OUTREACH AND FINANCIAL SUSTAINABILITY: A DEPOSITORY MICROFINANCE PERSPECTIVE:

Evidence from Low Income Sub-Saharan Africa

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Abstract

This article examined the relationship between outreach and financial sustainability of 64 Deposit-taking Microfinance Institutions sampled across 18 Low Income Sub-Saharan African countries. The System Generalized Method of Moments was employed utilising 2006-2017 panel data that was obtained from the Microfinance Information Exchange. The estimated results revealed that there is no significant relationship between financial sustainability and outreach depth but financial sustainability is negative and significantly related to outreach breadth. The study concluded that there is neither mission drift nor a trade-off in outreach depth but a trade-off exists in outreach breadth in depository microfinance. The practical implication is that Deposit-taking Microfinance Institutions should develop appropriate deposit products for each market segment identified and also leverage on cost-efficient deposit-taking methods such as the use of agents and mobile phone banking technology. The policy recommendation is that mobile phone use should be followed by reduction of the transaction costs through subsidisation.

Keywords: *Outreach; Financial Sustainability; Depository Microfinance, Mission Drift; Trade-off.*

INTRODUCTION

The provision of microfinance is a policy vehicle for accelerating financial inclusion, poverty alleviation, microenterprise finance and economic development in Low Income Countries (LICs) (Nogueira et al., 2020). However, the Microfinance Institutions (MFIs) in Low Income Sub-Saharan Africa (LISSA) and other parts of the world face a challenge in balancing outreach and financial sustainability which are the double bottom line objectives of microfinance provision (Reichert, 2018). Outreach measures social performance while financial sustainability measures financial performance. Outreach has several dimensions but the most common ones are outreach depth and breadth (Woller & Schreiner, 2004). Outreach depth looks at the poverty or socio-economic level of the clientele by emphasizing on reaching out to the pro-poor, women and the marginalised or rural populations. Outreach breadth focusses on the number of clients served. Financial sustainability is the ability of the

MFIs to cover the operational and financial costs from operating revenues so that their continuity as going concerns is guaranteed (Mersland & Strøm, 2010; Hermes et al., 2011).

The problem on the attainment of the double bottom line objectives concurrently is based on the arguments of two groups of microfinance researchers and practitioners; the Welfarists and the Institutionalists. On the one hand, the Welfarists prioritise outreach, which is the 'original mission' of the MFIs by encouraging them to serve the poorest and very remote clientele with financial services of small average balances (Woller et al., 1999). Serving this niche market is costly due to high administration and distributions costs involved. As a result, profitability is eroded thereby stifling attainment of financial sustainability. On the other hand, pursuing financial sustainability as promulgated by the Institutionalists encourages the MFIs to focus on the urban clientele or the better-off poor with financial services of large average balances (Rhyne, 1998; Ledgerwood & White, 2006; Lützenkirchen & Weistroffer, 2012). This is profitable and guarantees the assured continuity of the MFIs. Nonetheless, as the financial mission of the MFIs eclipses their social mission, it may result in 'mission drift'.

Mission drift is the shift of focus from serving the pro-poor to serving the better-off poor (Cull et al., 2007; Armendariz & Szafarz, 2011; Quayes, 2021). Mission drift results in a change in the composition of the target market from pro-poor to better-off poor, rural to urban, informal to formal, groups to individuals and less focus on women (Hermes et al., 2011). Mission drift is caused by commercialisation of MFIs in search of profitability and competition (Kar, 2013; Hermes & Hudon, 2018). According to Beisland at al. (2019), mission drift can also occur at loan officer level (personal mission drift), and then detected at firm level.

In addition to the argument of a mission drift in the outreach-financial sustainability symbiosis, there is also the argument of a 'trade-off', which is "the choice MFIs make regarding combinations of financial and social performance and the consequences this has for their operations" (Hermes & Hudon, 2018: 6). The nature and acuteness of trade-offs are contingent on several factors and exhibit variations across contexts (Wry & Zhao, 2018). According to Bennouri et al. (2020), dealing with trade-offs is a difficult task for the managers of MFIs as they have to strike a desirable balance between financial and social performance.

A detailed look into existing literature shows that the outreach-financial sustainability nexus has always been discussed from a lending perspective. Thus, evidence of a mission drift or trade-off is extant on the microlending business of MFIs (Xu et al., 2016; Hermes & Hudon, 2018; Reichert, 2018; Wry & Zhao, 2018; Bennouri et al., 2020). However, scanty literature exists on the outreach-financial sustainability nexus

explained from a deposit-taking perspective particularly in the context of the LISSA's Deposit-taking Microfinance Institutions (DTMFIs). These financial intermediaries have high levels of deposits that exceed the level of loans since 2010. Moreover, the number of depositors far exceeds the number of borrowers since the early 2000s (Microfinance Information Exchange (MIX) and Consultative Group to Assist the Poor, 2010; MIX, 2016). Lafourcade et al. (2005: 4) called this phenomenon, "the African exception" as the aforementioned trends in deposits are largely observed in Africa than in any other sub regions of the world. These deposits outreach statistics dismiss the once-held view that deposits were the "forgotten half" of microfinance as the poor have demonstrated that they can save more than they can borrow (Helms, 2006: 24).

Against the background discussed above, the objective of this article is to examine whether there is any evidence of a mission drift or a trade-off in the LISSA's depository microfinance sector in the pursuit of outreach and financial sustainability goals. Thus, the study will answer the question: is there any evidence of an outreach-financial sustainability trade-off or mission drift in the LISSA's depository microfinance sector?

To the best of the researchers' knowledge, this study contributes to microfinance literature in two ways. Firstly, the present study looks at the nexus between outreach and financial sustainability from a deposit-taking perspective contrary to the previous studies in Sub-Saharan Africa (SSA) that looked at the same nexus from a lending perspective (Abdulai & Tewari, 2017a; Nyanzu et al., 2019; Chikalipah, 2020). Accordingly, this study fills this void in existing literature by adopting deposit-taking outreach depth and breadth measures and sampling DTMFIs only. Thus, the Credit-only MFIs (COMFIs) did not constitute the adopted sample. Secondly, the study focussed on the LISSA countries due to the prevalence of high extreme poverty rates, low financial inclusion levels and low minimum monthly wages which make these countries, the most appropriate consumers of microfinance (Demirgüç-Kunt et al., 2018; International Labour Organisation – ILO, 2017; World Development Indicators of the World Bank - WDIs, 2017). The sole focus on LICs also distinguishes the current study from the previous ones carried out in SSA that focussed on MFIs drawn from all SSA countries regardless of their income classification by the WDIs.

This study is significant to microfinance stakeholders. The study benefits the managers of DTMFIs in balancing their social and financial performance objectives by shedding light on whether the mission drift or trade-offs that are observed on the microcredit side are also experienced on the deposit-taking front as well. Thus, the managers of DTMFIs will be equipped to formulate strategies on goal congruence. The study is also essential for international policy decision makers in the current era of the Sustainable Development Goals where microfinance provision is an esteemed tool of eradicating extreme poverty mostly in LICs by the year 2030. This can only be

possible if there is minimal or no mission drift and when optimal trade-offs are found that ensure sustainable outreach.

The rest of the article is structured as follows: literature review is discussed next followed by an exposition of the research methodology, discussion of results and lastly, the conclusions and recommendations.

LITERATURE REVIEW

A careful analysis of empirical studies reveals that the relationship between outreach and financial sustainability varies across studies depending on the variables used to measure outreach and the objective to be achieved. Several studies found the existence of a trade-off and mission drift. Hermes et al. (2011) utilised data 1997-2007 data of 435 MFIs. They concluded that there is a trade-off between outreach depth and efficiency as they found that focusing on the pro-poor with small average loans and targeting women is costly to MFIs resulting in reduced efficiency. Their finding also suggested signs of mission drift as the MFIs change the composition of their clientele in search for efficiency. Ageing MFIs were found to be inefficient and group-based lending was found to favour efficient operations due to group cohesion in loan repayments.

Xu et al. (2016) sampled 218 MFIs across 76 countries utilising 2001-2011 data. They found evidence of mission drift between the average loan balance and operational self-sufficiency including other variables such as the domestic credit to the private sector and the shares in the Gross Domestic Product (GDP) of net foreign direct investment. Hermes and Hudon (2018) carried out a systematic review of 170 articles to identify the determinants of social and financial performance and found that the determinants which have an impact on the existence of trade-offs depend on the study's context particularly the country specific context.

Reichert (2018) conducted a meta-analysis study of 61 articles to examine the nature of trade-offs in microfinance. That study found that trade-offs are catalysed by outreach depth proxied by the average loan size, outreach cost measured by the yield on the loan portfolio and efficiency captured by the cost per borrower, operating expenses and total expenses. The portfolio at risk resulted in fewer trade-offs while focusing on women and profitability does not exhibit trade-offs. Wry and Zhao (2018) considered 1995-2013 data of 2,037 MFIs across 115 countries to examine the relationship between outreach intensity and financial sustainability. That study found that outreach intensity is negatively related to financial sustainability implying that a trade-off exists. Additionally, that study found that the outreach-financial sustainability trade-offs are dependent on the institution's cultural roots on social issues, operating market conditions and the professionalism of the management.

Bennouri et al. (2020) examined the effect of workforce diversity on the trade-off between social and financial performance using 2010-2018 data of 1,257 MFIs across 107 countries. The findings revealed that the average loan balance is negatively related to operational self-sufficiency indicating that a trade-off exists between social and financial performance. However, the trade-off is reduced by the moderating effect of interacting the female loan officers and average loan balance variables. Thus, having more female loan officers in the disbursement procedures weakens the trade-off.

There are empirical studies that did not find the presence of a trade-off and mission drift. Hartarska and Nadolnyak (2007) sampled 114 MFIs drawn across 62 countries and found that imposing regulations on MFIs does not directly influence the way they balance their outreach and financial sustainability goals. Mersland and Strøm (2010) utilised 1998-2008 data of 379 MFIs across 74 countries. They did not find existence of mission drift and suggested that MFIs can deepen outreach through reducing the average loan size, focussing on women, the rural and group clients as long as this is followed by cost cutting measures so that profitability is not eroded. Zerai and Rani (2011) investigated 85 Indian MFIs using 2009 data and found a positive relationship between financial sustainability and outreach breadth as measured by the number of borrowers. No evidence of a trade-off and mission drift.

Quayes (2021) examined 1,591 MFIs using 2003-2018 data to examine the presence of a mission drift. That study found that outreach depth and financial performance measured by the return on assets had a negative coefficient. This result implies that there is no evidence of a trade-off and the absence of a trade-off was confirmed by the positive coefficient between financial performance and outreach to women.

Quayes and Joseph (2021) utilised data of 1,291 MFIs to investigate the effect of the legal system and MFI-specific characteristics on outreach. The results showed that, in jurisdictions where common law is applied, outreach depth, outreach breadth and outreach to women is better than in countries where code law and mixed law prevail. Unregulated MFIs were found to achieve better outreach than the regulated ones. No evidence of a trade-off was found.

Empirical literature also shows that some studies found mixed evidence. Ahlin et al. (2011) studied 329 MFIs from 70 countries utilising 1996-2006 data. They found a positive and significant relationship between foreign direct investment and outreach depth; and a negative and significant relationship between outreach depth with the manufacturing share in GDP and the labour force participation rate.

Previous research works also present findings that exhibit comparisons in the pursuit of social and financial performance. Wijesiri et al. (2015) sampled 420 MFIs using 2013 data and found that aging MFIs achieve financial sustainability better than the younger ones but they fall short in pursuing the outreach objective. In terms of size, older MFIs were found to outperform the younger ones in achieving both outreach and financial sustainability.

The empirical studies discussed above show that the outreach and financial sustainability nexus has always been examined from a lending perspective and not from a deposit-taking perspective. In this realm, this study seeks to examine the outreach-financial sustainability nexus in the context of the LISSA's depository microfinance sector thereby deviating from the existing studies.

RESEARCH METHODOLOGY

Data

This study used an unbalanced panel dataset for the years 2006-2017 of 64 purposively sampled and self-reporting MIX DTMFIs drawn across 18 out of 27 LISSA countries. 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 five-point diamond scale of the MIX database. However, this may result in self-selection bias which poses limitations in the generalisation of the results. Nonetheless, previous studies also relied on the MIX database as it is currently, the most reliable database that provides microfinance data (Ahlin et al., 2011; Hermes et al., 2011; Xu et al., 2016).

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. For robustness check purposes, this study also used data of 36 DTMFIs that were sampled across 6 Non-LISSA countries. Since the data is panel in nature, diagnostic tests for heteroscedasticity and serial correlation were conducted. The null hypothesis test of the Breusch-Pagan test that the errors are homoscedastic was rejected indicating that the data utilised suffered from heteroscedasticity. The robust option of the dynamic data model estimated corrected this problem (Roodman, 2009).

The Arellano-Bond test for serial correlation was conducted and the study failed to reject the null hypothesis that there is no second order serial correlation in the first differenced residuals. The Sargan-Hansen test was employed to test for the validity of the instruments employed. The study failed to reject the null hypothesis which states that the instruments are valid. The results of the Arellano-Bond and the Sargan-Hansen tests are reported in the lower panel of Table 1.

Estimation method and variables

For data analysis, a dynamic panel data model, the System Generalized Method of Moments (SGMM) which was first developed by Arellano and Bond (1991) and later on refined by Arellano and Bover (1995) and Blundell and Bond (1998) was employed. This method was adopted as it is suitable for situations where the number of cross-sections "*N*" (64 DTMFIs) is greater than the time period under consideration "*T*" (12

years, 2006-2017) (Baum, 2013). Since this study utilised unbalanced panel data, the SGMM is appropriate because it can handle unbalanced data through orthogonal deviations thereby minimizing loss of observations. Furthermore, the SGMM is superior to other panel data methods in solving the endogeneity problem which is caused by reverse causality, omitted variables and measurement errors. The SGMM incorporates a lagged regressand as one of the regressors thereby introducing dynamic bias as the lagged dependent variable correlates with the time invariant fixed effects which allow for individual DTMFI heterogeneity (Arellano & Bond, 1991). In the first SGMM equation, the SGMM utilises the one period lagged regressand as instruments in levels thereby ensuring no correlation between the endogenous DTMFI specific variables and the error term. In the second SGMM equation, the first differenced equation provides additional instruments to increase efficiency of the model. The instruments proliferation problem is addressed through the collapse option. The general form of a dynamic panel data model is shown in equations (1) and (2):

$$Y_{it} = \gamma Y_{it-1} + X_{it}\beta + \epsilon_{it}; |\gamma| < 1 \quad (1)$$

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

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,

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

According to Rozas and Erice (2014), the outreach of MFIs that mobilize deposits can only be analysed accurately if the number of depositors and their average account balances are considered. Therefore, the study adopted two dependent variables in the outreach models specified below. This is also in line with previous studies such as Abdulai and Tewari (2017a).

$$AVDGNI_{it} = \beta_0 + \beta_1 AVDGNI_{it-1} + \beta_2 OSS_{it} + \beta_3 DTA_{it} + \beta_4 DEPSTAME_{it} + \beta_5 AGE_{it} + \beta_6 POW_{it} + \beta_7 lnASSETS_{it} + \beta_8 PAR_{it} + \beta_9 ComBB_{it} + \beta_{10} RPOP_{it} + \beta_{11} D_{it}^{SUBREGION} + \mu_i + \partial_t + \varepsilon_{it} \quad (4)$$

$$lnNODEP_{it} = \beta_0 + \beta_1 lnNODEP_{it-1} + \beta_2 OSS_{it} + \beta_3 DTA_{it} + \beta_4 DEPSTAME_{it} + \beta_5 AGE_{it} + \beta_6 POW_{it} + \beta_7 lnASSETS_{it} + \beta_8 PAR_{it} + \beta_9 ComBB_{it} + \beta_{10} RPOP_{it} + \beta_{11} D_{it}^{SUBREGION} + \mu_i + \partial_t + \varepsilon_{it} \quad (5)$$

Equation 4 is the empirical model for outreach depth following the Welfarists' approach where the dependent variable is the average deposit balance per depositor/Gross National Income (GNI) per capita *(AVDGNI)*, a measure of the size of the savings that the microdepositors contribute to the deposit base of the DTMFIs (Rosenberg, 2009). The lower the AVDGNI, the deeper the outreach. Equation 5

specifies the empirical model for outreach breadth following the Institutionalists approach where the dependent variable is the logarithm of the number of voluntary depositors *(lnNODEP)* (Rozas and Erice, 2014). The higher the number of depositors, the broader the outreach. $AVDGNI_{it-1}$ is the one period lagged dependent variable for outreach depth. $lnNODEP_{it-1}$ is the one period lagged dependent variable for outreach breadth. The lagged dependent variables where considered as endogenous variables.

The main independent variable is operational self-sufficiency *(OSS)*, the commonly used measure of financial sustainability and was treated as a weakly exogenous variable (Hartarska and Nadolynak, 2007; Abdulai and Tewari, 2017a). Following the Welfarists' approach, a negative relationship between outreach depth and financial sustainability was expected and following the Institutionalists' approach, a positive relationship between outreach breadth and financial sustainability was expected. Several DTMFI-control variables were considered and were assumed to be strictly exogenous variables. The percentage of women borrowers *(POW)* is a proxy that reflects the relative proportion of the total number of women to the total number of clients served. A high POW reflects that the DTMFIs are deepening their outreach (Marr & Awaworyi, 2012). A declining focus towards lending to women is a sign that the DTMFIs are inclining their programs to those of the commercial banks who mainly focus on men (Briere & Szafarz, 2014). The POW variable was expected to be positive in the depth of outreach model and positive in the breadth of outreach model.

The deposits to assets *(DTA)* variable indicates the extent to which the deposits finance the total assets portfolio of the DTMFIs (Bayai & Ikhide, 2016). The depositors per staff member *(DEPSTAME)* variable is an indicator of how many depositors can an employee handle at a particular period. Experience *(AGE)* relates to the number of years the DTMFIs have been operational and exhibits variations in terms of outreach success due to ageing (Vanroose & D'Espailler, 2013). The size proxy, logarithm of total assets *(lnASSETS)*, represents the ability of the DTMFIs to strategically position themselves in fighting competition, adapting to technological revolutions and seizing diversification and investment opportunities (Wijesiri et al., 2015). The portfolio at risk greater than 30 days *(PAR)* variable was included to account for the proportion of the total gross loan portfolio that is overdue for repayment by 30 days and also the portion of the gross loan portfolio that has been renegotiated (Abdulai & Tewari, 2017a).

Macroeconomic controls were also included in the estimated model. The existence of commercial banks in the financial development landscape as measured by the number of commercial bank branches per 100 000 adults *(ComBB)* measures the competition for microfinance clientele by downscaling commercial banks (Cull et al., 2014). The WDIs show that more than 50% of the population in the LISSA countries resides in rural areas. Janda and Zetek (2014) noted that vastly populated rural areas indicate

that there is a high demand for microfinance products therefore, DTMFIs are envisaged to cater for their financial needs. Following several empirical works, location is a dummy variable which constitute four sub-regions; Central Africa *(CA)*, Western Africa *(WA)*, Eastern Africa *(EA)* (base category) and Southern Africa *(SA)* (Sainz-Fernandez et al., 2015; Wijesiri et al., 2015). β represents the estimation parameters. The error component was broken down into the unobservable individual DTMFI heterogeneity effects, μ_i; the time varying effects, ∂_t; and the idiosyncratic term, ε_{it}.

DISCUSSION

TABLE 1. ESTIMATION RESULTS FOR LISSA AND NON-LISSA DTMFIS

	LISSA DTMFIs (baseline results)		Non-LISSA DTMFIs (robustness check)	
	(1)	*(2)*	*(3)*	*(4)*
Variables	AVDGNI	lnNODEP	AVDGNI	lnNODEP
Lagged dependent variable	0.3220842* [0.191]	0.5985122*** [0.194]	0.5886173* [0.297]	0.4300257* [0.256]
Financial sustainability *(OSS)*	-0.0120457 [0.087]	-0.0028037** [0.001]	-0.0061762 [0.099]	-0.0013667 [0.002]
Financial intermediation *(DTA)*	0.8370487** [0.410]	0.0006808 [0.003]	0.0039353 [0.121]	0.008721 [0.006]
Productivity *(DEPSTAME)*	-0.090919*** [0.036]	0.0015744** [0.001]	0.0192184 [0.034]	0.0000713 [0.0004]
Experience *(AGE)*	-0.1560299 [0.491]	-0.0048697 [0.009]	-0.6788366 [0.794]	0.0172496 [0.032]
Gender *(POW)*	0.1437431 [0.141]	-0.001912 [0.003]	0.2353173 [0.313]	0.0039261 [0.009]
Size *(lnASSETS)*	3.094286 [2.691]	0.2623647* [0.142]	3.970207 [2.935]	0.4261237** [0.190]
Risk and portfolio quality *(PAR)*	-0.7854077 [0.813]	0.0001223 [0.005]	0.5436917 [0.651]	-0.0227735 [0.022]
Competition *(ComBB)*	3.885022* [2.208]	-0.2344905 [0.159]	0.0948781 [2.916]	-0.3309803 [0.276]
Location *(RPOP)*	1.801151*** [0.609]	-0.019813 [0.013]	-0.6370262 [0.396]	0.021059 [0.017]
Central Africa *(CA)*	40.61682*** [15.878]	-0.7826032* [0.450]	26.45515 [17.478]	-1.841606** [0.916]
Western Africa *(WA)*	28.38413*** [11.181]	-0.417262* [0.221]	-28.49342* [15.500]	1.12536 [0.798]
Eastern Africa *(EA)*			17.30637* [7.657]	-1.209407** [0.461]
Number of observations	172	185	111	112
Time dummies	Yes	Yes	Yes	Yes
Number of groups	53	55	30	30
Number of instruments	43	36	29	29
GMM instrument lag	1	1	1	1
AR(1)	0.004	0.063	0.223	0.077
AR(2)	0.224	0.379	0.292	0.229
Hansen Test	0.126	0.267	0.054	0.294

Note: ***, ** and * denotes 1%, 5% and 10% significance level, respectively.
The figures in brackets are robust standard errors.
Source: Authors' compilation

Columns (1) and (2) of Table 1 present the baseline results for the LISSA DTMFIs. Columns (3) and (4) of Table 1 present the robustness check results for the Non-LISSA DTMFIs. The lagged dependent variables in columns (1) to (4) are all positive, significant and less than one at 10% significance level except in column (2) where the significance level is 1%.

This shows that the estimated models are consistent with dynamic stability. The positive and significant lagged dependent variables indicate that the DTMFIs are persistent in increasing outreach depth and breadth through deposits. This means that the past deposits' outreach programs have a positive bearing on the future ones implying that DTMFIs that deepen and broaden their current levels of outreach will continue intensifying them in the future in line with national financial inclusion policy initiatives.

Column (1) of Table 1 presents the baseline results for the outreach depth model. No significant relationship was found between financial sustainability and outreach depth. This entails that the self-sufficiency of the LISSA DTMFIs does not have any bearing on the deposit size scaled by the GNI per capita. The implication is that the LISSA DTMFIs can accept deposits of any size from any depositors regardless of their poverty status. This finding supports the Welfarists' theory as the pro-poor clientele who lodge small deposit balances will not be left out by the LISSA DTMFIs. Thus, no trade-off exists and no mission drift has occurred in outreach depth of the LISSA DTMFIs. Similarly, Mersland and Strøm (2010) and Zerai and Rani (2011) did not find existence of mission drift and a trade-off on the microcredit lending side. The results may indicate that outreach is not driven by their level of self-sufficiency (Abdulai & Tewari, 2017a). Thus, both outreach and financial sustainability can be pursued concurrently without the depth of outreach goal straining the quest for attaining operational self-sufficiency.

Contrary to the findings of this study, Hermes et al. (2011) as well as Xu et al. (2016) found existence of mission drift and a trade-off between financial performance and outreach depth. de Sousa-Shields and King (2005) argued that deepening outreach through mobilizing small deposit balances is done at the expense of achieving financial sustainability because administering many small deposits is costly and erodes the operating income thereby stifling financial sustainability. Any deviation from small average balances reflects a change in the market segment served and improves financial sustainability (Armendariz & Szafarz, 2011). Therefore, this study's findings may suggest that the LISSA DTMFIs ought to focus on both the pro-poor and the well-off poor as well so that profits earned from serving the well-off poor can subsidise the losses on serving the pro-poor (Robinson, 2004).

It is possible that the LISSA DTMFIs work with different segments of the market as they also provide credit as well. The LISSA DTMFIs can have different policies in terms of credit which 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 as found by Hermes et al. (2011) and Xu et al. (2016).

The deposits to total assets are positive and significant at the 5 % significance level indicating that the LISSA DTMFIs are effective in the mobilisation of intermediated deposits. The depositors per staff member variable is negative and significant at the 1 % level giving the impression that administering small scale deposits reduces the productivity of the personnel handling them. In concurrence with Johnson (2015), the study did not find any significant relationship between age and outreach depth but Hermes et al. (2011) found that ageing reduces the efficiency of MFIs in outreach. The insignificant relationship between the percentage of women clientele and outreach depth is further evidence that no mission drift has occurred in outreach depth of the LISSA DTMFIs. Reichert (2018) also reported that focusing on women clientele does not usually exhibit trade-offs.

Size is insignificant in explaining outreach depth. Wijesiri et al. (2015) found that size significantly influences the decisions of mature MFIs in achieving outreach and financial sustainability simultaneously. In line with the findings of Xu et al. (2016) and Reichert (2018), the study did not find a significant relationship between risk and portfolio quality and outreach depth. The commercial bank branches coefficient is positive and significant at 10% significance level indicating that competition encourages the DTMFIs to re-strategise their deposit-taking programs to further deepen their outreach as they try to fight off their rivals (Cull & Morduch, 2017). The rural population percentage coefficient is positive and significant at 1% significance level suggesting that the deposit-taking programs are in line with the financial inclusion agenda of expanding financial access in remote areas. Contrary to the findings of this study, Xu et al. (2016) found no significant relationship between rural population and outreach depth. The sub-regional dummies coefficients (Central Africa and Western Africa) are positive and significantly related to outreach depth at the 1% level of significance implying that the sub-regional differences positively influence the size of the deposits accepted by the LISSA DTMFIs. This finding concurs with that of Sainz-Fernandez et al. (2015) who noted that regional differences influence the size of micro-financial services. Eastern Africa is the default category in both outreach depth and breadth models. No DTMFIs were sampled from Southern Africa as this sub-region had no low-income countries based on the classification of countries reported in the 2018 UNCTAD Handbook of Statistics.

Column (2) of Table 1 presents the baseline results for the outreach breadth model. In marked contrast to the outreach depth model where financial sustainability was

insignificant with the average deposit size, financial sustainability is negative and significant at 5% significance level with outreach breadth (logarithm of the number of depositors). Thus, a percentage decrease in financial sustainability stifles the growth rate in the number of depositors by 0.28% thereby contradicting the Institutionalists' theory. Therefore, a trade-off exists in achieving outreach breadth and financial sustainability concurrently in the LISSA's depository microfinance sector. Kipesha and Zhang (2013) who found that outreach breadth measured by the number of borrowers is negative and significantly related to financial sustainability reported related findings on the microlending side. The findings of the present study did not support Zerai and Rani (2011) who found a positive relationship between financial sustainability and outreach breadth.

The trade-off between outreach breadth and financial sustainability of the LISSA DTMFIs can 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. Thus, inefficiency in dealing with increasing numbers of depositors in the name of financial inclusion in depository microfinance strains financial sustainability. Inefficiency that emanates from the use of deposit mobilisation strategies such as extensive branch networks is embedded with exorbitant costs which erode financial sustainability. It means that there is an optimal scale of the number of depositors that can enable the LISSA DTMFIs to achieve social and financial performance objectives simultaneously as noted by Ngo et al. (2014). The trade-off between outreach breadth and financial sustainability of the LISSA DTMFIs may also imply that these institutions 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 microcredit or deposits in other financial institutions.

Contrary to the outreach depth model results, the outreach breadth model results present a positive but insignificant relationship between deposits to total assets and the number of depositors. While the number of depositors per staff member variable was negative and significant in outreach depth, the outreach breadth model presents a significant but positive relationship between the depositors per staff member and outreach breadth at 5% significance level. This finding is consistent with Abdulai and Tewari (2017b) who found that highly productive loan officers contribute positively towards increased outreach breadth. This gives the impression that the personnel handling depositors' accounts in the LISSA region are very productive in serving a significant number of depositors but their productivity is slowed down when the deposit size is small (outreach depth).

Contrary to the outreach depth results, the coefficient of size is positive and significant with outreach breadth at the 10% level of significance. This result concurs with Wijesiri et al. (2015) who discovered that size influences social and financial performance. This

suggests that the LISSA DTMFIs can leverage on the goodwill they generate through their assets to tap as many depositors as possible. Similar to the outreach depth model results, no significant results are found for some DTMFI specific variables; age, percentage of women clientele and portfolio at risk. The macroeconomic controls are insignificant in explaining outreach breadth contrary to the outreach depth results. The sub-regional coefficients, Central Africa and Western Africa, are both negative and significant at 10% level of significance. This finding is not consistent with the findings on outreach depth where the coefficients of the sub-regional dummies were positive. The negative coefficients may therefore indicate that the DTMFIs from Central Africa and Western Africa are not coping well with sharp increases in the number of depositors.

In line with the baseline outreach depth results, the robustness check results in column (3) of Table 1 show no significant relationship between financial sustainability and the average deposit size indicating that neither a trade-off or nor mission drift has occurred in the depository microfinance sector of the Non-LISSA countries. The results of the other explanatory variables largely concur with those found in the baseline models except for deposits to total assets, depositors per staff member, competition, location and the sub-regional dummies. The Western Africa dummy is negative and significant with outreach depth at the 10% level of significance contrary to the baseline results. The Eastern Africa dummy is positive and significant with outreach depth at the 10 % level of significance in line with the sub-regional dummies in the baseline outreach depth model. Southern Africa is the default category in both outreach depth and breadth models of the Non-LISSA DTMFIs.

In the outreach breadth results, the robustness check results in column (4) are not in line with the baseline results as financial sustainability is insignificant in explaining the number of depositors. This indicates that there is no trade-off in outreach breadth amongst the Non-LISSA DTMFIs. The results of most of the explanatory variables largely concur with those of the baseline outreach results except for the productivity variable and the Western and Eastern African sub-regional dummies.

CONCLUSION

This article examined the relationship between outreach and financial sustainability of 64 DTMFIs sampled across 18 LISSA countries. Based on the estimated regressions, the study found no significant relations between the average deposit balance (outreach depth) and financial sustainability but the number of depositors (outreach breadth) was negative and significant with financial sustainability. The study concluded that for the LISSA DTMFIs, there is neither nor mission drift nor a trade-off in outreach depth but a trade-off exists in outreach breadth. Intuitively, it means that the LISSA DTMFIs are financial inclusion enablers that can tap deposits of any size from surplus units regardless of their poverty status without harming financial sustainability. However, the LISSA DTMFIs suffer from inefficiency that erodes

financial sustainability in dealing with large numbers of depositors. The significant deposits to assets coefficient in the outreach depth model led to the conclusion that the LISSA DTMFIs are effective in financial intermediation but this is done at the expense of the productivity of the personnel that handles the deposits. In marked contrast, productivity improved with broadening outreach. While the country specific controls and sub regional factors positively influenced outreach depth, they did not affect outreach breadth.

Based on the conclusions, recommendations for policy and practical implications were made. Firstly, the LISSA DTMFIs should segment their markets and then develop deposit products that are appropriate for each market segment. This intensifies deposit inflows from both the pro-poor and better-off poor thereby suppressing the chances of mission drift and also augmenting financial sustainability. The efficiency gains earned from profitable market segments can be leveraged on to offset the loss making ones. Secondly, the LISSA DTMFIs should devise cost cutting deposit-taking methods to boost financial sustainability as the numbers of both the pro-poor and the better-off depositors increase. Deposit-taking methods such as hiring commission based mobile agents or adjunct stationed agents and mobile phone deposit-taking platforms are cost efficient. Mobile phone use should be followed by reduction or subsidisation of the transaction costs by the policy authorities in their intervention strategies. The LISSA DTMFIs should also limit activities that choke financial sustainability such as free account opening as some of the accounts may be empty accounts, paying unsustainable interests on deposits and expensive clustering of office networks.

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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