The Role of Non-bank Financial Institutions on Financial Intermediation Process in Nigeria (1992-2014)

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Authors' contributions

This research was carried out in collaboration between both authors. Author NCNI conceptualized the study, sourced and managed relevant literature. He also wrote the first draft of the manuscript and critically reviewed it thereafter. Author AAC sourced the data, performed the analysis and interpreted the results. Both authors read and approved the final version of the manuscript.

Article Information

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ABSTRACT

The role of non-bank financial institution towards financial intermediation process in Nigeria is not fully noticed. It is against this background that we assess the effect of non-bank financial institutions on financial intermediation process as well as the long run relationship between non-bank financial institutions and financial intermediation process in Nigeria for the period 1992 to 2014. Before we estimated the model, we subjected the model to diagnostic test of heteroskedasticity, serial correlation, Ramsey specification and multicollinearity test. The unit root test was conducted for all the variables to ensure they are free from stationarity defect. The long run relationship was tested using the Johansen co-integration approach and the effect assessment by granger causality effect test. The unit root result indicates that the variables were stationary at first difference and free from stationarity defect associated with most time series data. Johansen co-integration result reveals the presence of a long run relationship between non-bank financial institutions and financial intermediation process in Nigeria. The granger causality test on effect

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assessment reveals that it is only primary mortgage institutions activities that have significant effect on financial intermediation process while there is no evidence of the significant effect of discount houses, microfinance banks and finance companies on financial intermediation process. In view of the positive relationship between non-bank financial institutions and financial intermediation process, monetary authorities should put in place adequate regulatory framework for the operation of non-bank financial institutions in Nigeria especially primary mortgage institutions as it has significant effect on financial intermediation process based on the finding of this study.

1. INTRODUCTION

The significant of efficient and well-developed financial system in promoting economic growth is undisputable. The contribution of the financial system towards the growth of an economy is primarily credited to the role it plays especially in savings mobilization and allocation of resources to deficit sectors of the economy. It is widely accepted within the theoretical literature that intensification of financial instruments and institutions would tremendously reduce transaction and information costs in an economy which in turn influences savings rate, investment decision and technological innovative ventures. The bulk of empirical research on financial development have focused on banking sector or stock market development. In the finance-growth nexus dogma, the depth of development in the banking sector and stock market have been mostly adopted to reflect the level of financial development [1], noted that the emergence of non-bank financial intermediaries as one of the relevant sub-sector in the financial system development hence, their linkage with economic activity is largely unnoticed.

The exacerbation of economic activities has led to upsurge in the number of non-bank financial institutions in Nigeria. Non-bank financial institutions have attained a substantial degree of development in the financial system and in likewise manner, expanded magnificently in relation to the size of the economy. Most of the non-bank financial institutions in Nigeria are poised and developed contemporaneously with economic activities in order to specifically serve a purpose in the economy with highest regard in provision of long term financing for industrialisation. The funds that non-bank financial institutions mobilize, predominantly from contractual savings are mostly of long term in nature. This is in sharp contrast to the deposits harnessed by commercial banks that are mainly short term in disposition as they operate with depositor's money [1]. The deposit liabilities of the commercial banks are normally contained in their financial statements published quarterly or yearly. Financial records of non-bank financial institutions are hardly available to the public compared to that of the commercial banks thus, difficult in assessing their effectiveness and impact towards intermediation process in Nigeria. Virtually all the primary mortgage institutions, microfinance banks, discount houses, finance companies and others in Nigeria have no website for accessing information. They only consider reporting to the regulatory agencies their priority.

The integration of non-bank financial institution as an important facet of the financial system is positively related to development of small and medium scale enterprises. Small and medium scale enterprises are the backbone of all economies and a key source of economic growth, job creation and innovation in both developed and emerging market economies [2]. Small and medium scale enterprises in Nigeria have limited access to bank credit due to lack of collateral to match the fund needed. Furthermore, it is difficult for small and medium scale enterprises to access long term fund from stock market genuinely on their incapability to get listed due to stringent listing requirements [2]. The constraints faced by small and medium scale enterprises in accessing long term financing can be eased by non-bank financial institutions provision of small and medium sized loans. Similarly, non-bank financial institutions can assist small and medium scale enterprises in business expansion which result in employment generation for the economy.

This study is broken down into sections with introduction as section one. Section two comprises review of related literature (concept of non-bank financial institutions and financial intermediation, theoretical framework and empirical studies) and rationale for this study. Methodology takes care of section three, section

four for data analysis and result while section five features conclusion.

2. REVIEW OF RELATED LITERATURE

2.1 The Concept of Non-bank Financial Institutions

Generally, non-bank financial institutions are financial institutions other than deposit money banks that are involved in the mobilization of funds from surplus unit in the economy and making such funds available to deficit unit for investments. [3] sees non-bank financial institutions as shadow banks. Shadow banking had a distinctly United States of America focus however, there were shadow banking institutions in the United Kingdom, Europe and China [3]. Non-bank financial institutions do much more than commercial banks in terms of maturity transformation when they use deposits which are normally short term to fund loans that are longer term [4]. The Nigeria Bank and Other Financial Institutions Act (BOFIA) of 1990 defined non-bank financial institutions as any individual, body, association or group of persons; whether corporate or unincorporated, other than the banks licensed under the Act which carries on the business of a discount house, finance company and money brokerage and whose principal object include factoring, project financing, equipment leasing, debt administration, fund management, private ledger services, investment management, local purchase order financing, export financing, project consultancy, pension fund management and such other services as the bank may from time to time designate. We carefully observed from BOFIA definition that non-bank financial institutions include institution that have no full banking licence and are not authorised to accept deposits from the public. Nevertheless, they provide alternative financial services such as management of individual and collective investments, money transmission, and pooling of risk among others. The Central Bank of Nigeria (CBN) regulates and supervises the following categories of non-bank financial institution: bureau de-change, finance companies, discount houses, microfinance banks, primary mortgage institutions and development financial institutions such as Federal mortgage Bank of Nigeria (FBN), Nigeria Export-Import Bank (NEXIM), Bank of Agriculture (BOA), among others. [5] and [1] have recognized the important role played by non-bank financial institution in the economic growth and development of Nigeria and Malaysia.

2.2 Financial Intermediation

Financial intermediation is the connection between savers and borrowers where funds are transferred from savers to borrowers through an intermediary institutions. In other words, it is the process by which financial intermediaries such as banks, finance house, microfinance bank and other similar licenced institutions harness fund from savers and give to borrowers on request for investments or other needs. The savers and borrowers constitutes two main roles in financial intermediation process. Financial intermediation in the banking system is a catalyst for growth of the economy. The non-bank financial institutions promote growth of the economy through the process of financial intermediation by effectively and efficiently mobilizing resources from surplus sector of the economy and allocating same to the deficit units. The financial intermediation functions of non-bank financial institutions serves as catalyst for growth and development of the economy. Providing enabling environment and regulatory framework that could facilitate the smooth operation of non-bank financial institutions will in same measure deepen the proper functioning of the financial system. Financial intermediation is the root institution in the saving-investment process. Ignoring it would seem to be done at the risk of irrelevance [6]. Financial intermediation is very critical as most of the financing that takes place in the economy is consequent to intermediary functions of both bank and non-bank financial institutions. Financial intermediation functions of finance companies have prominent role in determining the performance of the Nigeria economy [6].

2.3 Theoretical Background

According to [7], the theory of financial intermediation was first formalised in the works of Goldsmith (1969), Shaw (1973) and Mckinnon (1973). The financial intermediation process is central to the development and growth of any country. The level of intermediation is a reflection of the level of development of the financial system. The financial intermediation theory is based on the theory of information asymmetry and the agency theory [8]. To provide a good background for this study, we succinctly discussed financial intermediation using the concepts of information asymmetry, transaction cost and regulation/supervision of money creation, saving and financing of the economy. However, in modern theories of financial intermediation, two most prominent explanations for the existence of intermediaries like depository

institutions are the provision of liquidity and the provision of monitoring services [9].

2.3.1 Information asymmetry

Information asymmetry connotes inadequate information especially to the borrowers. In this theory, it is believed that the borrowers have advantage of having more information about the riskiness of the project in which they receive funds than the savers or lenders of funds. As a result, moral hazard and adverse selection conundrum arises, leading to the possibility of diminution in proficiency of funds allocation to deficit units from surplus units. This problem of selection and moral hazard lead to the application of some costly verification and auditing procedures or even the forced execution of the debtor, generates imperfections of the market and deviations from the theory of perfect markets in an Arrow -Debreu sense [8]. Many of these imperfections lead to specific form of transaction costs which financial intermediaries appear to overcome at least partially [10]. However, literature argues that banks help to overcome these problems by way of providing commitment to long-term relationships with customers, economies of scale and delegated monitoring of borrowers [11].

2.3.2 Transaction costs

The transaction cost approach is a follow up the perfect market condition where according to the neo-classical economists, prices in the market cannot be influenced by one partaker, conditions for lending and borrowing for all partakers are indistinguishable, and all information concerning factors and components capable of influencing the present or future value of financial securities are instantaneously at disposal of all partakers. In this approach, the banks become the alliance of the lenders and borrowers who take advantage of the economies of scale or scope which arise through maturity transformation and size or banks diversification of their business. The transaction cost is not just the cost of fund the borrower pays to lenders or intermediaries, it also encompasses enforcement, monitoring, verification and search costs. Branch networks, telephone banking and internet banking are some of the distribution channels employed by banks to reduce the costs of search. However, banks use documented forms of contract to reduce negotiation costs.

2.3.3 Money creation, saving and economy financing regulation/supervision

The type of regulation and supervision financial intermediaries are subjected to affect their liquidity and solvency position. Government provision of deposit insurance and intervention into banking markets, including bank supervision and examination, limitations on bank activities, capital requirements, charter requirements and entry restrictions, closure rules, and other rules for banks are now widespread around the globe on the rationale that banks are inherently flawed institutions being prone to harmful banking panics [6]. [8] acknowledged that Diamond and Rajan (2000) showed that the regulations regarding the capital of intermediaries influence the health of banks and their ability for refinancing and methods for recovering debt. The development and growth of the economy is shaped by the soundness and safety of the financial system. This is the reason why governments around the world through the central banks ensure soundness, safety and stability of the financial system.

2.4 Empirical Review

Based on internet search, empirical literature on contribution of non-bank financial institutions towards financial intermediation process are scarce. Scholars focus mainly on its effect on growth and development of the economy. This could be attributed to the fact that in most countries, the banks dominate the financial system. In this sub-section, we reviewed the few literature available online and cemented it with studies on the role played by non-bank financial institutions in economic growth and development (particularly in developing economies).

[12] determined the role played by the National Cooperative Development Bank as a Non-Bank Financial Microfinance Institution in providing financial services to class of economically poor people in the Western Area in Seirra Lone whom hitherto were been neglected by the formal sector. A sample of 30 Barrays with each constituting 5 members totalling to 150 respondents were thoroughly investigated 2001 to 2005. The OLS econometric estimation technique was used to analyse the data employing a Probit Regression model. The result of the Probit regression model revealed that probability of access to credit is increased if the individual is a trader, self-employed, a widow and with increases in the initial amount deposited

which was used as a proxy variable for cash collateral. However, the probability of access to credit is reduced if the individual's education is primary.

[13] analysed the role played by Non-Bank Financial Institutions (NBFIs) in Egypt and other MENA countries from 1970 to 1993. The result revealed that Non-Bank Financial Institutions (NBFIs) complement the services provided by banking institutions and also represent a countervailing force to their dominant role, forcing them to be more competitive and efficient. Non-Bank Financial Institutions (NBFIs) provide a strong stimulus to the development of the capital markets, generating large amounts of long-term financial resources and creating new sources of supply and demand for marketable securities.

[5] assessed the impact of NBFIs on the economy by utilizing data obtained from CBN Statistical Bulletin and the Statistical Directory of the National Insurance Commission. Trend analysis and Pearson's correlation technique were used to analyse data and test hypotheses and finding indicates that significant relationship exist between NBFIs credit to the manufacturing and agricultural sectors' GDP.

[1] employed bounds testing approach to co-integration and error correction mechanism to investigate the existence of a long run equilibrium relationship between NBFIs and economic growth. The study found evidence of a long run co-integrating relationship between NBFIs and real per capita income. The empirical result indicates that the development of NBFIs positively and significantly influences per capita income in Malaysia.

[14] evaluated the impact of bank and non-bank financial institutions on the growth and development of the Nigerian economy from 1992 to 2012 under the ordinary least square (OLS) regression analysis. The result of the joint test revealed that the financial institutions play prominent role on the growth and development of the Nigerian economy. However, it further revealed that individual contributions of the explanatory variables varied. Deposit money banks were seen to have impacted very insignificantly to the growth and development of Nigerian economy.

[15] ascertained growth of NBFIs over time and contribution to Bangladesh economy by adopting growth measures based on asset, loan, income and expenditure figures with a sample period 2000-2010. The study revealed a positive growth of NBFIs over the years in advances, income, assets and others financial aspect and a good contribution in the GDP growth of Bangladesh.

[16] applied Johansen co-integration and the vector error correction model to empirically test the existence of a long-run equilibrium relationship between economic growth and non-bank financial institutions (NBFIs) and the causality thereof. The empirical assessment was based on evidence from selected African countries over the period 1971-2013. The result showed that a strong long-run relationship between NBFIs and economic growth exist in Egypt and South Africa. Evidence in respect of Nigeria is weak. Thus, the study revealed that in countries with more developed financial systems, the role and importance of NBFIs to the economic growth process is more pronounced.

[17] employing data of 27 Chinese provinces over the period 1995-2003, examined whether two different types of institutions – banks and non-bank financial institutions – have (a significantly different) impact on local economic growth. The finding showed that banks outperform non-bank financial institutions. Only bank loans exert a statistically and economically significant positive impact on local economic growth. This effect becomes more pronounced when the banking sector is less concentrated.

[18] looked at the linkage between finance companies intermediation functions and economic growth in Nigeria. Using an annual time series data spanning the period of 1992 - 2014 with the application of the estimation techniques of ordinary least square, co integration test, alongside granger causality test. The Global statistic results indicates that about 80% of the variations in GDP for the estimation period were captured by the explanatory variables, financial intermediation functions of finance companies has a prominent role in determining the performance of the Nigeria economy.

2.5 Rationale for Our Study

Nigeria just like India, the largest component of the financial system is the banking sector. This is hinged to its dominance is providing financial resources for

economic activities. To this effect, Nigeria is been regarded as a bank based market on the argument that the banking sector extends more credits to the economy compared to funds obtained from the financial market. Reminiscent of the transformation in the banking sector, non-bank financial institutions have gone through massive expansion process. The non-bank financial institutions as an alternative source of financial resources have been seen expanding rapidly and gaining reputation in recent time resulting from their proficiency in servicing the financial necessities of different economic units there by proliferating the financial intermediation process in Nigeria. The development of the non-bank financial institutions is necessary for the development of the Nigerian stock market. [13] empirically observed that non-bank financial institutions help in stimulating activities in the stock market by increasing the demand for securities traded and the level of professional fund management which in turn translat to higher market capitalization and value of stock traded ratio relative to gross domestic product. In India, investment activity of non-bank financial institutions comprises around 16% of their total assets. However, there are specialized non-bank financial institutions that are exclusively engaged in capital market investment i.e. trading in securities (Gandhi, 2014).

Despite the significant functions of non-bank financial institution in growth of the economy, its prominence effect on financial intermediary process in Nigeria is hardly noticed and established. Thus, vital to carry out a study of this nature to examine the extent to which the development of these institutions have influenced financial intermediary process. The few studies conducted on this subject matter by [5] and [18] were essentially on the role of non-bank financial institutions on economic growth of Nigeria. To the best of our knowledge based on internet searches, this study is the first to carefully and unambiguously assess the effect of non-bank financial institutions on financial intermediation process as well as the long run relationship between non-bank financial institutions and financial intermediation process in Nigeria for period 1992 to 2014. To this effect, the directional hypothesis is that there is no significant long run relationship between non-bank financial institutions and financial intermediation process.

2.6 Non-bank Informal Bodies Operating in Nigeria

Aside the non-bank financial institutions such as bureau de-change, finance companies, discount houses, microfinance banks, primary mortgage institutions and development financial institutions that are subjected to the regulation and supervision of the Central Bank of Nigeria and Nigeria Deposit Insurance Corporation, there are other non-bank informal bodies operating in Nigeria. Some of these non-bank informal bodies are precisely discussed as follows:

2.6.1 Credit co-operatives

There are a lot of saving and credit associations geared towards creating and building of wealth of its members through personal monthly savings/contributions. They make funds available to members on request at a less interest rate and collateral demand compared to commercial banks and other financial institutions in the country. For instance, the co-operative society operated by lectures in Nnandi Azikiwe University, Awka, Nigeria extends up to ₦5 million to a member at 10% rate of interest compared to a commercial bank that will grant same amount at over 22% rate of interest. Virtually all the members of this credit and thrift society in Nnandi Azikiwe University, Awka does not borrow from commercial banks. This corporative society pays interest on member's contribution, and higher than what commercial bank pays when same amount is held in current or savings account. The operations of these credit and thrift societies is potential source of capital formation and contributes to financial intermediation process in Nigeria.

2.6.2 Isu-su groups

The Isu-su group are usually made up of 5 to 30 members that are well known to each other via friendship, neighbourhood, same village setting, etc. This kind of group are mostly made of low income women. They contributes a certain amount of money weekly or monthly and extends to members on a rotational basis. These funds are used to finance business, child education or self-education, purchase of home utensil, hospital bill, etc. They help members especially during difficulty or when a member is bereaved. The Isu-su group are predominantly practiced in rural areas as most rural areas have no microfinance banks talk more of commercial banks.

2.6.3 Money lenders

This may be a wealthy individual or a group of people who give life time opportunity loan. They act as private loan lender and grant facility to individuals in urgent need to clear debt or capital to improve a business. The people seeking funds from these private lenders are incapable of meeting the conditions of the banks for facility approvals.

2.6.4 Much rooms savings/clubs

These constitutes people on the same line of business or different business but most resides in the same town or area. They come together and forms a club and contributes weekly to the club account. The money contributed are normally for business expansion of its members. They only lend to members of the club at a low interest rate without collateral. They believe that if a member should default in loan repayment, the amount outstanding will be recouped via the goods available in the shop. They have a very clear rules and regulations that are enforceable in court of law in the event of default by any member.

Other non-bank credit mobilization that result in financial intermediation include: family funds, personal savings, savings from friends and relatives and funds from trade business among others.

3. METHODOLOGY

The focal point of this study is to assess the effect of non-bank financial institutions on financial intermediation process in Nigeria for period 1992 to 2014. To achieve this objective, time series data were collected from the Central Bank of Nigeria (CBN) statistical bulletin of 2014. The granger causality was used to test for effect and Johansen co-integration for long run relationship. However, prior to estimating the equation, we subjected the model to diagnostic test of heteroskedasticity, serial correlation, Ramsey specification and multicollinearity test. The essence of this is to ensure that the model is in line with basic econometric assumption for such nature of research. In Nigeria, the non-bank financial institutions licensed by the Central Bank of Nigeria to operate are categorised into bureau de-change, finance companies, discount houses, microfinance banks, primary mortgage institutions and development financial institutions. We selected primary mortgage institutions, microfinance banks, discount houses and finance companies on the argument that they submit their annual financial statement to the Central Bank of Nigeria being the regulator, even though most of them do not make their financial statement available to the public. The period 1992 to 2014 is justified on the ground that it covered all the financial system restructuring done so far, especially the consolidation exercise of 2005.

3.1 Model Specification

In developing a model for this study, we considered firstly, the focal point of the study, and secondly, the distinctness of the type of non-bank financial institutions in Nigeria. The dependent variable is financial intermediation, and proxied as the financial intermediaries credit to private sector ratio to gross domestic product. [19] noted that the higher the credit to private ratio to gross domestic, the higher the level of financial services hence, greater level of financial deepening. The explanatory variables are ratios of total assets of primary mortgage institutions, microfinance banks, finance companies and discount house to gross domestic product. This measures the size of these NBFIs relative to the economy. It captures the actual level of development attained by NBFIs in a period. If NBFIs has grown as a result of greater intermediation, the ratio will be higher, and the reverse is the case if there was no growth and vice versa. The econometric model is stated as:

$$FI_{it} = \beta_0 + \beta_1 DHAG_{it} + MBAG_{it} + FCAG_{it} + PMIAG_{it} + \varepsilon_{it} \qquad (3.1)$$

Where FI = Financial Intermediation, DHAG = Total Assets Ratio of Discount Houses to Gross Domestic Product, MBAG = Total Assets Ratio of Microfinance Banks to Gross Domestic Product, FCAG= Total Assets Ratio of Finance Companies to Gross Domestic Product and PMIAG = Total Assets Ratio of Primary Mortgage Institutions to Gross Domestic Product. β_0 is a constant term, ε is the error term and it is the time trend. These are normally included in standard time series analysis to account of unaccounted variables.

Our a priori expectation is that intermediary activities of primary mortgage institutions, microfinance banks, discount houses and finance companies is expected to contribute positively to financial intermediation process in Nigeria i.e. a positive relationship is expected to exist between

non-banks financial institutions and financial intermediation, hence:

$$\frac{\delta\,FI_{it}}{\delta\,DHAG_{it}} > 0, \frac{\delta\,FI_{it}}{\delta\,MBAG_{it}} > 0, \frac{\delta\,FI_{it}}{\delta\,FCAG_{it}} > 0 \;and\; \frac{\delta\,FI_{it}}{\delta\,PMIAG_{it}} > 0$$

4. DATA ANALYSIS AND RESULTS

4.1 Summary of Descriptive Statistics Properties

The descriptive characteristics of the variables are presented in Table 4.1. The mean values of the FI, DHAG, MBAG, FCAG and PMIAG are 14.06957, 0.646030, 0.267761, 0.321987 and 0.503913 while their median are 11.90000, 0.507100, 0.265900, 0.279400 and 0.470000 respectively.

The series depicts the maximum values of 36.90000, 1.717000, 0.611500, 1.228400 and 1.463300 for FI, DHAG, MBAG, FCAG and PMIAG. The minimum values are 5.900000 for FI, 0.000000 for DHAG, 0.078400 for MBAG, 0.110000 for FCAG and 0.101500 for PMIAG. The series standard deviation are 7.509899 for FI, 0.487018for DHAG, 0.142512 for MBAG, 0.256203 for FCAG and 0.412969 for PMIAG.

All the variables are positively skewed towards normality as evidenced by the positive sign of the skewness. The Kurtosis that measures the peakedness of the distribution of each of the variables are 5.030865, 3.040495, 3.334951, 8.326019 and 3.277863. These values are greater than 3, indicating that all the variables are leptokurtic in nature. The Jarque-Bera suggests that FI and FCAG are normally distributed as the p-values are significant at 5% level of significance. This is not the case for DHAG, MBAG and PMIAG.

4.2 Diagnostic Test

4.2.1 Heteroscedasticity

The probability of the Chq statistic is significant at 5% level of significance, indicating that the model is free from the problem of heterscedasticity. Table 4.2. presents the Breusch-Pagan-Godfrey heteroscedasticity test.

4.3 Serial Correlation LM Test

The serial Correlation test is an alternative to the Q-statistic test for serial correlation. Unlike the Durbin Watson statistic for AR(1) errors, the LM test may be used to test for higher order ARMA errors and is applicable whether there are lagged dependent variables or not. The serial Correlation test is preferred to Durbin Watson in testing autocorrelation in any stated model. The p-value of the Breusch-Godfrey serial correlation test in Table 4.3 reflects the acceptance of the null hypothesis as it is significant at 5% level of significance. In the light of this, the variables in the model are not correlated.

Table 4.1. Variables descriptive statistics properties

	FI	DHAG	MBAG	FCAG	PMIAG
Mean	14.06957	0.646030	0.267761	0.321987	0.503913
Median	11.90000	0.507100	0.265900	0.279400	0.470000
Maximum	36.90000	1.717000	0.611500	1.228400	1.463300
Minimum	5.900000	0.000000	0.078400	0.110000	0.101500
Std. Dev.	7.509899	0.487018	0.142512	0.256203	0.412969
Skewness	1.462334	1.025511	0.942480	2.332649	1.091070
Kurtosis	5.030865	3.040495	3.334951	8.326019	3.277863
Jarque-Bera	12.14984	4.032986	3.512547	48.04267	4.637320
Probability	0.002300	0.133121	0.172687	0.000000	0.098405
Sum	323.6000	14.85870	6.158500	7.405700	11.59000
Sum Sq. Dev.	1240.769	5.218096	0.446810	1.444075	3.751959
Observations	23	23	23	23	23

Source: Computer Output data using E-views 8.0

Table 4.2. Breusch-Pagan-Godfrey heteroscedasticity

F-statistic	9.319411	Prob. F(4,18)	0.0003
Obs*R-squared	15.51053	Prob. Chi-Square(4)	0.0038
Scaled explained SS	8.714553	Prob. Chi-Square(4)	0.0686

Source: Computer Output data using E-views 8.0

Table 4.3. Breusch-Godfrey serial correlation LM test

F-statistic	4.752201	Prob. F(1,41)	0.0240
Obs*R-squared	8.571118	Prob. Chi-Square(1)	0.0138

Source: Computer Output data using E-views 8.0

4.4 Ramsey Specification Test

The Ramsey RESET test is a stability diagnostic test that ascertains whether the model is correctly specified/fitted or not. The rationale behind the test is that if non-linear combinations of the independent variables have any power in explaining the dependent variable, the model is not well specified. The p-values of F-statistic and Likelihood ratio as shown in Table 4.4 are significant at 5% level of significance showing that our model is well specified.

Table 4.4. Ramsey RESET test

	Value	df	Probability
F-statistic	6.668697	(2,16)	0.0078
Likelihood ratio	13.94431	2	0.0009

Source: Computer Output data using E-views 8.0

4.5 Multicollinearity Test

It can be inferred from the correlation matrix in Table 4.5 that the correlation between the series is not more than 0.76. All the independent variables are positively correlated with the dependent variable. Since the independent variables are correlated to a highest value of 0.76, we conclude that multicollinearity does not exist between them as they are different components of non-bank financial institutions.

4.6 Unit Root Result

4.6.1 Augmented Dickey-fuller (ADF) test

We conducted the ADF test in level and first difference at intercept and trend and intercept.

The result of the ADF test in Tables 4.6a and 4.6b performed in level form at intercept and trend and intercept discloses that all the variables have no unit root at intercept and trend and intercept except DHAG at trend and intercept.

The unit root result in Tables 4.7a and 4.7b at intercept and trend and intercept of first difference shows that the ADF test statistic for all the variables were greater than the critical values at 5% first difference at intercept and trend and intercept. We accept the null hypothesis that the variables have unit root at first difference. Hence, all the variables are stationary at first difference at the 5% level of significance and integrated of order one i.e. 1(1).

4.7 Phillips Perron (PP) Test

We performed the Phillips Perron (PP) test in level and first difference at intercept and trend and intercept. Tables 4.8a and 4.8b depict the result of the level form test at intercept and trend and intercept while Tables 4.9a and 4.9b that of first difference at intercept and trend and intercept. The result in Tables 4.8a and 4.8b show that all the variables have not unit root.

The Phillip Perron (PP) test in Table 4.9a and 4.9b illustrates that all the variable are stationary at first difference. The result of the unit root test through ADF and PP shows that all the variables are stationary at first difference hence permitting for the testing of the long run relationship between the variables.

4.8 Short Run Relationship

We analysed the short run test between non-bank financial institutions and financial

Table 4.5. Correlation matrix

	FI	DHAG	MBAG	FCAG	PMIAG
FI	1.000000	0.725946	0.740827	0.060455	0.752311
DHAG	0.725946	1.000000	0.656389	0.093319	0.713930
MBAG	0.740827	0.656389	1.000000	0.327290	0.768859
FCAG	0.060455	0.093319	0.327290	1.000000	0.111833
PMIAG	0.752311	0.713930	0.768859	0.111833	1.000000

Source: Computer Output data using E-views 8.0

intermediation process in Nigeria using the OLS regression approach. The result were interpreted using the global utility and relative statistics of model we developed in section 3 of this paper.

4.9 Global Utility of Model

The Adjusted R-squared value of 0.620536 indicates that selected non-bank financial institutions: discount houses, microfinance banks, finance companies and primary mortgage institutions explained 62.05 variations in Nigeria financial intermediation. The F-statistic of 9.994129 and p-value of 0.0000 shows that discount houses, microfinance banks, finance companies and primary mortgage institutions jointly and significantly influenced variations in financial intermediation process within the perio

Table 4.6a. ADF test result at level: Intercept

Variables	ADF test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-1.815323 (0.36)	-3.769597	-3.004861	Not stationary
DHAG	-1.827420 (0.36)	-3.769597	-3.004861	Not stationary
MBAG	-2.620296 (0.10)	-3.769597	-3.004861	Not stationary
FCAG	-2.562369 (0.12)	-3.769597	-3.004861	Not stationary
PMIAG	-1.567911 (0.48)	-3.769597	-3.004861	Not stationary

Source: Computer Output using E-view 8.0.
Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.6b. ADF test result at level: Trend and intercept

Variables	ADF test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-3.451203 (0.07)	-4.467895	-3.644963	Not stationary
DHAG	-4.616804 (0.00)*	-4.532598	-3.673616	Stationary
MBAG	-2.675543 (0.25)	-4.440739	-3.632896	Not stationary
FCAG	-3.095859 (0.13)	-4.440739	-3.632896	Not stationary
PMIAG	-1.349129 (0.85)	-4.440739	-3.632896	Not stationary

Source: Computer Output using E-view 8.0
Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.7a. ADF test result at first difference: Intercept

Variables	ADF test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-4.616823 (0.00)*	-3.808546	-3.020686	Stationary
DHAG	-4.022011 (0.00)*	-3.886751	-3.052169	Stationary
MBAG	-5.252683 (0.00)*	-3.788030	-3.012363	Stationary
FCAG	-8.272717 (0.00)*	-3.788030	-3.012363	Stationary
PMIAG	-4.416801 (0.00)*	-3.788030	-3.012363	Stationary

Source: Computer Output using E-view 8.0.
Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.7b. ADF test result at first difference: Trend and intercept

Variables	ADF test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-4.476721 (0.01)**	-4.498307	-3.658446	Stationary
DHAG	-3.664361 (0.04)**	-4.616209	-3.710482	Stationary
MBAG	-5.102381 (0.00)*	-4.467895	-3.644963	Stationary
FCAG	-8.573236 (0.00)*	-4.467895	-3.644963	Stationary
PMIAG	4.397111 (0.00)*	-4.467895	-3.644963	Stationary

Source: Computer Output using E-view 8.0.
Note: The optimal lag for ADF test is selected based on the Akaike Info Criteria (AIC), p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.8a. PP test result at level: Intercept

Variables	PP test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-1.732583 (0.40)	-3.769597	-3.004861	Not stationary
DHAG	-1.925327 (0.32)	-3.769597	-3.004861	Not stationary
MBAG	-2.669978 (0.09)	-3.769597	-3.004861	Not stationary
FCAG	-2.660205 (0.09)	-3.769597	-3.004861	Not stationary
PMIAG	-1.610839 (0.46)	-3.769597	-3.004861	Not stationary

Source: Computer Output using E-view 8.0.
Note: In determining the truncation lag for PP test, the spectral estimation method selected is Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.8b. PP test result at level: Trend and intercept

Variables	PP test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-2.472554 (0.34)	-4.440739	-3.632896	Not stationary
DHAG	-2.451330 (0.35)	-4.440739	-3.632896	Not stationary
MBAG	-2.758594 (0.22)	-4.440739	-3.632896	Not stationary
FCAG	-3.250766 (0.10)	-4.440739	-3.632896	Not stationary
PMIAG	-1.437328 (0.82)	-4.440739	-3.632896	Not stationary

Source: Computer Output using E-view 8.0.
Note: In determining the truncation lag for PP test, the spectral estimation method selected is Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.9a. PP test result at first difference: Intercept

Variables	PP test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-5.188724 (0.00)*	-3.788030	-3.012363	Stationary
DHAG	-2.984630 (0.04)**	-3.788030	-3.012363	Stationary
MBAG	-6.789456 (0.00)*	-3.788030	-3.012363	Stationary
FCAG	-7.403882 (0.00)*	-3.788030	-3.012363	Stationary
PMIAG	-4.416801 (0.00)*	-3.788030	-3.012363	Stationary

Source: Computer Output using E-view 8.0.
Note: In determining the truncation lag for PP test, the spectral estimation method selected is Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

Table 4.9b. PP test result at first difference. Trend and Intercept

Variables	PP test statistic	Test critical value at 1%	Test critical value at 5%	Remark
FI	-4.997553 (0.00)*	-4.467895	-3.644963	Stationary
DHAG	-4.652174 (0.02)**	-4.467895	-3.644963	Stationary
MBAG	-6.536437 (0.00)*	-4.467895	-3.644963	Stationary
FCAG	-7.703260 (0.00)*	-4.467895	-3.644963	Stationary
PMIAG	-4.397111 (0.01)*	-4.467895	-3.644963	Stationary

Source: Computer Output using E-view 8.0.
Note: In determining the truncation lag for PP test, the spectral estimation method selected is Bartlett kernel and Newey-West method for Bandwidth, p-values are in parentheses where (*) and (**) denote significance at 1% and 5% respectively.

of the study. The Durbin Watson statistic of 0.90 reflects evidence of autocorrelation in the model. However, the serial correlation LM test Table 4.3 indicates that the model is free from

Table 4.10. OLS regression: Financial intermediation as dependent variable

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.420283	2.230583	1.981671	0.0630
DHAG	4.671767	2.988896	1.563041	0.1355
MBAG	20.57750	12.08903	1.702163	0.1059
FCAG	-3.621072	4.201161	-0.861922	0.4001
PMIAG	4.539011	4.212253	1.077573	0.2955
R-squared	0.689529	Mean dependent var		14.06957
Adjusted R-squared	0.620536	S.D. dependent var		7.509899
S.E. of regression	4.626146	Akaike info criterion		6.090986
Sum squared resid	385.2221	Schwarz criterion		6.337832
Log likelihood	-65.04633	Hannan-Quinn criter.		6.153067
F-statistic	9.994129	Durbin-Watson stat		0.901783
Prob (F-statistic)	0.000193			

Source: Computer output data using E-views 8.0.

autocorrelation problem. The result of the serial correlation LM test overrides any possible value of Durbin Watson statistic.

4.10 Model Relative Statistic

The model relative statistic reveals that discount houses, microfinance banks and primary mortgage institutions have positive relationship with financial intermediation process while finance companies have negative relationship with financial intermediation. The coefficient of the constant 4.42 implies that holding the selected non-bank financial institutions constant, financial intermediation process in Nigeria would appreciate by a factor of 4.42. The positive coefficient of 4.67, 20.58 and 4.54 for discount houses, microfinance banks, finance companies and primary mortgage institutions respectively suggest that a unit increase in financial intermediation of discount houses, microfinance banks, finance companies and primary mortgage institutions would respectively result in 4.67, 20.58 and 4.54 factor increase in the total financial intermediation process in Nigeria. The positive contribution of discount houses, microfinance banks and primary mortgage institutions towards the financial intermediation process in Nigeria confirm to a priori expectation, however, financial

intermediation in finance companies would not confirm to a priori expectation as it depicted a negative relationship.

4.11 Long Run Relationship

The result of the unit root suggests that all the variables are stationary at first difference hence, are free from stationarity defect associated with most time series data. The long run test was performed using the Johansen Co-integration approach and the result is presented in Tables 4.12a and 4.12b. However, we determined the VAR lag order selection before performing the long run test.

4.12 VAR Lag Order Selection Criteria

In our attempt to ensure the trustworthiness of long-run test, the VAR length test was performed using the vector auto regression model. The optimal level of time lag was obtained with the aid of standard tests Akaike information criterion (AIC) and Schwarz information criterion (SC). The lower the values of AIC and Schwarz information criterion (SC) tests, the better the terseness and veracity of the model. The number of lag length was one as automatically selected by econometric software E-views 8.0 and the result presented in Tables 4.11.

Table 11. VAR lag order selection criteria for Eq. 3

Lag	LogL	LR	FPE	AIC	SC	HQ
0	0	-57.78071	NA	0.000207	5.707338	5.955302
1	1	-18.12161	57.68597*	5.87e-05*	4.374692*	5.862477*

Source: Computer analysis using E-views 8.0.
*Note: * indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion and HQ: Hannan-Quinn information criterion.*

Table 4.12a. Unrestricted co-integration rank test (Trace)

Hypothesized number of CE(s)	Eigen value	Trace statistic	0.05 critical value	Prob.**
None *	0.934392	130.8378	69.81889	0.0000
At most 1 *	0.858979	73.63268	47.85613	0.0000
At most 2*	0.594265	32.49696	29.79707	0.0239
At most 3	0.447796	13.55381	15.49471	0.0960
At most 4	0.050274	1.083225	3.841466	0.2980

Source: Computer analysis using E-views 8.0. Trace test indicates 3 co-integrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 4.12b. Unrestricted co-integration rank test (Maximum Eigenvalue)

Hypothesized number of CE(s)	Eigen value	Trace statistic	0.05 critical value	Prob.**
None *	0.934392	57.20510	33.87687	0.0000
At most 1 *	0.858979	41.13572	27.58434	0.0005
At most 2	0.594265	18.94314	21.13162	0.0985
At most 3	0.447796	12.47059	14.26460	0.0942
At most 4	0.050274	1.083225	3.841466	0.2980

Source: Computer analysis using E-views 8.0. Maximum Eigenvalue test indicates 2 co-integrating eqn(s) at the 0.05 level; * denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 4.13. Effect assessment result

Null Hypothesis:	Obs	F-statistic	Prob.	Remarks
DHAG does not Granger Cause FI	21	3.14176	0.0706	No Causality
FI does not Granger Cause DHAG		0.15725	0.8558	No Causality
MBAG does not Granger Cause FI	21	0.53488	0.5959	No Causality
FI does not Granger Cause MBAG		2.45232	0.1178	No Causality
FCAG does not Granger Cause FI	21	1.02646	0.3807	No Causality
FI does not Granger Cause FCAG		0.25390	0.7788	No Causality
PMIAG does not Granger Cause FI	21	3.63075	0.0500	Causality
FI does not Granger Cause PMIAG		2.29772	0.1327	No Causality

Source: Computer analysis using E-views 8.0.

The co-integration test result in Tables 4.12a and 4.12b reveals the presence of five co-integration vector equations. The trace statistic and the maximum eigenvalue indicate three (3) and two (2) co-integrating vector equations at the 5% level of significance in accordance to MacKinnon-Haug-Michelis (1999) p-values. These result in Tables 4.12a and 4.12b suggest the presence of a long-run relationship between financial intermediation process in Nigeria and non-bank financial institutions at 5% level of significance. In this regard, the null hypothesis that there is no significant long run relationship between non-bank financial institutions and financial intermediation process is rejected.

4.13 Effect Assessment

To assess the effect of non-bank financial institution on financial intermediation process we utilized the granger causality test as summarised in Table 4.13 above. The effect assessment result reveals that PMIAG granger cause FI, that is, there is a unidirectional relationship between primary mortgage institutions and financial intermediation at 5% level of significance. In other words, causality flows from primary mortgage institutions to financial intermediation process. The effect assessment result indicates that primary mortgage institutions have significant effect on financial intermediation process in Nigeria. This is on the bases that the p-value of the f-statistic is significant at 5% level of significance. The operation of discount houses, microfinance banks and finance companies have no significant effect on financial intermediation process in Nigeria.

5. CONCLUSION

We examined the effect of non-bank financial institution on financial intermediation process in Nigeria for the period of twenty three (23) years that is, from 1992 to 2014 as well as the

relationship that exist in regard to the subject matter. We succinctly looked at the some of the theories of financial intermediation via information asymmetry, transactional cost and money creation, saving and economy financing regulation/supervision. The data covering the study period were obtained from Central Bank of Nigeria Statistical Bulletin of 2014. Before we estimated the model, we subjected the model to diagnostic test of Heteroskedasticity, Serial Correlation LM, Ramsey RESET and Multicollinearity test. The long run relationship was tested using the Johansen co-integration approach and the effect assessment by granger causality effect test.

The unit root result indicate that the variables were stationary at first difference and free from stationarity defect associated with most time series data. Johansen co-integration result reveals the presence of a long run relationship between non-bank financial institutions and financial intermediation process in Nigeria. The granger causality test on effect assessment reveals that it is only primary mortgage institutions activities that has significant effect on financial intermediation process while there is no evidence of the significant effect of discount houses, microfinance banks and finance companies on financial intermediation process. The null hypothesis that there is no significant long run relationship between non-bank financial institutions and financial intermediation process was rejected on the ground that the p-value of the F-statistic is significant at 5% level of significance. In view of the positive relationship between non-bank financial institutions and financial intermediation process, monetary authorities should put in place adequate regulatory framework for the operation of non-bank financial institutions in Nigeria especially primary mortgage institutions as it has significant effect on financial intermediation process based on the finding of this study. Furthermore, a good spread of non-bank financial institutions in the rural areas would encourage people to save and contribute tremendously to the financial intermediation process.

The finding of the study adds to literature on the linkage between non-bank financial institutions and financial intermediation process in the context of Nigeria by utilizing variables of interest. Another innovation of this study lies in the use of up-to-date dataset spanning from 1992 to 2014 for a total observation of 23 years. This period covered year 2005 when the federal government of Nigeria through the Central Bank of Nigeria with Professor Charles Chukwuma Soludo as Governor, restructured the financial system. The reform in the Nigeria financial system in 2005 is seen as the backbone of current financial system stability especially soundness and liquidity of the commercial banks.

This study selected four non-bank financial institutions in Nigeria thus, the finding would not reflect the exact operation of the non-bank financial institutions in Nigeria. Nevertheless, we recommend the totality of the non-bank financial institutions for future studies.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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