EFFECT OF SELECTED SOCIAL OUTREACH INDICATORS ON PROFITABILITY OF MICROFINANCE INSTITUTIONS IN NIGERIA: AN AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) MODEL

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Abstract

The data were analyzed with autoregressive distributed lag (ARDL) framework and the properties of panel data were checked with normality tests and panel unit root tests. The results shows that the coefficient of number of active borrowers and percentage of female borrowers are negative and significant (p>0.05) in explaining profitability of microfinance institutions. The coefficient of debt-equity is positive and significant is (p>0.05) in explaining profitability of microfinance institutions. Moreover, the error correction term coefficient is signifying that short-run disturbance is adjusted in the long-run and the results suggest the existence of a rebound effect. This study recommends financially sustainable microfinance bank expansion in order to serving its social goals at an acceptable credit risk level. The professionalization of microfinance should be considered as a complementary way of providing financial services to the excluded portion of population, the remote and inaccessible sections of the country.

Keywords: Social outreach indicators, profitability, microfinance institutions, Nigeria, adjusted and rebound effect, ARDL model

Introduction

Nigeria's population growth represents the socio-economic reality of SSA and it is the largest potential market for micro and small business (World Bank, 2008; Bateman and Chang, 2012). These characteristics portrayed the country as very fertile economic conditions for blossoming of microfinance activities (Ahlin *et al.* 2010). Microfinance is widely acknowledged as one of the most important development policy innovations to provide solutions to problems of poverty and under development. It does it through: i) alleviating financial constraints; and ii) facilitating the management of money of the low-income households on the one hand (Gulli, 1998). On the other hand, the World Bank (2008) asserts that microfinance provides solutions to the problem of informational asymmetry which attenuates moral hazards among the poor and lack of collateral which typically prevents the poor households from accessing financial services from the formal credit institutions. Microfinance is motivated in part by the broader perspective towards financial inclusion. However, this lack of access to finance continues to exacerbate the persistent poverty traps and imbalance in incomes in the developing nations (Sakshi, 2014).

In recent time, there are over 900 MFBs providing services to the Nigerian population with over eight of these MFBs being of the national status, while over fifty as the state MFBs and the rest are categorized as the unit MFBs. Yet, Nigeria lags behind the

development of the microfinance industry that is partly responsible for deepening poverty and dominant but persistent growing presence of subsistence microenterprises and agriculture (World Bank, 2008; Bateman and Chang, 2012).

The adoption of microfinance policy by CBN has raised some concerns. They are: what have been performances of MFBs since the adoption of commercialization policy for over a decade? How has this policy enhanced financial inclusion in the country and to what extent? It will involve critical evaluation of performances of MFBs operating in the country in order to determine their levels of attainment of the social and financial responsibilities expected of them with the view of enhancing inclusion of the active poor and women.

Literature and Conceptual issues

In Africa, 546 million people were living in poverty, which is more than half of the continent's population; and women and girls are considered to be more vulnerable (Elhiraika, 2023). Furthermore, he stated that in 2022 extra 18 million new poor emerged and had more than half of the highest proportion of the world's poor at 54.8 per cent. The answer to question "Why is Africa still poor?" is of essence in meeting the number one Sustainable Development goals in Africa and its 2030 Agenda. The number one aim of the Sustainable Development Goals (SDGs) targets to "End poverty in all its forms everywhere" and thus admits that poverty is multidimensional (Swedish International Development Cooperation Agency - Sida 2019).

The understanding of poverty in a given context in Africa entails focus on "who is poor" and in what way it manifests for dissimilar groups. Asking who lacks resources, opportunities and choice, power and voice; who lacks human security; and capturing disparities among groups unlocks for understanding how poverty influences diverse groups in these dimensions (Sida 2019). While the four dimensions of poverty unlocks for understanding how poverty manifests itself, Sida analyses four development contexts that included economic and social context, political and institutional context and peace and conflict context which emphasis on the principal causes and find pathways out of poverty. According to Sida, a person living in poverty is resource poor and poor in one or several other dimensions. Furthermore, the dimensions of poverty and the development context are interlinked and they cannot be explained in separation from each other but the approach will vary depending on the situation in different country contexts.

In this Africa's socioeconomic development discourse the resource, opportunities and choice and power and voice poverty dimensions within the economic and social development context are relevant to this study - the effect of selected social outreach indicators on profitability of microfinance banks in Nigeria. This knowledge about the poverty dimensions and development context is fundamental to defining effective policy measures and approaches to reduce poverty. The resource poor entails not having access to, or power over, resources that can be used to sustain a decent living standard, meet basic needs and improve one's life while opportunities and choice refers to one's possibilities to develop and/or use the resources to move out of poverty. Power and voice relates to people's ability to articulate their concerns, needs and rights in an informed way, and to take part in decision making affecting these concerns inside the household, in local communities and at the national level. The economic and social context covers the size and growth rate of the economy, the key macroeconomic variables, fiscal policy, structure of the economy and exports, use and dependence on natural resources, education system, health system, financial system and demographic

developments. The development context for dimension of poverty analysis contain the main elements of a development analysis that explains opportunities and constraints to inclusiveness and sustainable development as well as ways for people living in poverty to change their situation. The economic and social context is often outside of the influence of an individual, but it frames the set of choices and opportunities available to individuals within the context.

According to Lislevand (2012) microfinance institutions are facing a double challenge of providing both financial services to the poor and also covering their costs in order to avoid bankruptcy; hence the need to evaluate microfinance institutions performance, both dimensions must be taken into account. Based on this, Yaron (1994) introduces two fundamental criteria: financial sustainability and social outreach for assessment of performance of microfinance institutions. However, Meyer (2002) uses *The Critical Microfinance Triangle* to evaluate the performance of using microfinance for development: i) outreach to the poor; ii) financial sustainability; and iii) welfare impact. In addition, according to CGAP (2003), there are five parameters when evaluating microfinance performance. These include the following: i) breadth of outreach: numbers of clients being served; ii) depth of outreach: degree of poverty of the clients; iii) loan repayment/portfolio quality: how well is the lender collecting its loans; iv) financial sustainability and profitability: is the MFI profitable enough to maintain and expand its services without continued injections of subsidies); and v) efficiency: how well does the MFI control its operating costs. These are the core indicators recommended in *Good Practice Guidelines for Funders of Microfinance* (CGAP 2006).

In addition, Rosales (2014) adds indicators such as percentage of female borrowers as a proxy for the diversity of clients; and number of active borrowers as a proxy for the scale of operation. In the light of this, many researchers like Cull *et al.* (2007) and Quayes (2012) argued that there is a positive correlation between the income level of the borrowers and the size of loans they demand. Similarly, others have equally argued that the number of female borrowers is an appropriate proxy for the depth of outreach since the most vulnerable in society are usually considered as women (depth of social outreach) (Quayes, 2012).

Methodology

The study is conducted in Nigeria. It is located in West Africa, and bordered on west by the Republic of Benin; on the north by Niger; Chad and Cameroon to the east; and the Gulf of Guinea in the Atlantic Ocean to the south. The study used panel data obtained from the publications of Microfinance Information Exchange database (MIX-Market), a web-based data online managed by the World Bank; Central Bank of Nigeria and National Bureau of Statistics (NBS) for specific objectives. The panel data comprise cross section of nineteen (19) banks and time series of fifteen (15) years from 2004 to 2018. The banks were spread across South East Zone, North Central Zone, North West zone, South South Zone and North East Zone. The banks were purposively selected because the microfinance banks have available and up-to-date data on the selected variables. The choice of the series from 2004 to 2018 was informed by the CBN policy of commercialization of microfinance institution. The data were analyzed autoregressive distributed lag (ARDL) framework and the stationarity of panel data was one with panel unit root tests: Levin, Lin and Chu test (LLC), Im, Pesaran and Shin test (IPS) and Augmented Dickey-Fuller test (ADF) tests.

Model Specification

The model follows the pattern of Mongo (2021) to determine influence of social outreach on profitability of regulated microfinance institutions in Nigeria both in the long-run and short-run periods. It takes the following form:

$$?LnROA_{it} = \beta_0 + \beta_1 LnROA_{it-1} + \beta_2 LnNAB_{it-1} + \beta_3 LnALB_{it-1} + \beta_4 LnPFB_{it-1} + \beta_5 LnDER_{it-1} + \beta_6 LnPAR_{it-1} + \beta_7 LnGLP_{it-1} + ?\psi_1 ?LnROA_{it-1} + ?\psi_2 ?LnNAB_{it-1} + ?\psi_3 ?LnALB_{it-1} + ?\beta\psi_4 ?LnPFB_{it-1} + ?\psi_5 ?LnDER_{it-1} + ?\psi_6 ?LnPAR_{it-1} + ?\psi_7 ?LnGLP_{it-1} - ECM_{it-1} + e_{it}$$

Where:

$?$ = difference

ROA_{it-1} = lagged natural log of Return on assets represents profitability

ALB_{it-1}= lagged natural log of Average loan Balance

NAB_{it-1} = lagged natural log of Number of average of borrowers;

DER_{it-1} = lagged natural log of Debt -to- equity ratio

GLP_{it-1} = lagged natural log of Gross Loan Portfolio

PAR_{it-1}= lagged natural log of Portfolio at risk

Ln = Natural logarithm of the variables

β_0 = *Intercept*

β_1- β_6 = *coefficients of the explanatory variables for long-run*

ψ_1- ψ_6 = *coefficients of the explanatory variables for short-run*

ECM_{it-1} =*Error correction model*

i = individual MFI

t = time period (2004-2018)

μ_1 = *error term*

Results and Discussion

Diagnostic Tests

The normality and panel unit root tests were performed on data set as presented in Tables 1 and 2 respectively.

Table 1 presents the normality for all the variables used for the panel regression. The variables were positively skewed except InGLP which is negatively skewed. For Kurtosis the distribution of TER is platykurtic that is, flatted-curve since the Kurtosis values are less than 3 while the remaining variables values are greater than 3 indicating leptokurtic that is, peak-curve. It could be deduced from the Jarque-Bera probabilities with high values are greater than 1. From all variables put together, we could deduce that all the variables were not normally distributed.

Table 1: Normality root tests

Variable	Notation	Obs	Mean	Med	Max	Min	Std. Dev	Skewn	Kurtos	Jarque-B	Prob
Return on Assets	ROA	284	4.867	3.360	57.230	-35.12	8.4378	0.514	11.189	806.105	0.00
Debt to Equity	DER	284	8.962	2.410	189.120	-9.55	26.377	4.416	22.581	5460.46	0.00
Average Loan Balance	ALB	284	93.816	68.910	1221.11	9.120	116.038	5.670	47.380	24828	0.00
Percent of Female Borrowers	PFB	284	80.12	0.0000	495021	0.0000	435.95	3.012	13.001	22312	0.00
Number of Active Borrows	NAB	284	66660.4	5500.5	873556	74.000	159909	3.345	14.066	1978.58	0.00
Gross Loan Portfolio	GLP	284	3.51E+09	1.12E+08	6.17E+10	8869.0	9.46E+09	4.437	24.001	6151.01	0.00
Gross Loan Portfolio -1	GLP	284	19.007	18.540	24.850	9.0900	3.194	-0.62	3.512	21.308	0.00
Portfolio at Risk	PAR	284	22.691	4.795	309.10	0.0100	39.772	3.779	23.332	5567.59	0.00

Computed by researcher generated from data 2004-2018 (2022) Eview10

Table 2 shows the summary of the results of panel unit root tests. According to Olayungbo (2021), the decision rule is that if the absolute *p*-value of the LLC test, IPS test, ADF test is less than 5 percent critical value, then it is adjudged that the tested variable is stationary or does not have unit roots. If, on the other hand, the absolute *p*-value of the LLC test, IPS test, ADF test is greater than 5 percent critical value, then it is adjudged that the tested variable is non-stationary or has unit roots. Based on this, most of the variables were found to be stationary at first difference and as such they are integrated at order one I(1). However, variables such as GLP was stationary and integrated at order zero I(0). Given that variables were integrated at order I(1) and order I(0) respectively, thus the Autoregressive Distributed Lag (ARDL) estimation technique becomes the most appropriate method for this study.

Table 2: Panel Unit Root Tests Results

Variable	LLC	IPS	ADF	PP	Order of Integration
ROA	-14.7473***	-8.46328***	112.528***	240.011***	I(1)
	0.0000	0.0000	0.0000	0.0000	
DER	-2.25836***	-4.07534***	83.3304***	189.567***	I(1)
	0.0000	0.0000	0.0000	0.0000	
PAR	-7.24879***	-3.26872***	70.9901***	192.175***	I(1)
	0.0000	0.0000	0.0000	0.0000	
GLP	-30.5774***	-7.55715***	65.1578***	57.8238***	I(0)
	0.0000	0.0000	0.0000	0.0000	
LnGLP	-4.42468***	-2.50771***	60.44381***	115.3961***	I(1)
	0.0000	0.0000	-0.0001	0.0000	
NAB	-21.8632***	-7.05507***	93.0719***	191.769***	I(1)
	0.0000	0.0000	0.0000	0.0000	
ALB	-7.56823***	-2.98879***	66.3821***	174.688***	I(1)
	0.0000	0.0000	0.0000	0.0000	
LnALB	-4.01336***	-2.56986***	67.5937**	182.260***	I(1)
	0.0000	-0.0051	-0.0002	0.0000	
PFB	-7.05064***	-5.46316***	100.104***	190.316***	I(1)
	0.0000	0.0000	0.0000	0.0000	

Computed by researcher generated from data 2004-2018 (2022) Eview10

** and *** mean significant at 5% and 1% level respectively and *p*-values are parentheses

The result of ARDL on the long-run effect of selected social outreach indicators on financial performance

This objective was achieved by estimating the effect of social outreach indicators (average loan balance, number of average borrowers, and percent of female borrowers) on return on assets (profitability) and results are presented in Tables 3 and 4. Table 3 shows that the coefficient of number of active borrowers is negative and significant at 5 percent level of probability in explaining profitability. This suggested that 1 percent increase in number of active borrowers resulted to about 0.089 percent decrease in profitability of microfinance institution. This finding is consistent with Yitayaw (2020) and Bayai (2017) who found that as number of active borrowers increases inefficiency is introduced which inevitably leads to decrease in profitability. Similarly, Marr and Churchill (2014); Quayes (2012); and Jorgensen (2011) reported an inverse and significant association between number of active borrowers and profitability of microfinance institutions due to increasing in number of borrowers lead to diseconomies of scale which consequently impact return on assets resulting from inefficiencies and liquidity risks. However, this finding is not consistent with Fadikpe *et al* (2022) positions who posited that number of active borrowers and financial sustainability are complementary and positive; this is because as number of clients increases leads to economies of scale and hence reduces costs which help them to become financial sustainable.

The coefficient of debt-to-equity is positive and significant at 5 percent level of probability in explaining profitability. This suggests a 1 percent increase in debt-equity resulted about 0.039 percent in increase in profitability of microfinance institutions under review. This finding aligns with Anna (2018) and Ngo *et al.,* (2014) who found positive correlation between leverage and return on assets on the one hand; and social outreach measured in number of borrowers on the other hand. This is so because large and medium microfinance institutions have more funding opportunities and cheaper access to outside financing than small ones; and thus capable of taking on more debts in their financial structures to create greater revenues than expenses. However, the results contrasted works of Fama and French (2002); Quayes (2015); Bayai (2017); Narwal and Yadav (2014) who found an inverse relationship between firms' level of debtedness and its impacts on profitability. The implication is that the more debts microfinance institutions acquired in their capital structures the more they would impact on their financial performance negatively.

The coefficient of percentage of female borrowers is negative and significant at 1 percent level of probability in explaining profitability. This implies that 1 percent increase in percentage of female borrowers resulted about 0.096 percent decrease in profitability of microfinance institution. This result is in tandem with the findings of Yitayaw (2020) and Keller (2019) who revealed return on assets declines with increase in numbers of female borrowers due to inefficiency associated with handling of small loans transactions of large number of female borrowers. However, this finding is not consistent with Zainuddin and Yasin (2020) who found number of female borrowers has a positive and significant impact on financial sustainability of microfinance institutions as resulting from high percent repayment rates associated with better operational self-sufficiency; and two, reduction in portfolio at risk stemming from recovery rates and effective monitoring. Similarly, Adhikary and Papachristou (2014) asserted that the higher repayment rate of female borrowers helps to reduce administrative expenses yielding higher profitability.

Table 3: ARDL Results of Long- Run Effect of Selected Social Outreach Indicators on Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNALB	-0.180909	0.107723	-1.679391	0.0955
NAB	-8.91E-06	4.49E-06	-1.986595	0.0491**
DER	0.039582	0.015381	2.573367	0.0112**
LNGLP	0.000354	0.071252	0.004963	0.996
PAR	0.004646	0.002482	1.872037	0.0635
PFB	-9.61E-05	2.04E-05	-4.715363	0.0000***

Computed by researcher generated from data 2004-2018 (2022) Eview10
** = significant @ 5% and *** = significant @ 1% respectively.

Additionally, from Table 4, the error correction term coefficient is negative and significant at 1 percent level of probability. This suggests that short-run disequilibrium is corrected in the long-run. This implies that about 0.59 percent disequilibrium in social outreach in the short-run in previous year is corrected in the current year. On the other hand, the results show that the speed of adjustment of the disturbance in the short-run towards the long-run equilibrium is 59.0 percent thus high. The results indicate that in the long term, some social outreach indicators tend to improve profitability of microfinance institutions, whereas in the short term the observed effects are opposite, suggesting the existence of a rebound effect.

Table 4: Panel ARDL Estimation Results of Short run Effect of Selected Social Outreach Indicators on Financial Performance

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
ECT-1	-0.593843	0.090392	-6.569662	0.000***
D(LNALB)	-1.713932	0.967056	-1.772319	0.079
D(NAB)	-5.53E-05	0.000106	-0.521368	0.603
D(DER)	-1.293469	0.623684	-2.073917	0.040**
D(LNGLP)	-0.849711	0.668423	-1.271217	0.206
D(PAR)	0.062937	0.106847	0.589043	0.557
D(PFB)	0.004446	0.017411	0.255356	0.799
C	3.997382	0.679091	5.886373	0.000***

Computed by researcher generated from data 2004-2018 (2022) Eview10

Conclusion

The breadth and depth of outreach were found to have negative and significant association with profitability. The implication is that outreach has a decreasing relationship with profitability in Nigeria. The variables have both positive association and inverse relationship with financial performance. This study recommends financially sustainable microfinance bank expansion in order to serving its social goals at an acceptable credit risk level. The professionalization of microfinance should be considered as a complementary way of providing financial services to the excluded parts of population, the remote and inaccessible sections of the country.

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