Financial Sustainability and Outreach in Inclusive Finance: A Depository Microfinance Perspective. Evidence from Low Income Sub-Saharan Africa

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Abstract

The objective of this paper is to examine whether financial sustainability and outreach exhibit a trade-off or mission drift in depository microfinance as this is not clear for deposits as yet. The System Generalized Method of Moments is adopted, using data from the Microfinance Information Exchange of 64 Deposit-taking Microfinance Institutions sampled across 18 Low Income Sub-Saharan African countries, spanning 2006 to 2017. No significant relations were found between the average deposit balance and financial sustainability but the number of depositors was significantly negative with financial sustainability. We conclude that in depository microfinance, there is neither a trade-off nor mission drift in outreach depth but a trade-off exists in outreach breadth. Based on the findings and conclusions, recommendations were made.

Keywords: Financial Sustainability; Outreach; Depository Microfinance; LISSA; Inclusive Micro-financial Systems.

Introduction

The microfinance sector in Low Income Sub-Saharan African (LISSA) countries[1] and in other parts of the globe faces challenges in balancing the double bottom line objectives of microfinance provision; financial sustainability and outreach (Huq, Azad, Masun, Wanke, & Rahman, 2017). According to Bogan (2012), financial sustainability is the ability

[1] The LISSA countries are listed in annex 1.

of the Microfinance Institutions (MFIs)[2] to cover their operational and non-operational costs from the revenues earned thereby ensuring that they live long. The pioneering work on defining outreach by Woller & Schreiner (2004) points out that outreach is multidimensional incorporating outreach breadth; the provision of a wide array or voluminous financial products and services to the clientele, and outreach depth; which relates to the clientele's poverty status.

On the one hand, prioritizing outreach the 'original mission' of the MFIs in support of the Welfarists' theory (Woller, Dunford, & Woodworth, 1999) compels the MFIs to serve the poorest and very remote clientele with financial services of very small balances. But serving this niche market is very costly, and this thwarts financial sustainability. On the other hand, pursuing financial sustainability as promulgated by the Institutionalists' theory (Rhyne, 1998) incites the MFIs to charge high microcredit interest rates and to focus on the urban better-off poor with financial services of large average balances. This is deemed profitable and guarantees the assured continuity of the inclusive micro-financial systems but it results in 'mission drift'; the shift of focus from serving the pro-poor to serving the better-off poor. According to Cull & Morduch (2017), the increased preference for financial sustainability over outreach indicates that the MFIs might be losing their moral compass. Thus, financial sustainability and outreach have become an 'either or' question indicating that there is a trade-off in achieving these two goals alongside. Morduch (2000) dubbed this financial sustainability-outreach nexus; a schism.

A detailed look into existing microfinance literature shows that the financial sustainability-outreach nexus has always been told from a microcredit perspective (Ahlin, Lin & Maio, 2011; Zerai & Rani, 2011; Kipesha & Zheng, 2013; Wijesiri, Yaron & Meoli, 2016; Bayai & Ikhide, 2016b; El-Maksoud, 2016; Xu, Copestake & Peng, 2016; Amin, Qin, Rauf & Ahmad, 2017). Scanty literature exists on the financial sustainability-outreach relationship of DTMFIs most particularly for those operating in Sub-Saharan Africa (SSA). This region is experiencing a glut of microfinance deposits to the extent that the volume of deposits exceeds the volume of the gross loan portfolio. Between 2009 and 2015, SSA was the second world's leading region in terms of mobilizing voluntary deposit volumes (Microfinance Information Exchange (MIX) & Consultative Group to Assist the Poor (CGAP), 2010; 2011; 2013; MIX, 2015, 2016, 2019). Furthermore, exclusive to this region is that the number of depositors far exceeds the number of borrowers (MIX, 2015). Lafourcade, Isem, Mwangi, & Brown (2005, p. 4) dubbed this phenomenon, "the African exception". These statistics have dismissed the long held view that deposits were the "forgotten half" of microfinance as the poor have demonstrated that they are also able to save in small proportions (Helms, 2006, p. 24).

The rest of the paper is structured as follows: the research objective is discussed next; followed by literature review; the exposition of the research methodology; presentation of results and then, their discussion. The conclusions drawn from the findings are then highlighted and the recommendations are discussed last.

[2] MFIs are either Credit-only (COMFIs) or Deposit-taking (DTMFIs).

Research Objective

The objective of this paper is to examine whether there is any evidence of a mission drift or a trade-off in the LISSA's inclusive depository microfinance sector in the pursuit of financial sustainability and outreach goals. Thus, this paper tries to address the question: "Is there any evidence of a financial sustainability-outreach trade-off or mission drift in the LISSA's depository microfinance sector?"

To the best of the knowledge of the researchers, no depository microfinance story has been told as yet on the financial sustainability-outreach nexus, most particularly for the LISSA countries where the Gross National Income (GNI) per capita and the minimum wages are very low; and the rates of poverty, rural populations and financial exclusion are very high (Bhorat, Kanbur, & Stanwix, 2015; International Monetary Fund (IMF), 2016; World Development Indicators (WDIs), 2017). This study will therefore provide an insight on the extent to which the depository microfinance sector in the LISSA region has been working towards building sustainable and inclusive financial systems in the perpetual fight against poverty and financial exclusion using deposits. The results obtained will benefit the DTMFIs' managers; national, regional and international policy makers in balancing social performance goals and financial performance goals in this era of the Sustainable Development Goals (SDGs), where microfinance provision is deemed as an esteemed tool in eradicating extreme poverty.

Literature Review

Empirical literature reveals that there is an on-going and inconclusive debate on the nexus between financial sustainability and outreach of MFIs (Abdulai & Tewari, 2017b; Amin et al., 2017; Huq et al., 2017). It has been argued that these two performance measures exhibit relationships which are positive, neutral and negative (Huq et al., 2017).

Some researchers contend that where a positive relationship between financial sustainability and outreach exists, this suggests that intensifying outreach breadth through provision of a wide array of financial products and services results in increased profitability which boosts financial sustainability (Zerai & Rani, 2011). Another group of microfinance researchers are convinced that there is a neutral relationship (no trade-off) between financial sustainability and outreach. This group of researchers argues that increasing outreach to the poorest (depth of outreach) does not impede working towards attaining financial sustainability (Amin et al., 2017).

Where serving the poor is costly thereby dwindling profitability, the financial sustainability-outreach relationship is negative suggesting that there exists a trade-off in pursuing financial and social performance goals (Huq et al., 2017). So, this prompts MFIs to shift focus from the poorest clients who want small average balances of microfinance products and services which is costly; to the better-off poor who want large average balances of microfinance products and services in pursuit of financial sustainability. This phenomenon is called mission drift in microfinance literature (Zerai & Rani, 2011; Abdulai & Tewari, 2017b; Amin et al., 2017). However, Dokulilova, Janda & Zetek (2009, p. 2) disputed that "the poor are viable customers as long as their financing is appointed in their right way".

It has also been argued that the financial sustainability-outreach relationship varies across

locations and also depends on the variables used to measure outreach, model specification (Kipesha & Zhang, 2013) and the goals to be achieved (Churchill & Marr, 2017). With these arguments in mind, Cull et al. (2009) in Bayai & Ikhide (2016b, p. 285) reasoned that "the exact nature of trade-offs in microfinance differ across regions, but meaningful trade-offs need to be recognized and weighted everywhere". In this context that this study seeks to examine the financial sustainability-outreach link of the depository microfinance sector of the LISSA countries.

Methods

Dataset

This paper used an unbalanced panel dataset for the years 2006 to 2017 of 64 purposively sampled, self-reporting MIX DTMFIs drawn across 18 LISSA countries (see annex 1). Purposive sampling enabled the selection of DTMFIs with the highest level of information disclosure as measured by the completeness of their datasets based on the 5 point diamond scale of the MIX database. Data on the country specific variables was sought from the World Development Indicators and the data on the sub-regions was extracted from the 2018 United Nations Conference on Trade and Development (UNCTAD) Handbook of Statistics.

Dependent Variables

Rozas & Erice (2014) argued that the outreach of MFIs that mobilize deposits from the poor and the low-income households can only be analysed accurately if the number of depositors and their average account balances are considered. So, two measures of outreach related to deposit-taking were considered as dependent variables; the average deposit balance per depositor/GNI per capita (AVDGNI), an indicator of outreach depth and the natural logarithm of the number of depositors (lnNODEP), an indicator of outreach breadth.

Tulchin, Sassman & Wolkomir (2009) noted that the average deposit balance per depositor cannot be the same across different countries therefore to accommodate cross country variations, the average deposit balance per depositor is divided by the GNI per capita. In complementing this view, Rosenberg (2009) wrote that average balances that are below 20 % of their GNI are pointers that consumers of microfinance products are very poor. Thus, a link there is a link between the average deposit balance and the poverty or income level of the depositors (Churchill & Marr, 2017). This indicates that DTMFIs that target low income depositors follow the Welfarists approach as they serve the pro-poor, the original mission of microfinance provision. Deviation of focus from small income depositors to large income depositors indicates mission drift.

The Basel Committee on Banking Supervision (BCBS) (2010) noticed that though the sizes of the deposits account balances are very small, these institutions serve very significant numbers of depositors in some parts of the world. So, the rush to increase the market share drives the DTMFIs to cast their nets very wide so that they reach as many depositors as possible. As the number of the depositors increases, the breadth of outreach increases in quantity and this in turn increases the volume of deposits resulting in positive returns in economies of scale which boost profitability. This argument is supported by the Institutionalists' theorists.

Independent Variables

The explanatory variables were DTMFI specific, country specific and sub-regional. Financial sustainability, the main explanatory variable was measured using the Operational Self-sufficiency (OSS) ratio of the DTMFIs. OSS was considered as a weakly exogenous variable. The other DTMFI specific variables which were considered as strictly exogenous variables are deposits to total assets *(DTA)*, a financing and financial intermediation variable; deposits per staff member (*DEPSTAME)*, a productivity measure; the number of years of operation (*AGE)*, an indicator of experience; the natural logarithm of total assets (*lnASSETS)*, a measure of size; the portfolio at risk greater than 30 days *(PAR)*, a measure of risk and the percentage of women clientele *(POW*), a gender variable. The country specific and the sub-region variables {commercial bank branches (*ComBB)*, a competition variable; rural population *(RPOP)*, Central Africa *(CA)*, Western Africa (*WA)*, Eastern Africa *(EA*)} were also considered as strictly exogenous variables. No DTMFIs were sampled from Southern Africa (SA) as this sub-region has no LICs based on the information from the UNCTAD and the WDIs.

Data analysis

For data analysis, the System Generalized Method of Moments (SGMM) which was first developed by Arellano & Bond (1991) and later on refined by Arellano & Bover (1995) and Blundell & Bond (1998) was employed. This method is suitable where the number of cross sectional units "*N*" (64 DTMFIs) is greater than the time period under consideration "*T*" (12 years) (Baum, 2013). Furthermore, the SGMM is superior to other panel data methods in solving the endogeniety problem which is caused by reverse causality, omitted variables and measurement errors. The SGMM incorporates a lagged regressand as one of the regressors. This introduces dynamic bias as the lagged dependent variable correlates with the time invariant fixed effects which allows for individual DTMFI heterogeneity. Thus, the SGMM utilizes the one period lagged regressand as instruments in levels thereby ensuring no correlation between the endogenous DTMFI specific variables and the error term. The diagnostic tests utilized included the AR test for checking autocorrelation of the residuals and the Sargan-Hansen test that checks for over identifying restrictions (Roodman, 2009). Failure to reject the null hypotheses in both tests confirmed the robustness of the SGMM model. The general form of a dynamic panel data model is shown in equations (1) and (2):

$$Y_{it} = \gamma Y_{it-1} + X'_{it}\beta + \epsilon_{it}; |\gamma| < 1 \qquad (1)$$

$$\epsilon_{it} = \mu_i + \varepsilon_{it} \qquad (2)$$

where; Y_{it} is the regressand factor, Y_{it-1} is the lagged regressand, $|\gamma| < 1$ is the intercept and is less than one; X'_{it} is a 1 x k vector of regressors; β is k x 1 vector of parameters to be estimated on the regressors for i = 1, … N and t = 1, … T. μ_i denotes the time invariant individual heterogeneity and ε_{it} denotes the idiosyncratic error component. μ_i and ε_{it} are assumed to be independent and identically distributed *(IDD)* with a zero mean and constant variance (0, σ^2) and are exogenous to each other hence,

$$\in (\mu_{it}) = (\varepsilon_{it}) = (\mu_{it}, \varepsilon_{it}) = 0 \qquad (3)$$

Equation 4 is the empirical model for outreach depth following the Welfarists and equation 5 specifies the empirical model for the outreach breadth following the Institutionalists:

$$AVDGNI_{it} = \phi AVDGNI_{it-1} + \beta OSS_{it} + \gamma Z'_{it} + \varphi X'_{it} + \mu_i + \partial_t + \varepsilon_{it} \quad (4)$$

$$lnNODEP_{it} = \phi lnNODEP_{it-1} + \beta OSS_{it} + \gamma Z'_{it} + \varphi X'_{it} + \mu_i + \partial_t + \varepsilon_{it} \quad (5)$$

where $AVDGNI_{it}$ and $lnNODEP_{it}$ are the dependent variables; $\phi AVDGNI_{it-1}$ is the one period lagged dependent variable for the depth of outreach model. $\phi lnNODEP_{it-1}$ is the one period lagged dependent variable for the breadth of outreach model. These lagged dependent variables are endogenous in the empirical models. OSS_{it} represents the weakly exogenous variable. The strictly exogenous variables are represented by the (1 x k) vector Z' (country specific and sub-region variables) and the (1 x k) vector X' (DTMFI specific variables). ϕ , β, γ and φ represent the estimation parameters. The error component is broken down into the unobservable individual DTMFI heterogeneity effects which are inevitable, μ_i, the time varying effects, ∂_t, and the idiosyncratic term, ε_{it}.

Results

Overall Descriptive Statistics

Annex 2 shows the descriptive statistics of the variables that were used in the estimation process. On average, the AVDGNI in the LISSA region is 39.06 per cent. This gives the impression that the LISSA DTMFIs are socially oriented institutions that mobilize small average deposit balances which deepen their outreach goal. The mean value of the number of depositors is 78 959 indicating that the scale of operations of an average LISSA DTMFI is large. The wide disparity between the minimum and maximum values of the number of depositors, 40 and 1 148 561 respectively, suggests that some LISSA DTMFIs operate on a very small scale with very few depositors and some operate on a large scale with many depositors. The mean value of the OSS ratio of 99.85 % depicts that on average, LISSA DTMFIs are self-sufficient institutions as this value is equal to 100 % when rounded up. This suggests that these depository institutions should be able to cover their operational and financial costs with ease.

The DTA variable averaged 41.89 % over the period suggesting that the LISSA DTMFIs are adequately financed using deposits and are effective in intermediating deposits into loans as the mean DTA value doubled the 20 % threshold. The maximum value of the DTA variable of 103.77 % is in line with the MIX's annual reports that the microfinance sector in SSA is largely financed through the huge deposit volumes that they mobilize. In terms of productivity, the personnel who work in the LISSA DTMFIs serve 341 depositors on average. The AGE variable statistics show that on average, the depository microfinance sector in the LISSA countries is largely composed of young and mature DTMFIs. These AGE statistics confirm the output of the empirical works of Bogan (2012) and Bayai & Ikhide (2016a) who applied the life cycle theory to the financing of MFIs.

The PAR variable mean of 6.89 % which is above the international benchmark of 5 % shows that declining loan portfolio quality cripples the depository microfinance sector of the LISSA countries. The LISSA DTMFIs face stiff competition posed by the proliferation of commercial banks as they have on average, 3 branches per 100 000 adult population. The average value of the RPOP variable of 69.71 % shows that there are vast masses of people that reside in the rural areas in the LISSA countries.

The means for the sub-regional dummies show that the presence of DTMFIs in the LISSA countries is highly concentrated in Eastern Africa followed by Western Africa and lastly, Central Africa.

Descriptive Statistics on the Average Deposit Balance per Depositor/Gross National Income per Capita

Figure 1 shows some line graphs of the mean values of the average deposit balances of the DTMFIs divided by the GNI per capita and subdivided into three LISSA sub-regions (Central Africa, Western Africa and Eastern Africa) from 2006 to 2016.

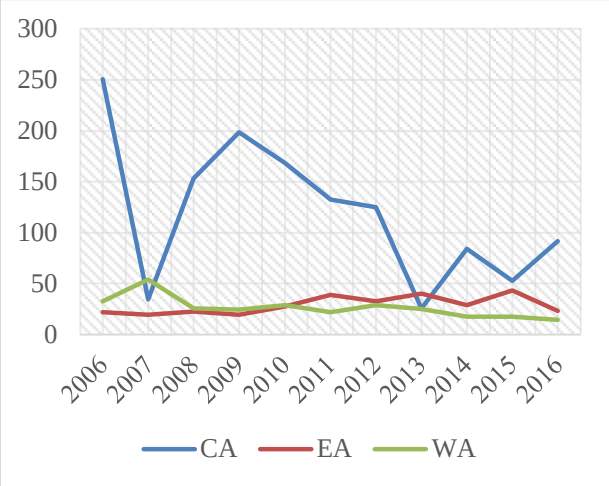

Figure 1: Average Value for the Average Deposit Balance per Depositor/GNI per capita for LISSA's Sub-regions between 2006 and 2016

At the onset of the period under consideration, figure 1 shows that the highest AVDGNI was recorded by Central Africa DTMFIs and the lowest AVDGNI was recorded by Western Africa DTMFIs at the outset of the period. The graph also shows that there were sharp upward and downward swings in the AVDGNI for Central Africa DTMFIs between 2006 and 2016 depicting an unstable trend. The increases in the level of the AVDGNI indicate the shift of focus by the Central Africa DTMFIs from the very poor depositors to the better off depositors who lodge large deposit sizes, a sign of possible mission drift (MIX, 2007). The changes in the AVDGNI for Eastern Africa and Western Africa DTMFIs over time were minor as the variations were not very significant. According to the MIX & CGAP (2013), the small average balances on deposits across all the sub-regions as from the year 2013 reflect the emphasis by the DTMFIs on serving the poorest depositors.

Descriptive Statistics on the Number of Depositors

Figure 2 shows the mean values of the number of depositors of DTMFIs from the LISSA's sub-regions between the years 2006 and 2017.

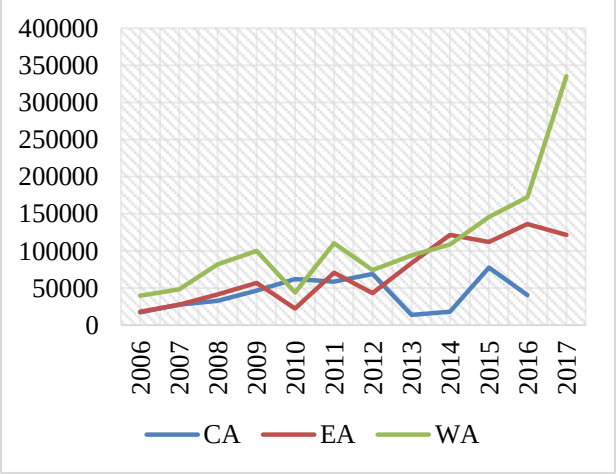

Figure 2: Average Value for the Number of Depositors for LISSA's Sub-regions between 2006 and 2017

In line with the overall growth trends for the entire SSA depository microfinance sector, figure 2 shows that there were upward trends in the growth of the number of depositors for all LISSA's sub-regions over time (MIX & CGAP, 2010; MIX, 2015, 2016,

2019). However, the Central Africa DTMFIs recorded declines between 2012 and 2014 and in 2016. The number of depositors from Western Africa DTMFIs sky rocketed after 2014 and reached a maximum of 335 822 depositors in 2017 which was 2.76 times greater than the number of depositors from Eastern Africa DTMFIs.

Empirical Results

Tables 1 and 2 show the estimation results using the SGMM technique. A cursory look into these tables shows that table 1 presents the results for the LISSA DTMFIs which are the baseline results and table 2 presents the results for the non-LISSA DTMFIs which are a robustness check. The lagged dependent variables in both tables are positive and significant indicating that the DTMFIs (both LISSA and non-LISSA) are persistent inclusive micro-financial systems in outreach depth and breadth. This means that their past deposits outreach programs have a bearing on their current and future ones.

Discussion

Empirical Results for the LISSA DTMFIs (Baseline Results)

Depth of Outreach Results

No significant relationship was found between financial sustainability and the average deposit balance per depositor/GNI per capita implying that the average deposit size scaled by the GNI per capita does not have any bearing on self-sufficiency. Therefore, no trade-off exists and no mission drift has occurred in outreach depth of the inclusive depository microfinance sector of the LISSA countries. The implication is that efforts of mobilizing relatively small scale deposits from low income depositors can be intensified.

Table 1: SGMM Results for LISSA DTMFIs

Variables	**AVDGNI**	**lnNODEP**
Lagged Dependent Variable	0.2207917** (0.0947)	0.5661833*** (0.2014)
OSS	-0.0586011 (0.1438)	-0.002871** (0.0012)
POW	-0.1954064 (0.3138)	0.0009861 (0.0025)
DTA	0.6615132** (0.3142)	0.0012571 (0.0029)
DEPSTAME	-0.0584951* (0.0307)	0.0014543** (0.0006)
AGE	2.30412 (1.6639)	-0.0032384 (0.0076)
LnASSETS	-1.922134 (3.9104)	0.2808928* (0.1462)
PAR	-1.841811 (1.2196)	-0.0017356 (0.0042)
ComBB	5.33335 (10.2052)	-0.0155107 (0.0109)
RPOP	-0.5079222 (1.1255)	-0.16000 0.1246)
CA	8.291318 (27.4208)	-0.6037698 (0.3817)
WA	-10.64785 (18.3009)	-0.4115609** (0.2004)
EA (base category)		
Number of Observations	173	185
Time Dummies	Yes	Yes
Number of Groups	53	55
Number of Instruments	30	36
GMM Instrument Lag	1	1
AR(1)	0.039	0.062
AR(2)	0.170	0.341
Hansen Test	0.420	0.167

***, ** and * denote the 1 %, 5 % and 10 % significance levels respectively. Robust standard errors are in brackets.

Source: Estimation Results using STATA 15

Based on the findings of Abdulai & Tewari (2017a) such results are indicative of the fact that the outreach of the microfinance providers is not driven by their level of self-sufficiency. Thus, both financial sustainability and outreach can be pursued concurrently without the depth of outreach goal straining the quest for operational self-sufficiency in line with Bassem (2012) as well as Martínez (2015).

The DTA variable was positive and significant indicating that the LISSA DTMFIs are effective in the mobilization of intermediated deposits. The DEPSTAME variable is negative and significant with outreach depth indicating that administering deposit balances of varying amounts reduces the productivity of the personnel handling them. No significant relations were found between outreach depth and AGE, POW, lnASSETS, PAR, the country-specific variable and the sub-regional dummies.

Breadth of Outreach Results

Outreach breadth (log of the number of depositors) was negative and significant with financial sustainability. Thus, a decrease in the OSS by 0.002871 % stifles the growth rate in the number of depositors that the LISSA DTMFIs can reach. Therefore, a trade-off exists in achieving these two goals. This may be attributed to decreasing returns to scale that for every increase in the number of depositors, the profit from trading activities is reduced by the costs of dealing with those depositors, on average.

Thus, inefficiency in dealing with expanding outreach breadth in the name of expanding inclusive micro-financial systems strains the financial sustainability of the DTMFIs. Increasing financial access through having many clients opening deposits accounts is costly and reduces the financial sustainability of the LISSA DTMFIs as they are not able to handle such capacity profitably. The outreach breadth results may also imply that the LISSA DTMFIs are not using in the best way, the funds available through deposits and, hence, are not maximizing income generation of these funds through the provision of credits or deposits in other financial institutions. A trade-off point therefore exists in pursuing both financial sustainability and outreach breadth in inclusive depository microfinance systems.

The outreach breadth model reports a positive but insignificant relationship between the deposits to total assets ratio and financial sustainability. DEPSTAME was positive and significant with outreach breadth. This gives the impression that the personnel handling depositors' accounts in the LISSA region are very productive; were able to serve a significant number of depositors over the period. The log of assets was positive and significant with the log of the number of depositors in line with Wijesiri et al. (2016) who discovered that size significantly influences outreach and financial performance. This shows that the LISSA DTMFIs can leverage on their infrastructural development and extensive branch networks in tapping many depositors. Congruent with the outreach depth model, no significant results were found for AGE, POW and PAR, the country specific macroeconomic control. The Western Africa sub-regional dummy has significant relations with outreach breadth. The negative sign indicates that the LISSA DTMFIs from this sub-region are not coping well with the very sharp increases in the number of depositors.

Empirical Results for the Non-LISSA DTMFIs (Robustness Check)

Table 2: SGMM Results for Non-LISSA DTMFIs

Variables	AVDGNI	lnNODEP
Lagged Dependent Variable	0.3648837* (0.1911)	0.573393*** (0.1612)
OSS	0.0231336 (0.0258)	-0.0009713 (0.0029)
POW	-0.0184133 (0.1593)	0.0005544 (0.0055)
DTA	0.1612537** (0.0691	0.0070217 (0.0059)
DEPSTAME	-0.0095889 (0.0070)	-0.0003049 (0.0008)
AGE	-0.1524078 (0.1529)	0.0028929 (0.0341)
lnASSETS	1.516333** (0.6865)	0.329551** (0.1384)
PAR	0.1891486 (0.1187)	-0.0114483 (0.0299)
ComBB	-0.4248347 (1.6680)	-0.1787035 (0.1894)
RPOP	-0.1833772 (0.7051)	0.0461848 (0.0381)
CA	36.53592*** (8.3586)	-2.1888212 (1.3474)
WA	15.53547 (16.1749)	-1.111276* (0.6316)
EA (base category)	26.51652 (28.5465)	-2.428264* (1.2856)
Number of Observations	122	132
Time Dummies	Yes	Yes
Number of Groups	32	32
Number of Instruments	31	30
GMM Instrument Lag	1	1
AR(1)	0.090	0.052
AR(2)	0.198	0.110
Hansen Test	0.130	0.825

***, ** and * denote the 1 %, 5 % and 10 % significance levels respectively. Robust standard errors are in brackets.

Source: Estimation Results using STATA 15

As a comparison and to make the baseline results robust, table 2 shows that the study also estimated the depth and breadth of outreach models for the non-LISSA DTMFIs. 36 DTMFIs shown in annex 1 were sampled across 6 non-LISSA countries. In both models, no significant outreach relationships were found with financial sustainability indicating that no trade-off or mission drift exists in outreach depth and breadth in the non-LISSA's depository microfinance sector.

The insignificant relationship between financial sustainability and outreach depth resembles the results found for the LISSA DTMFIs except for the coefficients' size and magnitude. The insignificant relationship between financial sustainability and outreach breadth suggests that the non-LISSA DTMFIs can increase the number of their depositors without harming their financial sustainability. In this case, no trade-off exists, so financial sustainability and outreach breadth are parallel themes as noted by Amin et al. (2017).

In marked contrast to the LISSA DTMFIs' results, the coefficient of the DTA variable for the non-LISSA DTMFIs results was found to be insignificant with the breadth of outreach but significant with the depth of outreach at the 5 % level. Thus, the positive relationship between the deposits to total assets ratio and the average deposit balance/GNI per capita indicates that the non-LISSA DTMFIs boost their financing structure from relatively small deposit amounts that are collated together. This finding is consistent with empirical literature which points out that deposit financing is predominant in the depository microfinance sector in SSA (Bayai & Ikhide, 2016a).

In line with the breadth of outreach model for the LISSA DTMFIs, both models for the non-LISSA DTMFIs had positive and significant coefficients for size with financial sustainability. This reflects that the non-LISSA DTMFIs are effective in using their assets to reach the poorest depositors in their vast numbers. Similar to the results of the LISSA DTMFIs, some DTMFI specific variables were not significant in both models; AGE, POW, DEPSTAME and PAR. The country specific macroeconomic variables were also insignificant in both models.

As for the sub-regional dummies, only the Central Africa dummy was significant and positive with the depth of outreach. However, this dummy was insignificant and negative with the breadth of outreach. The dummies for the Eastern Africa and Western Africa sub-regions were both positive and insignificant with the depth of outreach but negative and significant at the 10 % level with the breadth of outreach. The negative and significant relationship between the sub-regional dummies and the log of number of depositors suggests that locational factors have the potential to inhibit the deposit mobilization strategies of the DTMFIs. Such locational factors may include the existence of informal, widely dispersed and inaccessible settlements which constrain the ability of the DTMFIs to reach out to as many depositors as possible.

Conclusion

This paper analysed whether financial sustainability and outreach exhibit a trade-off or mission drift in the depository microfinance sector of the LISSA countries as this is not so clear for deposits. Based on the estimated regression results, the main findings of the study were that there are no significant relations between the average deposit balance and financial sustainability but the number of depositors is significantly negative with financial sustainability. We therefore conclude that, in depository microfinance, there is neither a trade-off nor mission drift in outreach depth but a trade-off exists in outreach breadth.

Also, it is possible that the DTMFIs work with different segments of the market, the poorer and the better-off segments in terms of deposits, with no trade-off between outreach and sustainability due to cross subsidisation. However, the DTMFIs can have different policies in terms of credit as they also provide credit as well. Some of these institutions may restrain access to credit by the poorest segments as they are less profitable and riskier or there may be interest rate caps in place. Under such circumstances, there might be signs of mission drift in the access to credit.

From the significance of the deposits to assets ratio in the outreach depth model, it is concluded that the LISSA DTMFIs are active in balancing the needs of surplus and deficit units in microfinance provision. But this is done at the expense of the productivity of the personnel that handles deposits as outreach is deepened. In marked contrast, the deposit-taking staff members are productive as outreach is broadened. Further conclusions are that the country specific controls do not influence the financial sustainability-outreach nexus but the sub-regional factors do have a slight influence.

The main limitation of this paper is that the data used from the MIX online database is only for self-reporting institutions indicating that there is self-selection bias. This poses challenges on the generalization of the results across the whole of

LISSA's depository microfinance sector. Secondly, based on the criteria used in the sampling of DTMFIs and classification of countries, no DTMFIs were sampled from Southern Africa making the sample to be uneven. Nonetheless, the data from the MIX has been found to be reliable as there is standardized reporting and most of the world's largest MFIs with impressive outreach statistics and high rating scores report to the MIX (Lensink, Mersland, Vu, & Zamore, 2018). Also, a number of studies in microfinance have relied on the MIX market data (Bogan, 2012; Bayai & Ikhide, 2016a, 2016b).

Recommendations

Since the study concluded that neither a trade-off exists nor mission drift has occurred in outreach depth, it implies that the LISSA DTMFIs can intensify their deposit mobilization strategies amongst the poorest populations. It is therefore recommended that the LISSA DTMFIs diversify their deposit collection instruments to include mobile savings accounts, diaspora remittances accounts and agent banking, amongst others.

As the study concluded that a trade-off exists in outreach breadth, it is recommended that the LISSA DTMFIs formulate cost cutting measures in their deposit-taking programs as the numbers of both the pro-poor and the better-off depositors increase. This will help boost financial sustainability. Inclusive outreach breadth measures such as free account opening, paying high interest rates on depositors and many clustered office networks should be avoided as they are embedded with exorbitant costs which have undesirable repercussions on realizing financial sustainability. Agent banking and mobile phone technologies can be leveraged on to increase formal financial services to the low income populations.

For further research, there is need to deepen the knowledge on savings access and use, and its role on replacing or complementing credit and other micro-financial services in a bid to increase financial access to low income populations.

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Annexure

ANNEX 1

Sampled LISSA DTMFIs

Country and Sub-region	DTMFIs
Benin (WA)	ACFB, ALIDE, CMMB, FECECAM, PADME, PEBCO, VITAL FINANCE
Burkina Faso (WA)	GRAINE SARL, PAMF
Burundi (EA)	CECAD, CECM, COSPEC, DIFOSA, DUKUZE, FSTE, RECECA INKISI, TURAME COMMUNITY FINANCE, WISE
Chad (CA)	UCEC/MK
Congo, Democratic Republic (CA)	ADVANS BANQUE, COOPEC CAHI DRC, COOPEC CAMEC INKISI, FINCA, HEKIMA, PROCREDIT
Ethiopia (EA)	ESHET, PEACE, WASASA
Gambia (WA)	RELIANCE
Guinea (WA)	CRG
Madagascar (EA)	CEFOR, MICROCRED, ONG VAHATRA, PAMF, TAIVO
Malawi (EA)	CUMO, MLF, OIBM
Mali (WA)	RMCR
Mozambique (EA)	AFRICAWORKS, BOM, FDM, HLUVUKU
Niger (WA)	MECREF, NIYYA
Rwanda (EA)	AMASEZERANO, DUTERIMBERE, LETSHEGO, URWEGO BANK
Senegal (WA)	ACEP, CAUIRE MICROFINANCE, DJOMEC, MICROCRED, PAMECAS, U-IMEC
Tanzania (EA)	ACCESS BANK, BRAC, OPPORTUNITY, VISION
Togo (EA)	FECECAV, FUCEC,MGPCC DEKAWOWO, MUTUELLE AKABA
Uganda (EA)	BRAC

LISSA countries not included in the sample include: Central African Republic (CA), Comoros (EA), Eritrea (EA), Guinea-Bissau (WA), Liberia (WA), Sierra Leone (WA), Somalia (EA), South Sudan (EA), Zimbabwe (EA).

Sampled Non-LISSA DTMFIs

Country and Sub-region	DTMFIs
Cameroon (CA)	A3C, ADVANS CAMEROON, CAMCULL, CEC
Ghana (WA)	ID GHANA, KSF, NW ABIAGY, OISL, VISION FUND, WWB
Ivory Coast (WA)	ADVANS CIV, AE & I, FIDRA, MICROCREDIT CIV
Kenya (EA)	BIMAS, ECLOF-KEN, EQUITY BANK, FAULA MFB, JUHUDI KILIMO, KWIFT, MUSONI OPPORTUNITY KENYA, PWADEP, SIDIAN BANK, SMEP MFB, VISION FUND VISION KENYA
Nigeria (WA)	AB MFB, ACCION MFB NIGERIA, BABURA, DEC FORTIS, GROOMING CENTRE, HASAL MFB, LAPO NGR, SEAP
South Africa (SA)	CAPITEC BANK

Key: CA - Central Africa, EA - Eastern Africa, SA - Southern Africa and WA - Western Africa

Source: Authors' compilations using data from the Microfinance Information Exchange and the 2018 United Nations Conference on Trade and Development (UNCTAD) Handbook of Statistics and the GNI per capita classifications of the 2017 World Development Indicators (WDIs).

ANNEX 2

Descriptive Summary for the Variables used

Variable	Obs.	Mean	Std. Dev.	Min	Max
AVDGNI	393	39.058	70.946	0	691
NODEP	427	78958.59	139880.5	40	1148561
OSS	501	99.8478	32.75798	0.38	228.12
POW	390	61.557	25.782	0	100
DTA	486	41.889	24.051	0	103.77
DEPSTAME	426	340.542	304.229	0	2280
AGE	571	16.900	6.604	7	41
ASSETS	538	2094946.7	35134719.8	157185	214144887
PAR	419	6.865	7.964	-14.57	97
ComBB	556	2.762	1.485	0.36	9.46
RPOP	571	69.713	12.210	42.9	90.38
CA	571	0.0928196	0.2904339	0	1
EA	571	0.4886165	0.5003087	0	1
WA	571	0.4185639	0.4937561	0	1

Source: Authors' table based on data from the Microfinance Information Exchange