

# Balance Sheet Management and Outreach Success for Microfinance Banks in Nigeria

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## ABSTRACT

*Traditionally, Microfinance Banks (MFBs) are saddled with a dual objective of outreach and sustainability (efficiency). In the contemporary microfinance literature, the question often asked is, "Do the goals of financial viability and outreach complement each other?" or "is there a trade-off between the two?" We test the short and long run effects of balance sheet variables on outreach which we divide into loans and savings outreach. Our classification of balance sheet components and outreach is as given by the Central Bank of Nigeria (CBN) for the operation of microfinance banks. While the financial activities of MFBs have encouraged more of outstanding loans, savings balance has not been so affected. Quite disturbing is the fact that overtime, MFBs capital has worked against their savings balance. There is a need therefore for MFBs in Nigeria to intensify their savings mobilization drive.*

**Keywords:** *Microfinance Banks, financial viability, balance sheet components, loans outreach, and savings outreach*

## INTRODUCTION

As an interventionist programme aimed at achieving the goals of financial deepening at the grassroots sector of the economy, the activities of MFOs (including MFBs) cannot be overlooked (Microfinance Newsletter, 2009). Broadly speaking, MFBs are saddled with responsibilities which can be summarized in two objectives: (a) increasing client outreach in loans and deposits (b) sustaining their Organization through meagre but sustainable profits, effective loan screening, administration and recovery. These two are further classified respectively as social and financial objectives. The rewards of good performance and costs of poor performance are rising as MFBs play an increasingly important role in local financial economies and compete for customers and resources (Joachim, 2000). The issue of asset and liability management in the money market, that is, deposit taking financial institutions in general is more dynamic. The components of the portfolio (assets and liabilities) are subjected to changes in terms of structure and amount from time to time and at different stages of transaction. Especially for MFOs (which include Microfinance Banks -MFBs), their balance sheet components are said to be even more dynamic than those of commercial banks (Greuning, Gallardo and Randhawa, 1998). It will become a necessity for MFBs to behave as mainstream financial players, as they begin to diversify into new lines of businesses

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(Christein, Rhyne, Vogel and Mcklean, 1995). This may include; insurance and voluntary savings products, and also seek to raise money from traditional financial markets. They must design products (loan and deposit) suitable for their clients and ensure that they attract as many customers as possible. For MFBs, more emphasis is placed on the number of clients because of the mandate on wide coverage and outreach. Also, by their design, MFBs are not expected to give long term loans. They are to give short term loans which could be revolving or seasonal with a suitable loan technology and also run an effective repayment structure. There is a limit to the amount they can give out per time to ensure that they are able to serve as many clients as possible and also keep the risk of default low. On the other hand, MFBs are open to different sources of funding some of which may be very volatile (e.g. government subsidized funds), while some are short term in nature with changing terms and repayment structures. Therefore it is expected that MFBs have a dynamic balance sheet component which has effects on their outreach and sustainability.

The success stories of microfinancing in the Asia and Pacific countries like Bangladesh, India, Malaysia, Guatemala and Bolivia has endeared the idea to the heart of many other countries. The success stories coming from these countries reveal that microfinancing has helped to lift their extreme poor out of poverty (Rutherford and Arora, 1997; IADB, 1997; ADB, 2000; World Bank, 2013). Therefore, many other developing countries like Nigeria have been quick to toe the line of microfinancing. The belief is that it can serve as a panacea to the extreme poverty problem of the majority of the Nigerian people (Anyanwu, 2004). The idea of microfinancing is not entirely new in Nigeria but for the changes in the mode of operation. Thriving traditional rotating credit and savings institutions abound in a good number throughout the country. In addition, there were the community banks which were mandated to automatically metamorphose into microfinance banks. The general shortcomings observed in the operations of these traditional microfinance institutions was that they were limited in terms of capital and as such couldn't reach as many customers as were desiring to be reached. Against this backdrop, when Nigeria adopted the formal microfinancing system, emphasis was placed on capital. Government ensured that MFBs were admitted into the mainstream financial sector, complying with regulations and undergoing periodic examinations. Unfortunately, since the adoption of the microfinance framework with the establishment of microfinance banks (MFBs) in 2005, Nigeria waits endlessly for success stories to come. MFBs in Nigeria have failed on the two broad mandates given to them, that is; (i) they have not lifted as many poor people as required out of poverty (ii) they have not been able to sustain themselves as many of them have gone into liquidation within five years of existence. It became obvious that the problem facing the MFBs stemmed from their balance sheet when government asked them to shore up their capital base. Striking a balance between the social and financial objective actually involves risk taking, identification, measurement and control. This is called risk management. Talking about risk, MFBs are faced with three major categories of risk which include; financial, operational and strategic. Among all the risks, financial is the most crucial. Because our focus, this work is designed to analyse the effect of changes in balance sheet components on outreach, we put the issue of risk management for MFBs aside.

### **Balance Sheet Management and Success for Microfinance Banks**

Generally in financial parlance, the term asset and liability management refers to a management process that guarantees the spread on income coming from assets to be greater than the spread on expenses going to liabilities. Put differently, asset and liability management ensures that the difference between interest rate on earning assets and the interest rate on borrowed funds is positive. Originally, for MFBs, the asset side of the balance sheet is considered as most important. They justify this by the fact that their primary business is lending. As a result they have given more priority to developing products, structuring their operations and designing their procedures to suit their credit administration and loan recovering activities (Greuning, Gallardo and Randhawa, 1998).

At inception, MFBs because of their social mission, receive concessional loans and funding from both government and high net-worth individuals. Again, because of the status of these fund providers (i.e. they possess high credibility), MFBs tend to take their liability management for granted. They are rest assured that funds will come steadily from these sources. Later on, as MFBs grow towards maturity; they discover the need to wean themselves from these sources if they must remain viable. The pressure to expand their business also usually necessitates expansion of funding sources. This time, their funding sources will include deposits from customers, loans from commercial banks, equity and debt instruments. At this stage, liability management becomes a necessity for MFBs. They usually have to develop detailed set of reports (both financial and operational) to be presented to their creditors and shareholders. They also design policies and procedures to guide their selection of funding sources.

At the stage where funds become scarce and expensive for MFBs they suddenly realize the importance of managing their liabilities just as they do for assets. They realize the fact that as much as borrowing can help them increase their returns, it can also expose them to greater risk (Interest rate risk). In the same vein, as much as lending to greater number of customers can guarantee increased returns, it can also expose them to greater risk (credit risk). Therefore, MFBs have had to set as their number one priority, the need to strike a balance in the managing of a combination of different funding sources and an ever increasing and changing set of assets. These factors are considered to be responsible for the dynamic nature of MFBs balance sheet. As part of their balancing act, MFBs first consider the type of product they offer. The majority of their clients being poor are offered loan and savings products that are tailored to suit them. When clients are well served, MFBs can be assured of their retention and loyalty. It has been established that microfinance clients want a product that is easy to understand with flexible repayment structure (Campion and Frankiewicz, 1999). The components of assets and liabilities as applicable to microfinance banks are presented on table 2.

For Microfinance Institutions that rely on savings to meet up with loan request, it also behoves on them to have enough cash to meet their payment obligation as at when due. In addition, microfinance institutions that rely on deposits and borrowed funds are very vulnerable to interest rate fluctuations. Therefore microfinance institutions, more than any other financial institution, are supposed to diversify their funding sources as well as

their asset portfolio. The strategy used for achieving this is what makes their risk management very interesting (Patten, Rosengard and Johnston Jr., 1999). Government on its part can also come up with regulations that help to keep the activities of microfinance institutions in check. Greuning, Gallardo and Randhawa (1998) develop what they called financial statement approach in determining the extent of government regulation. Their work is of particular importance to this research as it provides a platform for understanding the different balance sheet structures that exists for different microfinance institutions. Especially when compared with that of commercial banks, the classification is quite revealing. As contained in their work, microfinance institutions are distinguished by the structure and composition of their financial statements. Within the balance sheet structure, the composition of assets was defined as those resources that have been used to generate more resources.

In a more explicit form, Net loans and short term investments were classified as earning assets. It is observed in their classification, that earning assets makes up the majority of the total assets of the microfinance institutions. It is also observed that there are few cases where non-earning assets which include property, equipment, land holdings, make up a significant part of microfinance institution's total asset. Interestingly, the important factors that make one microfinance institution stand out from the rest are seen mainly on the liabilities side of the balance sheet. No wonder the regulators of microfinance institutions place more emphasis on their funding sources. Basically, the differences observed are between licensed and non - licensed microfinance institutions. MFBs by their design are given a social mission (i.e. to provide financial services to the unserved and unbanked low income poor population). This they combine with the financial objective of sustainability and self-sufficiency (Christein, 1997). Performing and well managed MFBs attract constant and good sources of capital which include deposits and loans from commercial banks to complement their lending activities.

In order to appraise the efficiency of MFBs, some financial management concepts are found relevant. Because microfinance Organizations like any other corporate Organization places emphasis on efficiency and sustainability, we therefore look at the efficiency factors and determinants for MFOs. Generally, efficiency in the operations of institutions is evaluated on the basis of their financial viability. Rhyne (1998) gives some key efficiency factors that affect a lending institution. They include the following;

- (i) ***Size of Organization:*** In this case larger institutions may enjoy economies of scale that helps to reduce their cost per transaction
- (ii) ***Periodic Structuring of loan portfolio:*** Organizations must make a choice between short term loans which attract higher administration costs and long term loans which is cheaper.
- (iii) ***Age of the Institution:*** It is expected that institutions that have been in business for long will do better than new entrants.
- (iv) **Growth rate:** This reflects in the attitude of institutions towards the issue of efficiency as they experience increase in their tangible assets. The reason being that their profit is diverted to the acquisition of these assets as against declaring excess profit.

Going by the efficiency factors highlighted above, MFOs may be said to be inefficient when compared to other formal lending institutions based on the following;

- (i) MFOs are smaller in size when compared to commercial banks
- (ii) MFOs by their nature, give loans on a short-term basis quite shorter than that of commercial banks.
- (iii) Most MFOs are new entrants in the financial market. They are therefore susceptible to mistakes and miscalculations.

Waterfield (1993) on his part argue that even though MFBs can adopt efficiency as an objective, it should be noted that they are meant to have a dual objective of outreach and sustainability. What this means is that, efficiency for MFBs will not only be financial but also include social. Therefore MFBs should be appraised on the basis of both financial and social efficiency. In the contemporary microfinance literature, the question often asked is; Do the goals of financial viability and outreach complement each other? Is there a trade-off between the two? These questions no doubt have produced two schools of thought on the issue. The proponents of a trade-off between outreach and sustainability are of the opinion that as MFBs strive to break-even and achieve cost reduction, become financially independent and sustain their institutions; they tend to look away from the other objective of outreach (CGAP 1998; 1999). Their argument is based on the fact that most of the poor client that MFBs serve may not be able to pay the full cost of the services they enjoy over time. On the other hand, the proponents of sustainability argue that MFBs can only engage in large scale outreach when financial independence and sustainability has been achieved (UNCDF, 2002). According to them, it takes a financially buoyant institution to attend to the ever increasing loan request of clients

## **METHOD**

Five balance sheet components are surveyed as explanatory variables that explain changes in MFBs outreach. We identified interest rate as the macroeconomic factor that determines changes to both asset and liability components. Therefore we adopt the monetary policy rate which is a more applicable rate for depository institutions. As found in the conceptual literature, for the purpose of analysis, we divide outreach into loans and savings outreach. The measurement of outreach actually posed a little challenge to us. As observed in the conceptual framework given by the Central Bank of Nigeria (CBN), outreach holistically is best measured by the total number of clients, percentage of women, no of urban branches, no of rural branches etc. As part of the regulatory requirements for audited reports, that information is contained in the financial report submitted by MFBs to CBN. However, in the aggregated report on MFBs compiled by CBN, it is excluded. We were therefore limited in accessing the information as we couldn't afford to collect data directly from all the seven hundred and seventy seven (789) MFBs in existence in Nigeria as at the time of this study. We resorted to using the loan and savings outreach values as dependable proxies for outreach. The variables are defined as follows:

LR = loan outreach (this is proxied as total balance of outstanding loans)

SR = savings outreach (this is proxied as total balance on savings account)

### Asset Components

**Earning Assets:** Value of all the income generating assets under investment, loans and advances, deposits with CBN and other banks represented as EA.

**Non-earning Assets:** Unimpaired value of all fixed assets (building, furniture and fixtures) represented as NA.

**Return (ROA):** This is taken as the return on total assets calculated as  $OP/TA$ . OP represents operating profit and TA represents total asset.

### Liability Components

**Capital:** this is the contribution of the owners (shareholders) of the bank. It is represented as CA.

**Deposit:** This is the amount of money in the custody of the banks under different accounts operated by them. It is represented as DE.

**Borrowings:** This involves the value of loans of different forms (short and long term) sought by the banks for their operation. It is represented by BR.

Data consists of quarterly closing values of variables covering the period 1992 Q1-2014-Q4. These are collected from the Central Bank Statistical Bulletin.

**Model Specification:** Based on the conceptual framework on the inter-relationship that exists among asset-liability components and outreach in the previous chapter, a multi-regression model that relates outreach with asset and liability components is specified. In a functional relationship, the model is specified as follows:

$$\text{Outreach} = f(\text{assets, liabilities})$$

Outreach is further divided into two; loan outreach and savings outreach. Specifically, the regression equations are given as follows:

$$\ln LR_t = \beta_1 + \beta_2 \ln EA_t + \beta_3 \ln NA_t + \beta_4 \ln CA_t + \beta_5 \ln DE_t + \beta_6 \ln BR_t + \beta_7 MPR_t + \mu_t \dots\dots (1)$$

$$\ln SR_t = \beta_1 + \beta_2 \ln EA_t + \beta_3 \ln NA_t + \beta_4 \ln CA_t + \beta_5 \ln DE_t + \beta_6 \ln BR_t + \beta_7 MPR_t + \mu_t \dots\dots (2)$$

## RESULTS AND DISCUSSION

As part of our diagnostic tests, first, we verify the normality of data on selected variables within the descriptive statistics framework. On table 3, the mean and the median of all the variables in the data set (outstanding loan, savings balance, deposit, borrowings, earning assets, non-earning assets, capital, return monetary policy rate), lie within the boundaries of maximum and minimum values. This indicates that the variables are normally distributed. Although the standard deviation of the variables are high, all the variables are positively skewed. Every other variable has a kurtosis value of greater than 3 but for CA, DE, EA, NEA and SR whose kurtosis values are less than 3. For the variables whose kurtosis values are greater than 3, it shows they are leptokurtic (flatly shaped). While those with values less than 3 are not leptokurtic (steeply shaped). Result of the Jarque-Bera normality test shows that all variables are significant at both 1% and 5%. Therefore we can accept the null hypothesis that data on variables are normally distributed.

We begin to look at the relationships that exist among variables by first carrying out the correlation test. The test presented below shows that asset variables, EA and NEA have positive and high correlation coefficient 91.71%. This reveals that MFBs have not diversified their assets as the correlation coefficient shows that virtually all of their assets move in the same direction. Again, it is observed that since most of the EAs are fixed income assets, MFBs tend to be largely affected by movements in short term interest rates. For liability variables, CA and DE have a positive and high correlation 99.16%. This shows that MFBs are able to attract deposits once their required capital base is settled. On the other hand, CA and BR have positive and relatively low correlation 60.87%. This shows that MFBs that have met the required capital base rarely engage in long term borrowing. It is interesting to note that all the components of asset and liability have a negative and relatively low correlation with MPR. This shows that macroeconomic factors as represented by MPR move in opposite direction with asset and liability components of MFBs. The relatively low value of MPRs correlation with asset and liability components implies that there is no strong relationship between movements in asset and liability components of MFBs and MPR. Until recently when MFBs were admitted into the mainstream financial sector, their short term lending rate was not at par with the ruling prime lending rate of banks in general.

The MPR being the rate at which government will buy back its own securities serves as a basis for the determination of the prime lending rate. That is why it is a good indicator for short term interest rate. LR and SR which are outreach variables have positive and high correlation values of 96.89%. This implies that as MFBs increases their balances on savings, their loans outstanding also increase. This is typical of the operations of MFBs as customers are encouraged to open savings account which automatically qualify them for loans. LR and SR have positive and high correlation with other components of assets and liability. This signifies that movement in all those variables is actually similar to movement in LR and SR that are actually dependent on them. Whereas LR and SR have positive but low correlation values of 50.7% with BR, negative and low correlation value of 55.15% with MPR. This implies that MFBs borrowings don't necessarily translate to increases in outreach. Outstanding loan (LR) and Savings balance (SR) like other balance sheet issues for MFBs have negative and relatively low correlation values with MPR. Both the loan given out and savings collected from MFBs customers have rates that are not *in tandem* with the MPR.

The result on table 6 shows that the ECM coefficient is negative and significant as required by the model. The Akaike and Schwartz criterion are also negative as required. The co-efficient of ECM measures the speed at which short run disequilibrium adjusts to equilibrium in the long run. This co-efficient which in this case is less than 1% at a 5% level of significance, suggest that just about 1% of previous period's disequilibrium in the outstanding loans and balance sheet components of MFBs are corrected in the long run. Co-efficient of determination ( $R^2$ ), with a value of 0.931782 shows that just about 93% of outstanding loans of MFBs within the short run period have been jointly explained by the balance sheet and macroeconomic variables. The F-statistics with a value of 115.3410 significant at 1% reveals that the model is fit. Most importantly too, that the coefficients of

the lagged variables are significant in the short run with the exception of non-earning asset (NEA). The level of their significance gives credence to the strength of their effects in the short run on outstanding loans (LR). It is observed that EA and BR have negative effects on outstanding loans in the short run, while NEA, MRR (monetary policy rate), CA (capital), LR (outstanding loans) and DE (deposits) all have positive effects on outstanding loans in the short run. The unit root test result shows that all the multi-regression variables are of I (I) series. Therefore, we proceed to test for co-integrating relationship among the multi-regression variables. The co-integration result is presented on table 5. The result shows that there are co-integrating relationships among variables in the two multi-regression models specified. In order to analyze the short term dynamics of the variables as they transit to the long term, the error correction method (ECM) is employed. The summary of the ECM result is presented on table 6.

The result on table 7 shows that the ECM coefficient is negative and significant as required by the model. The Akaike and Schwarz criterion are also negative as required. The co-efficient of ECM measures the speed at which short run disequilibrium adjusts to equilibrium in the long run. This co-efficient which in this case is less than 1% at a 5% level of significance, suggest that just about 1% of previous period's disequilibrium in the outstanding loans and balance sheet components of MFBs are corrected in the long run. Co-efficient of determination ( $R^2$ ), with a value of 0.26020 shows that just about 26% of total savings of MFBs within the short run period have been jointly explained by the balance sheet and macroeconomic variables. The F-statistics with a value of 3.38533 significant at 5% reveals that the model is fit. Unlike outstanding loans, most of the coefficients of the lagged variables are not significant in the short run with the exception of non-earning asset (NEA), monetary policy rate (MPR) and the lagged value of savings (SR). The implication of this is that in the short run, savings is mostly affected by non-earning assets and macroeconomic factors than liability and capital issues of MFBs. Customers are attracted to bring their savings by what they see on ground; mostly the physical assets which form a large part of the NEA, and interest rate. The level of their significance gives credence to the strength of their effects in the short term on savings (SR). It is observed that EA and BR have negative effects on savings (SR) just like they have on outstanding loans in the short run, while NEA, MRR (Monetary Policy Rate) and CA (capital) have positive effects on outstanding loans in the short run.

### **Long run Effects for Outstanding loans (LR) and Savings Balance (SR)**

Having estimated the short run effect of the independent variables on the dependent (LR and SR) and the speed of adjustment to the long run, we proceed to estimate the long run effect of the independent variables with the parsimonious model derived from the previous model. The long run regression result shows that DE, NEA and CA have significant effects on outstanding loans in the long run. Deposits (DE) has a negative effect of 40%, NEA has a positive effect of 21% and CA has a positive effect of 127%. This result is in contrast with what we saw in the short run. Deposits (DE) which had a positive effect in the short run now has a negative effect on outstanding loan. The implication of this is that at the initial stage of MFBs operation, they will encourage customers to open account and maintain



deposits with them in order to qualify for loans. Over time, as the amount of deposit maintained increases and MFBs are able to consolidate, it can lead to a reduction in the amount of loans given out. In the theoretical literature, there are two opposing views on the relationship between bank capital and liquid creation (loans outstanding). In the submission of Berger and Bouwman (2009), in the first view, bank capital tends to impede liquidity creation through two distinct effects which are; 'financial fragility structure' and the 'crowding out of deposit'. According to the financial fragility structure, higher capital is associated with less monitoring which leads to less liquidity creation i.e. loans outstanding (Diamond and Rajan, 2000; 2001). While higher capital ratios could crowd out deposits and thereby reduce liquidity creation (Gorton and Winton, 2000). Berger and Bouwman (2009) concluded that the financial fragility and the crowding out effect is relatively strong for small banks because they raise local funds which are very sensitive to macroeconomic changes. Under the second view, higher capital enhances the ability of banks to create liquidity because it allows them to absorb greater risk (Bhattacharya and Thakor 1993; Repullo, 2004; Von Thadden, 2004). Matz and Neu (2007) argue that there is a causal relationship between liquidity creation and capital. According to them, aside from the financial fragility and crowding out effects of capital on liquidity, the more banks create liquidity, the more they are exposed to the risk of being unable to meet unexpected withdrawals from customers. Our result conforms to the first and second view. The negative relationship of deposit with loans outstanding can be seen as the financial fragility and the crowding out of deposit effect.

Non-earning assets (NEA) which was not significant in the short run now has a positive effect on outstanding loans in the long run. This can be adduced to the fact that as MFBs improve on their fixed and other physical assets over time, they become more stable. Their stability can encourage more loans to be given out. Capital (CA) which had a far less than proportionate effect in the short run (0.000397%) now has a more than proportionate and the highest effect i.e. 127%. This can be adduced to the fact that overtime, as MFBs' capital base increases and more funds become available in the long run, they are encouraged to give out loans even more than the rate at which their capital has increased. This positive relationship between loans outstanding and capital can be seen as supporting the second view on the theory of the relationship between liquidity creation and capital. The F statistics of 157.5195 significant at 1% shows that the model is fit. Coefficient of determination ( $R^2$ ) with a value of 92.19% implies that the balance sheet and economic variables largely explain variations in outstanding loans in the long run. However, the long run regression presented above reveals the presence of serial autocorrelation going by the value of the Durbin Watson statistics 1.03. Therefore, we make correction for this by regressing the lag of the residuals using the Breusch-Godfrey serial correlation test. The test reveals that the lagged residuals have effects which are significant.

The long run regression result for savings balance (SR) reveals that DE, EA, NEA and CA have significant effects in the long run. Deposits (DE) has a more than proportionate positive effect of 138%, EA also has a more than proportionate positive effect of 120%, NEA has a negative effect of 19% and CA has a more than proportionate negative effect

of 137%. Having separated savings from other deposits in this study, the model and result are tested to provide information on the effect of capital and liabilities (including other forms of deposits) and the corresponding assets, on savings. Savings as an outreach measure reflects the financial gains and independence enjoyed by customers as a result of having benefited from access to credit. According to Dankor and Duah (2013), world over, MFIs have often experienced that exclusively offering credit services can lead to undue dependency on external sources of financing. This dependency can cause the MFIs to concentrate on the demands of the donors rather than on the demands of potential clients.

When compared with the short run effects, EA which now has a significant effect was not significant; NEA which now has a negative effect had a positive effect in the short run; CA which is now significant was not significant; DE which is now significant was not in the short run. BR which was not significant in the short run is still not significant in the long run. The significant positive effect of DE (deposits) on savings in the long run can be adduced to the fact that; as customers build their current account and other deposits with MFBs overtime, they are encouraged to start saving. The result shows that customers with deposits in MFBs also have more savings with them. The positive effect of EA (earning assets) can be adduced to the fact that as MFBs engage in more investments and build up their investment assets to generate earnings, the more they will place emphasis on savings which is one of their cheap sources of funds.

The negative effect of non-earning assets (NEA) can be adduced to the fact that because customers are first attracted to what they see on ground like the fixed and physical assets, the depletion in these assets for the MFBs may have caused drastic reduction in savings. The events of 2010-2011 which saw the liquidation of many of the MFBs and the sale of their physical assets has surely had a negative effect on their savings balance. This is supported by the CBN financial statistics on MFBs which shows a drastic reduction in savings over time. The negative effect of capital on savings can also be adduced to the same reason given for NEA. Depletion in capital has discouraged savings. However even when there is recapitalization, savers are still skeptical about the MFBs. As a result, with increased capital, MFBs can only give out more loans to attract customers. The reason CA (capital) has a more than proportionate positive effect on outstanding loans in the long run. When compared to some of the previous studies on credit and savings, our result presents an interesting support. Adams (1985); World Bank (1989); Yaron, (1994); Quaicoo, (2001), submits that the targeting or directing and subsidization of credit often delivered through specialized financial institutions neglected the overall development of the rural financial market. The argument is that subsidized and targeted credit does not always reach the beneficiaries while at the same time jeopardizing the financial viability of the lending institutions and discourage domestic savings.

Coefficient of determination ( $R^2$ ) at 98.25% shows that variation in savings balance of MFBs is largely explained by balance sheet and macroeconomic variables in the long run. However, the long run result above reveals the presence of serial correlation going by the Durbin Watson value of 0.839496. Just like we did for LR, we correct this by using the Breusch-Godfrey test for serial correlation. The test shows that the lagged values of the

residuals have significant effects on savings which explains the serial correlation. The adjusted long run regression result is presented in the appendix. In all, we observe that for both savings and outstanding loans in the short and long run, one of the balance sheet variables; BR (borrowings) did not really have significant effects. Except for its differenced value in the short run for outstanding loans, the variable did not have a significant effect on either LR or SR throughout the period under study.

**Table 1:** Composition of MFBs Balance sheet

Liabilities		Assets	
(i)	Capital	(i)	Cash and Balances
(ii)	Reserves and Retained profit	(ii)	Balances with Banks and Call Money/Short Notices
(iii)	Debts	(iii)	Investments
(iv)	Other Liabilities	(iv)	Advances and Loans
		(v)	Other Assets
		(vi)	Fixed Assets

**Source:** Central Bank of Nigeria (2011)

**Table 2:** Outreach and Sustainability

Outreach	Loan Outreach	Savings Outreach	Sustainability
No of clients/ members	No of active borrowers	Total balance of savings accounts	Financial self sufficiency
% of target clients served	Total balance of outstanding loans	No of savers	Operational self sufficiency
No of women as total % of borrowers	Average outstanding portfolio	% of women	Capital adequacy
No of women as total % of depositors	Average growth of loans outstanding	Value of average savings account	Subsidy dependence ratio
No of urban branches	Average loan size	Nominal deposit interest rate	-
No of rural branches	Minimum/maximum loan size	-	-
Ratio of deposits to volume of outstanding loans	Average disbursed loan size	-	-

**Source:** Central Bank of Nigeria (2011)

**Table 3:** Descriptive statistics and Normality Test of Balance Sheet and Outreach variables

Test/Variables	BR	CA	DE	EA	NEA	LR	SR	MPR
Mean	1931.290	37748.92	27559.82	38424.54	12448.75	18807.94	20824.68	0.13553
Median	115.2156	10572.91	9637.619	9198.088	6182.775	4323.742	5618.728	0.13500
Maximum	25412.79	139514.5	109978.3	139753.1	37622.90	87737.02	74531.98	0.26906
Minimum	8,525000	153.9781	46.07500	118.0750	93.06000	48.34375	7.228125	0.05459
Std. Dev.	5249.618	44007.33	30301.73	45955.40	13119.83	23636.87	23997.07	0.04581
Skewness	3.647593	0.958328	0.953200	0.980850	0.805904	1.227514	0.887096	0.74997
Kurtosis	15.54952	2.439001	2.651369	2.430839	2.073273	3.323748	2.285311	4.10530
Jarque-Bera	737.4853*	13.95901*	13.14566**	14.6027*	12.09862**	21.46193*	12.80489**	12.150*
Observations	84	84	84	84	84	84	84	84

\*and\*\* denotes significance at 1% and 5% levels respectively.

**Source:** Author's E-view result 2015

**Table 4:** Correlation Result for Balance Sheet variables

Correlation	Log LR	Log SR	Log EA	Log NEA	Log CA	Log DE	Log BR	MPR
Log LR	1.00000							
Log SR	0.968952	1.000000						
Log EA	0.977737	0.978651	1.000000					
Log NEA	0.894383	0.893488	0.917156	1.000000				
Log CA	0.981553	0.975744	0.998562	0.923354	1.000000			
Log DE	0.991412	0.972419	0.985877	0.918584	0.991554	1.000000		
Log BR	0.507007	0.550697	0.622021	0.549846	0.608745	0.519778	1.000000	
MPR	-0.551505	-0.622701	-0.630041	-0.635232	-0.616776	-0.577695	-0.477438	1.000000

**Source:** Author's E-view result 2015

**Table 5:** Summary of result for Johansen Co-integration Test

Variables	Trace	Max-Eigenvalue
LR, BR, DE, MPR, NEA, CA, EA	6 co-integrating equations	6 co-integrating equations
SR, BR, DE, MPR, NEA, CA, EA	6 co-integrating equations	5 co-integrating equations

*Source:* Author's E-view result 2015

**Table 6:** ECM Result Summary for LR (Over-parameterized)**Dependent variable DLog(LR)**

	ECMLR(-1)	C	Dlog(EA(-1))	Dlog(NEA(-1))	D(MPR(-1))	Dlog(CA)	Dlog(BR)	Dlog(BR(-1))	Dlog(DE)	Dlog(LR(-1))
<i>Coeff</i>	-4.38E-06	0.01089	-6.51E-06	3.81E-06	1.021788	3.97E-06	-1.22E-05	8.48E-06	0.973553	0.137008
<i>t-Stat</i>	-2.0564**	1.41723	-2.3729**	1.057120	2.3969**	2.0527**	-3.0730*	1.802586	18.7604*	3.227544*

$R^2 = 0.931782$ ;  $Ak.C = -2.748004$ ; \* = 10%, \*\* = 5%, \*\*\* = 1%;  $Sc.C = -2.462615$ ;  $F-Stat = 115.3410$   
*Note:* Ak C represents Akaike info criterion, Sc.C represents Schwartz criterion

*Source:* Author's E-view result 2015**Table 7:** ECM Result Summary for SR (Over-parameterized)**Dependent variable DlogSR**

	ECMSR(-1)	C	Dlog(EA(-1))	Dlog(NEA(-1))	D(MPR(-1))	Dlog(CA)	Dlog(BR)	Dlog(BR(-1))	Dlog(SR(-1))
<i>Coeff</i>	-0.074541	0.050578	-1.08E-05	1.92E-05	2.379330	2.22E-06	-1.06E-05	1.52E-05	3.72E-05
<i>t-Stat</i>	-2.4755**	2.3625**	-1.633986	2.10613**	2.1719**	0.337978	-0.969271	1.257092	2.04652**

$R^2 = 0.260204$ ;  $Ak.C = -0.830477$  \* = 10%, \*\* = 5%, \*\*\* = 1%  
 $Sc.C = -0.573627$ ;  $F-Statistics = 3.38533$ \*\*

*\*Note:* Ak C represents Akaike info criterion, Sc .C represents Schwartz criterion*Source:* Author's E-view result 2015**Table 8:** Long run Regression Result Summary for LR (Parsimonious)**Dependent variable DlogLR**

	Dlog(DE)	C	Dlog(EA)	Dlog(NEA)	D(MPR)	Dlog(CA)	Dlog(BR)
<i>Coeff</i>	-0.409244	0.11704	-0.036235	0.211530	-0.434370	1.272944	-0.007337
<i>t-Stat</i>	-3.45028*	1.622312	-0.093013	2.180762**	-0.834306	3.590210*	-0.727984

$R^2 = 0.921960$ ;  $R^2Adj = 0.916107$  \* = 10%, \*\* = 5%, \*\*\* = 1%  
 $F-Statistics = 157.5195$ \*;  $DW stat = 1.031331$

*Source:* Author's E-view result 2015**Table 9:** Long run Regression Result Summary for SR (Parsimonious)**Dependent variable DlogSR**

	Dlog(DE)	C	Dlog(EA)	Dlog(NEA)	D(MPR)	Dlog(CA)	Dlog(BR)
<i>Coeff</i>	1.382615	0.003821	1.208587	-0.197789	-0.143186	-1.368775	-0.013737
<i>t-Stat</i>	13.91033*	0.632067	3.702174*	-2.433335**	-0.328193	-4.606880*	-1.626399

$R^2 = 0.983682$ ;  $R^2Adj = 0.982458$  \* = 10%, \*\* = 5%, \*\*\* = 1%  
 $F-Statistics = 803.7376$ \*;  $DW Stat = 0.839496$

*Source:* Author's E-view result 2015**CONCLUDING REMARKS**

We conclude that changes in the active components of assets and liability (that is, EA, DE, CA and BR) do not affect savings balance in the short term. Even in the long run, it is observed that an important balance sheet component; capital (CA) has a negative effect on savings. As an indicator of MFBs outreach, savings mobilization is crucial. It is quite unfortunate that even the CBN financial statistics on MFBs savings balance shows gradual depletion over the years. MFBs therefore need to embark on aggressive savings mobilization. The result shows that MFBs asset and liability management creates more of outstanding loans than savings. MFBs should not focus only on giving out loans as part of their outreach

drive; they should also pay attention to their savings mobilization. As part of their oversight functions, CBN should mandate MFBs to provide in their periodic reports, statistics on their customers. This should include number of clients, gender, occupation and location. This is to aid proper assessment of their outreach performance.

**APPENDIX A (i)** Breusch-Godfrey Serial Correlation LM test for LR

F-statistic 13.46672 Prob. F(2, 78) 0.0000  
 Obs\*R-squared 22.33043 Prob. Chi-Square(2) 0.0000

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Sample (adjusted): 1992Q2 2013Q4

Included observations: 87 after adjustments

Presample missing value lagged residuals set to zero

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	-0.000882	0.006302	-0.139887	0.8891
DLOG(EA)	-0.084430	0.341813	-0.247007	0.8056
DLOG(NEA)	-0.059491	0.096998	-0.694794	0.0321
D(MRR)	-0.108843	0.456535	-0.238411	0.8122
DLOG(CA)	0.130587	0.311574	0.419120	0.6763
D(BR)	0.005636	0.008951	0.629662	0.5308
DLOG(DE)	0.007794	0.103992	0.074944	0.9405
RESID(-1)	0.436747	0.114303	3.820862	0.0003
RESID(-2)	0.140775	0.112581	1.250430	0.2149
R-squared	0.256672	Mean dependent variable		1.34E-17
Adjusted R-squared	0.180433	S.D. dependent variable		0.059098
S.E. of regression	0.053501	Akaike info.criterion		-2.920537
Sum squared resid	0.223264	Schwartz criterion		-2.665443
Log likelihood	136.0433	Hannan-Quinn		-2.817818
F-statistic	3.366679	Durbin-Watson stat		1.911518
Prob(F-statistic)	0.002296			

Source: Author's E-views result 2015

**APPENDIX A (ii)** Breusch-Godfrey Serial Correlation LM test for SR

F-statistic 19.87155 Prob. F(2,78) 0.0000  
 Obs\*R-squared 29.36604 Prob. Chi-Square(2) 0.0000

Test Equation:

Dependent Variable : RESID

Method: Least Squares

Sample (adjusted): 1992Q2 2013Q4

Included observations: 87 after adjustments

Presample missing value lagged residuals set to zero

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	-0.001228	0.004996	-0.245802	0.8065
DLOG(EA)	-0.167365	0.272746	-0.613629	0.5412
DLOG(NEA)	-0.038140	0.068014	-0.560767	0.5766
D(MRR)	-0.124212	0.361540	-0.343565	0.7321
DLOG(CA)	0.158590	0.248941	0.637058	0.5260
D(BR)	0.000603	0.006998	0.086111	0.9316
DLOG(DE)	0.048832	0.082788	0.589839	0.5570
RESID(-1)	0.546004	0.113225	4.822296	0.0000
RESID(-2)	0.070117	0.115752	0.605749	0.5464
R-squared	0.337541	Mean dependent variable		3.16E-17
Adjusted R-squared	0.269596	S.D. dependent variable		0.049523
S.E. of regression	0.042324	Akaike info.criterion		-3.389228
Sum squared resid	0.139723	Schwartz criterion		-3.134134
Log likelihood	156.4314	Hannan-Quinn		-3.286510
F-statistic	4.967886	Durbin-Watson stat		1.965259
Prob(F-statistic)	0.000054			

Source: Author's E-views result 2015

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