking reforms have an effect on money demand in Nigeria. The resulting inference from their theory is that the demand for money is positively related to income and inversely related to interest rate.

Model Specification

Following [12], studies, this study hereby models the effects of financial sector reforms for (1970-2004) and for the period (2005-2013) on money demand represented by the equation below.

$$MD_t = \alpha_0 + \alpha_1 BRD_i + \alpha_2 PLR_t + \alpha_3 (CBA/GDP)_t + \alpha_4 (NBB)_t + \alpha_5 INFL_t + \alpha_6 BRD*CBA/GDP_t + \varepsilon_t \quad \ldots\ldots 1$$

where

MD= Broad money demand (represented by M2).

RGDP= Income proxy by real gross domestic product.

PLR= prime lending rate.

BRD = Banking reform dummy, taking 0 for periods 1970 - 2004 reforms and 1 for periods 2005-2015.

NBB = Number of bank branches.

(BRD*CBA/GDP) = The interactive dummy, showing the differential effect for a structural change to occur (The coefficient needs to be significant).

CBA/GDP = Ratio of commercial bank assets to GDP (representing bank size), and

ε_t = error term.

α_0 = the constant or the intercept and α_1 = the differential intercept α_5 = differential slope coefficient for interactive case between the dummy and CBA/GDP- indicating by how much the slope coefficient of the reform periods differ from the slope coefficient of the base period. Economic theory predicts that the signs of α_2 and α_5 are likely to be positive while α_6 and α_7 are expected to be negative as the lending rates and inflation affect the money demand negatively. From the frameworks above, and adopting a linear specification with an assumption of linearity among the variables given: where all coefficients and variables are as defined earlier, c is a constant parameter and ε is the white noise error term.

Error correction equation

After the regression, the error will be added to the model to check the speed of adjustment between the long-run and the short-run model. This will be done following the Granger Representation Theorem which stated that if two variables Y and X are cointegrated, the relationship between the two can be

expressed as ECM (Gujarati, 2007).That is

$$\Delta MD_t = \alpha_0 + \beta_1 BRD_i + \alpha_2 \sum_{i=1}^{n} \Delta PLR + \alpha_3 \sum_{i=1}^{n} \Delta CBA/GDP + \alpha_4 \sum_{i=1}^{n} \Delta NBB + \alpha_5 \sum_{i=1}^{n} \Delta BRD_i * CBA/GDP + \alpha_6 ECM_{t-1} \quad \ldots\ldots 3$$

The coefficient of the error correction (ECM_{t-1}) will indicate the percentage of the error corrected each year that is, the speed of adjustment.

ANALYSIS AND PRESENTATION OF RESULTS

Tests for Unit Root

To ensure that the data set are stationary enough to allow for meaningful analyses, the variables were subjected to a unit root test following the Augmented Dickey Fueler Statistics result and is presented in table 1 below

Variable	ADF Statistics	5% critical value	Order of Integration
MD	-3.71	-3.56	I(1)
RGDP	-6.72	-2.95	I(1)
NBB	-4.29	-2.96	I(1)
CBA/GDP	-4.87	-2.95	I(1)
PLR	-3.06	-2.94	I(0)

Computation by author.

Table 1 reports the test for stationarity properties of the series following the Augmented Dickey Fueler statistics. All the variables were found to be stationary at order 1 except prime lending rate that is stationary at order 0. At the first difference as reported, the ADF statistics for the respective variables were more negative than the critical values at 5% level of significance. All their p-values were less than 0.05.

The estimated short-run structural differences in the relationship between post-consolidation banking reform and money demand in Nigeria, the dummy variable approach.

The short run dynamic relationship for real Broad Money demand was modelled and results represented in Table 2. The short run dynamic model was estimated by the Auto-regressive distributed lag

model (ARDL) procedure using the differenced variables and lagged error correction terms formed from estimated long run equations. The maximum lag was established by the minimum AIC which minimizes the standard errors. The estimated OLS error correction terms measured the transitory deviations from the steady state equilibrium value of each variable present in the long run relationship. The coefficient of the error correction term in this case measures the speed of adjustment from the short run to the long run equilibrium.

Table 2 Error correction model for money demand and banking reform

Dependent variable D (money demand)

Variable	Co-efficient	T-statistics	T-probability
Constant	50435.47	0.8884	0.3825
Reform dummy	17230.66	4.4314	0.0050
D(PLR)	-10425.22	-0.9340	0.3589
D(CBA/GDP	9599.27	1.4078	0.1710
D(NBB)	391.64	2.1630	0.0399
BRD*CBA/GDP	20798.77	3.1697	0.0039
ECM_{t-1}	-0.1125	-2.0849	0.0470
R-squared	**0.8894**	Adjusted R-squared	0.8639
F-statistics	**34.85**	Prob.(F-stat.)	0.0000
Durbin Watson stat	**2.021**		

Result of this model is for objective one, the impact of post-consolidation banking sector reform on money demand in Nigeria as presented in tables 2 and 3.

Both the dummy intercept and the slope coefficients are statistically significant strongly suggesting that the banking reform and money demand relationship for the two periods 1970-2004 and 2005-2015 are different. The result is expected, as it suggests that the recent banking reform in Nigeria has affected the money demand in the country.

Bank size represented by ratio of commercial bank assets to GDP (variable of banking reform) is not statistically significant but spread of bank branches (number of commercial banks in Nigeria) is statistically significant. This outcome implies that a unit increase in the spread of bank branches in Nigeria will result to an increase in money demand by 392 units. Also, a unit increase in the prime lending rate will result in 10425.22 decrease in money demanded. Thus, the result from Table 2 suggested that current level of banking reform index (proxy by spread of commercial bank branches), has a significant impact on money demand at 5 percent. All variables are here considered significant

at 5 percent level. The coefficient of ECM_{t-1} (-0.1125) is significantly different from zero and bears the right sign thus validating the existence of co-integration in the system. With this, it indicates that when an external shock disturbs the equilibrium condition of money demand, about 11 percent of it is absorbed within one period (one year in this study). In view of Table 2 and as regards significance of the model, the F-statistic and its probability justify that it is highly significant and thus reliable. The model explains about 89 percent of the overall variations in the money demand.

Diagnostic tests

Table 3 Results of diagnostic tests

	X^2 Statistics	Probability
Normality test	**18.85**	**0.0000**
White Heteroskedasticity	**32.7132**	**0.0862**
Ramsey RESET Test	**1.5185**	**0.2178**
Serial correlation	**2.021**	

The second-order tests show that the model well behaved as it is not affected by the problems of autocorrelation, heteroskedasticity and model specification.

SUMMARY OF THE FINDINGS

The study was set out to investigate the effects of banking sector reform on money demand in Nigeria. The study used the interactive dummy variable error correction model approach to investigate the effects of banking sector reform on money demand in Nigeria. The indicators of banking sector reforms are the ratio of commercial bank assets to GDP representing bank size and the number of bank branches. To separate the pre-and post-consolidation periods, a dummy was attached to the periods before and after the 2005 bank consolidation, with pre-consolidation period (1980-2004) taking 0 and post-consolidation period (2005-2015) taking 1. The study established that there is a structural change in money demand as a result of the recent banking sector reforms introduced in the country. Thus, post-consolidation money demand performed better than the pre-consolidation money demand in Nigeria.

Thus, from the findings of the study, financial reform was found to have positively impacted on money demand in Nigeria.

CONCLUSIONS

Most studies in Nigeria have been taking components of banking reform individually as explanatory variables. Other studies are found either to treat the partial financial reform of SAP as the full liberalisation, or exclude the partial liberalisation period by taking only the full liberalisation date. This is misleading, especially with the recent financial sector reforms. The trend of events focused mainly on the banking sector and therefore calls for thorough investigation on the banking sector reforms instead of the whole financial sector reforms. The study concludes that banking sector financial reforms have resulted in a significant structural change in the money demand in Nigeria.

RECOMMENDATIONS

Banking sector reforms in particular suppose to induce structural changes, augment money demand simultaneously with economic growth. But for these variables to exhibit rising contributions, the government should continue with financial liberalization policy in particular. Emphasis should be put on structural reforms such as promoting a competitive and viable domestic banking system, with an adequate regulatory and supervisory framework. This should be complemented by macroeconomic stability that is, fiscal deficits, rapidly depreciating exchange rate and high inflation should be put in check. This calls for appropriate sequencing of the structural reforms. In implementing such reforms, it is wiser to move gradually and to improve economic fundamentals first before complete deregulation of any policy component.

REFERENCES

1. Aiyedogbon, J.O., S.E. Ibeh, M. Edafe, B.O. Ohwofasa (2013). Empirical analysis of money demand function in Nigeria: 1986-2010. *International Journal of Humanities and Social Science, 3(8), Special Issue*.

2. Akinyele G.T, Ojenike J.O and Afolabi A.A (2014). Demand and Supply of Credit in Nigeria Banking Sector. *Research Journal of Finance and Accounting 3(8) 2012.*

3. Aniekan O.A and Gidigbi M.O (2014). Recent Bank Reforms in Nigeria: Implications on Sectoral Credit Allocation and Economic Growth*. International Journal of Business and Social Sciences 5(13) 2014*

4. Anoruo, E. (2002) Stability of the Nigerian M2 Money Demand Function in the SAP Period, *Economics Bulletin*, 14(3), 1-9.

5. Arrau, P., De Gregorio, J., Reinhart, C., Wickham, P. (1995). The demand for money in developing countries: assessing the role of financial innovation.

Journal of Development Economics 46 (2), 317-340.

6. Bassey, Bassey Eyo, Bassong, Peter Kekung, Effiong ,Charles.(2012). The Effect of Monetary Policy on Demand for Money in Nigeria. *Interdisciplinary Journal of Contemporary Research in Business, 4(7), 430.*

7. Baumol, W.J. (1952). The Transactions Demand for Cash: An Inventory Theoretic Approach. *The Quarterly Journal of Economics, 66(4).*

8. CBN (2012). Central Bank of Nigeria Annual Report 2012: CBN publications {internet}. Available from Google {Accessed 21st November, 2013}.

9. Dagher, J and Kovanen, A. (2011), On the Stability of Money Demand in Ghana: A bound Testing Approach. International Monetary Fund Working Paper/11/273.

10. Darrat, A. F. and Al-Sowaidi, S. S. (2010). Information Technology, Financial Deepening and Economic Growth: Some Evidence from a Fast Growing Emerging Economy. *Journal of Economics and International Finance*, 2(2), 28-35.

11. Gbadebo, O.O. and O.A. Okunrinboye (2009).Modelling the impact of financial innovation on money demand in Nigeria. *African Journal of Business Management, 3(2), 039-051*.

12. Gbadebo, O.O. (2010). Does financial innovation affect the demand for money in Nigeria? *Asian Journal of business management studies*, 1(1), 8-18.

13. Gurley, J. and E. Shaw (1955).Financial Aspects of Economic Development *American Economic Review, 45, 515-537.*

14. Ighodaro, C. A. U and Ihaza, I.M. (2008).A Cointegration and Error Correction Approach to Broad Money Demand in Nigeria. *Journal of Research in National Development, 6(1).*

15. Iyoboyi M. & Pedro, M.L. (2013). The Demand for Money in Nigeria: Evidence from Bounds Testing Approach. *Business and Economics Journal, 76.*

16. Johansen, S. (1988).Analysis of Cointegration Vector. *Journal of Dynamic and Control, 12, 231 – 254.*

17. Johansen, S. and Juselius, k. (1990). Maximum likelihood estimation and inference on cointegration with applications to the demand for money. *Oxford Bulletin of Economics and statistics,*52(2), 169-210.

18. Keynes J.M. (1936). The Ex-Ante Theory of the Rate of Interest. *The Economic Journal*, 47.

19. Kumar, M.A. et al (2012). Analyzing soundness in Indian banking: A CAMEL Approach, *Research journal of Management Science*, 1(3), 9-14.

20. McCallum, B. T. and Good friend, M.S. (1987). Demand for Money: Theoretical Studies in The New Palgrave. John Eatwell, Murray Milgate, and Peter Newman (Eds.).W.W. Norton & Company, Inc., London.

21. McKinnon, R.I. (1973). Money and Capital in Economic Development, Washington, DC, Brookings Institution.

22. Onaforowa, O.A. and O. Owoye (2007). Structural adjustments and the stability of the Nigerian money demand function. *International Business and Economics Research Journal, 3(8).*

23. Phillips, P. and Peron, P. (1988).Testing for a Unit Root in Time Series Regression, Biometrica, 75, 335-346.

24. Sanya, O. (2013). Impact of Commodity Price Fluctuations on the Stability of Nigeria Money Demand Function. International Journal of Arts and Commerce, 2(7).

25. Sanya, O. and A.A. Awe (2014). The Impact of financial liberalization on the stability of the Nigerian money demand function*. International Journal of Economics, Business and Finance, 2(1), 1-18.*

26. Shaw, E.S. (1973). Financial Deepening in Economic Development. New York, Oxford University Press.

27. Tobin, J. (1956). The Interest-Elasticity of Transactions Demand for Cash.*The Review of Economics and Statistics, 38(3).*

28. Tobin, James. (1958). Liquidity Preference as Behaviour Towards Risk. *Review of Economic Studies* 25(1), 65–86 (press +).

29. Vallence, N. (2011) The Effect of Financial Liberalization on Money Demand and Economic Growth, Uganda's Experience, unpublished Manuscript.

30. Yamden, P.B. (2011). The demand for money in Nigeria. *European Journal of Business and Management, 3(6), 63-85.*