FINANCING STRUCTURE AND FINANCIAL SUSTAINABILITY OF SELECTED SADC MICROFINANCE INSTITUTIONS (MFIs)

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ABSTRACT: This study analyses selected Southern Africa Development Community (SADC) Microfinance Institutions (MFIs) in delineating how commercialized financing structure relates to financial sustainability given the need to control poverty through financially sustainable MFIs. The study takes from a recent SADC microfinance survey which recommended financial rescue packages for ailing MFIs to proffer financial sustainability. This survey failed to specify the form of financing which supports financial sustainability in addition to the inconclusive and little evidence in this regard. We note that though the financing structure and the level of financial sustainability varies with countries, MFIs are generally financially unsustainable. A robust probit model framework affirms the role of financing structure on financial sustainability. Portfolio at risk, cost efficiency and costs linked to deposit attraction explain financial sustainability. We suggest the availing of more donations, upgrading risk management and improving cost efficiency to induce financial sustainability.

Keywords: Financing structure, financial sustainability, microfinance, MFIs, SADC

JEL classification: G21, I32

1 Introduction

The role of microfinance in poverty alleviation cannot be over-emphasized given a multiplicity of studies cementing the position microfinance occupies in improving the livelihood of the poor (Iezza 2010, Khawari 2004, Ayayi and Sene 2010). The poverty alleviation role of microfinance is hinged on the assumption that MFIs exist ‘eternally’ (financial sustainability) hence can register a consistent dent on poverty. This is because
financially sustainable MFIs are large, stable and innovative and can thus support extensive outreach at low cost (Quayes 2012; Paul 2010; Hermes et al. 2009). However, MFIs must be adequately capitalized for them to attain financial sustainability. According to Sekabira (2013, p. 86), ‘Sustainability of MFIs based on their capital structure ensures sustainability in poverty reduction and improved food security.’ In the same vein, Kapper (2007) underscored that the high prevalence of financial exclusion is caused by lack of strong financial intermediation based on sound financing. Intuitively, arresting poverty requires financially sustainable MFIs which are in turn backed by informed financing methodologies.

Literature acknowledges transformations in the manner MFIs are financed. Johnson (2015) noted the growing tendency by MFIs to commercially finance their operations. Policy makers, donors and institutionalists¹ have endorsed the commercialization of MFI financing despite the ‘schism’ on the exploits of donations in financing MFIs. Whilst welfarists² are concerned that commercialization triggers mission drift, using non-subsidized funds and ‘leveraging MFI assets’ as well as operating of banks by MFIs has become trendy (Johnson 2015). MFIs have become more profit-oriented, adopting debt and deposit financing whilst shunning donations, grants and subsidies. Earlier sentiments by Murdoch (2000: 620) stating that ‘financial sustainability will give programs access to commercial financial markets’ and that ‘subsidized programs are inefficient and thus bound to fail’ in a way redefined MFI financing.

Recent studies bear witness to MFIs’ financing structure having gradually taken a shift – mimicking that of commercial banks³ (Karim et al. 2011, Bogan 2012, Johnson 2015). Yaron and Manos (2007: 4) reiterated that ‘many of the newly emerging MFIs adopt a more economically-oriented approach that includes sourcing finance by making and retaining earnings, attracting deposits, increasingly borrowing from commercial sources at market rates, and tightening loan recovery procedures to minimize bad debt’. According to Lafourcade et al. (2006: 123), ‘The future of microfinance as a commercial industry has become the dominant strand of thought behind several international development organizations.’ This has seen a growing drift towards commercial microfinance in respect of financing and pricing of products (De Quidt and Ghatak 2018). What then explains the motive to commercialize?

The ballooning demand for microfinance exceeding $300 billion (Paul 2010) has led MFIs to ‘invent’ ways of expanding their financing sources by embracing commercial financing. Commercial financing ‘pressures’ MFIs to be cost-efficient. This promotes MFI survival through profit realization or financial sustainability, thereby broadening outreach (Johnson 2015) – a move described by Picciotti (2017: 1) as the ‘convergence of sustainable development and social economy’. The Industry Perspective⁴ has seen NGOs adopting commercial financing methods and financial sustainability (Campion

¹ Advocates of the financial mission of microfinance which values financial sustainability as a ‘means’ to serve the poor.
² Microfinance practitioners who tend towards the social mission of reaching the primarily the ‘core’ poor.
³ This does not imply that donations are no longer part of MFIs’ financing structure, but their proportions are gradually going down over time, with commercial sources taking dominance.
⁴ A notion which explains the deliberate will to transform the financing structure and business models.
and White 1999). Given these facts, it is equally intriguing to query how commercialized MFI financing relates to financial sustainability.

Delineating the relationship between MFI financing and financial sustainability remain amongst the virgin research areas in microfinance. Recent studies focused on how either capital structure or financial sustainability relate to MFI performance as well as determinants and implications of financial sustainability (see Kar 2012, Kimando et al. 2012, Hartarska and Nadolnyak 2007, Kipesha and Xianzhi 2013, Ek 2011, Kyeroboah-Coleman 2007, Janda and Turbat 2013, Ayayi and Sene 2010). Although Sekabira (2013) and Bogan (2012) looked at capital structure and financial sustainability of MFIs, their actual results differ indicating a contention in the evidence.\(^5\)

Against this background, extensive failure\(^6\) of MFIs in SADC prompted proposals of structuring financial rescue packages for ailing MFIs (Karim et al. 2011). The weakness in the recommendation is the failure to name the financing structure capable of proffering financial sustainability. Assuming the commercialization trend, querying the correct financing structure that can ascertain financial sustainability\(^7\) is unavoidable given the need for a persistent reach-out to the poor. Sparse evidence motivated us to trail the relationship between financing structure and financial sustainability of MFIs.

We take an SADC perspective on the basis that the region is a host to multiple MFI challenges including financial unsustainability and MFI financing problems as well as being amongst the poorest regions in the world (Karim et al. 2011, Johnson 2015, ICSW\(^8\) 2014). We took comfort in the realization that ‘the exact nature of trade-offs in microfinance differ across regions, but meaningful trade-offs need to be recognized and weighed everywhere’ (Cull et al. 2009: 19). Zooming on the relationship with the intent of informing MFI financing to ascertain financial sustainability, and in turn, outreach to the poor is a worthy cause.

The next section covers literature review whilst Section 3 addresses stylized facts on the SADC microfinance sector. The sample, data and econometric estimations are captured in Section 4 whilst Sections 5 and 6 present the empirical results and conclusions thereof.

2 Literature review

MFI funding theories

 Whilst the Modigliani and Miller (M&M) capital structure theory is popular in corporate finance, its relevance given the unique nature of microfinance is unproven. The traditional firm assumed by the M&M theory is at variance with lending institutions

\(^5\) Share capital was found to be additive to financial sustainability (Sekabira 2013) whilst Bogan (2012) recorded a negative link between donations and financial sustainability. It is noteworthy that both studies condoned the use of grants in funding MFIs.

\(^6\) Failure is equated to financial unsustainability.

\(^7\) ‘The lender’s capacity to operate for a considerable period of time, measured in decades, independent of subsidy or altruistic support.’ Von Pischke (1996).

\(^8\) International Council of Social Welfare (2014): more than half of the population in SADC live on less than a dollar per day.
which are capable of attracting deposits, thus the theory requires adjustments for it to suit lending institutions guided by double bottom lines\(^9\) (Cohen 2003).

One relevant theory is the agency theory. It hints at the role of debt in aligning management’s performance to that of the owners. Kar (2012) confirmed that debt usage by MFIs increases profitability measures and improves cost efficiency. The theory asserts that higher leverage is a useful governance mechanism which helps reduce wasteful cash flow by a threat of liquidation (Williams 1988). This may also lead to increased pressure on management’s part to generate enough cash flows to service debt obligations. However, agency costs of monitoring management activities lessen the gains. Agency costs may be large in the microfinance industry as MFIs are by their nature informationally opaque (Hudon and Traca 2011).

Recent studies (Hoque et al. 2011, Kapper 2007, Sekabira 2013, Bogan 2012) linked MFI capital structure to the life cycle theory (LCT). The LCT notes the age-related transformation from subsidized capital to commercial funding (especially for NGOs). Profit-oriented, small MFIs (having little capital and operating on a tight budget) with limited access to broader financing mechanisms graduate over time to levels where they can attract savings and have better access to debt and equity markets. The cost of capital and restraints attached to some sources of capital limit the sources of funding available for MFIs at each growth phase (Kapper 2007). However, evidence on the theory remains unsound as MFIs seem not to ascribe to the financing transition suggested by the LCT.

The Profit Incentive Theory (PIT), despite acknowledging MFI evolution, ascribes to the use of commercialized funding methods at any stage of MFI growth to further the microfinance promise\(^10\). Commercial funding is assumed to advance the profit motive, and is not limited to insufficient donor funds thus can meet the surging demand for microfinance (Bogan 2012, Barnett 2011). However, the trade-off theory (Myers 1984) states that debt must be used conservatively since the costs of using it may surpass firm-value gains it brings with it. Firms can thus borrow up to a point where the marginal tax shield benefits on additional debt is offset by the increase in the present value of possible costs of financial distress\(^11\). Beyond that, debt usage backfires on firm value.

MFI funding

Cull et al. (2009) and Hermes and Lensink (2011) resolved that technology, the degree of MFI commercialization, extent of regulation (financial liberalization) and competition play an important role in defining MFI funding. Regional factors such as financial development, saving and lending culture also affect MFI funding patterns (Fehr and Hishigasuren 2006, Banerjee et al. 2003). Funding of MFIs has remained in contest given fears of mission drift\(^12\) thus MFIs have to weigh outreach and financial independence options in attracting adequate funding. The various funding options available for MFIs,

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\(^9\) The social mission (serving the poor) and the financial mission (being financially sustainable).

\(^10\) Reach out to the poor (see Morduch et al. 1999).

\(^11\) Costs of bankruptcy (reorganization) and agency costs that arise when the firm’s creditworthiness is in doubt.

\(^12\) Failure to serve the poor by MFIs as they seek profits and financial sustainability.
the associated benefits and shortcomings noting the variant MFI motives is the focus of
this section.

**Deposits/savings**

In microfinance, deposits are tiny savings made by the poor or the marginalized. Meeting regulatory requirements before deposits can be attracted is a cost to MFIs. This partly explains why deposits are not popular with MFIs across the world (Tehulu 2013, Cull et al. 2011). However, the effect of regulation on deposit attraction remains controversial since the evidence points both directions (Fehr and Hishigsuren 2006). Although Kapper (2007), Bredbeg and Ek (2011) and Ek (2011) acknowledge that deposits are stable and can fund MFIs over a long period, thereby ensuring sustainability and solid growth, it is still a reality that not all MFIs are allowed to attract deposits. Legislation in most countries outlaws the attraction of savings by MFIs. This limits the financing options of MFIs to equity and debt where donations might be limited.

Deposits require the hiring of expensive technical experts to set up payment systems, system upgrades and ensuring information and data security. Legal costs too are high given the need to satisfy compliance and aligning with regulatory changes and interpretation of statutes. Reporting requirements to meet supervisory standards present itself as a cost to MFIs as MFIs might out-source accounting specialists. The aspect of meeting capital reserves is a tax on MFIs thus MFIs might decide to issue bigger loans, hence mission drift (Cull et al. 2009). Against these costs, attracting the adequate level of deposits takes a lot of time thereby suppressing the ultimate effect of deposits on financial sustainability though this effect is noticeable in the short run (Mwangi et al. 2015).

**Debt**

CGAP (2004) notes that debt is mainly supplied by private investors (non-commercial investors), commercial banks and other multilateral organizations. Debt can be from both local banks and foreign banks. Governments may own debt in MFIs or invest in Microfinance Investment Vehicles (MIVs) through International Finance Institutions (IFIs) (Kapper 2007). IFIs allow private investors keen on returns to invest in microfinance. However, debt comes with the obligation of servicing it, regardless of whether MFI operations are profitable or not. The agency theory is mainly framed on the usage of debt in spurring MFI efficiency in the deployment of resources and ensuring financial sustainability. This resource remains expensive in most African markets (Tehulu 2013) given financial underdevelopment, illiquid markets and the information opacity of the microfinance sector in most countries.

**Equity**

Equity relieves MFIs from making contractual periodical payments as is the case with debt financing. Equity financing is provided by owners (profit-motivated MFIs) or by national and international donor organizations and development banks (NGOs). Retained earnings form part of cheap equity capital compared to share issue. Costs linked to equity include dividends, although no legal statutes oblige dividend payment (Tehulu 2013), and administrative costs (flotation costs) of raising capital through stock markets (Kapper 2007). However, equity has remained a scarce resource mainly because few MFIs are listed with stock exchanges. There are few instances of MFIs which listed
successfully with stock exchanges, especially in Latin America. In most regions, MFIs resort to either debt or attraction of deposits to expand their operations as investors shun holding shares in institutions lending to the poor and female clients (Cull et al. 2009).

Donations

Although sidelined by institutionalists, donations remain popular with new MFIs. Despite the fact that donations come at concessionary rates, they still have strings attached as donors require that MFIs meet set conditions prior the extension of donations. While donations are good for start-up MFIs (de Aghion and Morduch 2005), they are condemned for limiting the growth of MFIs as they are linked to inefficiency, unsustainability, corruption, abuse and reduced scale of operations (Kapper 2007, Yaron and Manos 2007). This explains the move to commercialize MFI financing even by NGOs as set out by the Industry Perspective paradigm (Campion and White 1999). To circumvent all the pitfalls of donations, smart subsidies have been suggested but the major limitation has been the proper methodology of quantifying such as well as knowing the right time to stop providing subsidies when MFIs become financially sustainable (de Aghion and Morduch 2005).

Financial sustainability

An analysis of unsuccessful rural credit programs in developing countries done by the Ohio State University concluded that ‘(1) institutional sustainability was key to successful provision of financial services to the poor and (2) financial self-sufficiency was a necessary condition for institutional sustainability’ (Brau and Woller 2004, p. 6). Borbora and Sarma (2007) noted that though sustainability can be considered at various degrees, financial sustainability has earned researchers’ interest given its relevancy in poverty alleviation. Financial sustainability states that MFIs must be able to cover their operating and financial costs using operating revenue (Morduch 1999). Khawari (2004: 7) wrote that ‘Sustainability is permanence’, implying that financially sustainable MFIs are able to exist indefinitely and serve the poor, hence an endless fight against poverty (Paul 2010).

The dictates of financial sustainability acknowledge competent use of financial resources as a forerunner for sufficiency which is lacking in most subsidized microfinance programs (Quayes 2012). This augments Rhyme and Otero (2006) who disregarded the use of altruistic support if MFIs are to be financially sustainable. Given donor fatigue and inconsistency of donors in funding development (Ayayi and Sene 2010) there is a notable surge in commercialization of microfinance. Commercialization is applauded for ensuring financial sustainability and opening of broader financing opportunities for MFIs (Sekabira 2013). Quayes (2012), giving the instance of Latin American MFIs, acknowledged the significant strides made by NGOs in deviating from subsidy dependency into profitable institutions. Deposit attraction plus debt usage has been increasing, with a notable move away from grants and soft loans evidencing the evolution of MFI financing in pursuit of financial sustainability (Hoque et al. 2011).

13 MFIs with an age range of 0–4 years (de Sousa-Shields and Frankiewicz 2004).
14 Provision of subsidies only and up to the time that an MFI become financially sustainable.
15 Movement from subsidized to market-oriented microfinance.
One key element of financial sustainability is the charging of market interest rates on loans which allow for the recovery of administrative and operational costs. Khandker (1996) notes that financial sustainability can only be attained where the interest charged per unit of principal on loans exceeds the associated costs of raising the principal. For as long as the lending rates allow for the covering of operating and financing costs, the MFI is viable. The art of disbursing loans and loan recovery structures adds to financial sustainability. Disbursing of loans must limit administration costs (cost per borrower) whilst the recovery of loans must also limit losses for the MFI (Khandker 1996).

MFI financing and financial sustainability

Kinde (2012, p. 1212) wrote that ‘various sources of capital could affect profitability, hence sustainability of MFIs’, implying the existence of a relationship between financing and financial sustainability. The relationship between MFI financing and financial sustainability remains underexplored, hence the little evidence. Studies referred to in this section did not strictly interrogate the relationship but their findings gave an indication of the perceived link between financing and financial sustainability of MFIs.

Kar (2012) queried the effect of capital on the performance of MFIs considering the agency theory. GMM and IV methods indicated that increase in debt usage increases profitability for MFIs. MFIs’ cost efficiency responded to leverage positively. The study made use of ROE, ROA, Operational Self-Sufficiency (OSS) and Financial Self-Sufficiency (FSS) as performance measures. Ayayi and Sene (2010) undertook a study to tag the drivers of MFI financial sustainability: their study did not settle for capital structure as a determinant but noted the role of interest rates and portfolio quality. The study recommended the adoption of commercial banking practices, apt management and governance.

Ugandan evidence shows that both debt and donations have a negative link with OSS and FSS (Sekabira 2013). The study recommended equity financing as a way of promoting FSS after noting that debt had a negative effect on FSS. A related study by Kyereboah-Coleman (2007) noted that highly leveraged MFIs reach out further, endorse economies of scale, and reduce moral hazard and adverse selection. On the implications of FSS, Ek (2011) wrote that profit-oriented MFIs are more efficient as they can harness technology and employ novel lending methods. Such MFIs are mostly large and are more likely to attain financial sustainability, thus can broaden outreach whilst disbursing bigger loans even to female borrowers.

Kipesha and Xianzhi (2013) recommended that MFIs should emulate financial sustainability as well as lowering donations after identifying a positive trade-off between outreach and sustainability. Hartarska and Nadolnyak (2007) in a study meant to query if regulation improved financial sustainability and outreach found that regulation had no effect on FSS and OSS. Rather, low leverage promoted financial sustainability. Kinde (2012) focused on the financial sustainability of Ethiopian MFIs and found that capital structure had no effect on FSS. Outreach depth and breadth, dependency ratio and cost per borrower were noteworthy in determining FSS. Kimando et al. 2012 also found that capital structure had no effect on FSS in a study which focused on Nigeria. However, Iezza (2010) confirmed the importance of capital in explaining FSS though he singled out savings as the significant variable. Other significant variables were portfolio at risk,
yield on gross portfolio, interest rates and inflation. Bogan (2012) on changes in capital structure and financial sustainability noticed the negative relationship between grants and OSS. Assets recorded a positive link with FSS whilst debt recorded a negative link with FSS.

The evidence cited demonstrates a link between financial structure and financial sustainability, although varying results testify inconclusiveness. Different results also result from the variation in the samples used in different studies. This tallies with the realization by Cull et al. (2009, p. 19) that ‘the exact nature of trade-offs in microfinance differ across regions, but meaningful trade-offs need to be recognized and weighed everywhere’. In line with this thinking, refocusing on how commercialized MFI financing relates to financial sustainability in SADC countries with the intent of fighting poverty through appropriately financed and sustainable MFIs is a worthy cause.

3 Stylized facts: SADC microfinance sector

Microfinance in SADC comprises an assortment of MFIs which are geographically spread with the intention of serving the diverse needs of the society (Lafourcade et al. 2006). Commercial microfinance has trended in the region as evidenced by the souring of profit-oriented NGOs serving salaried clients. MFIs do lend to small enterprises too, though to a limited extent. Evidence shows that microfinance is a growing sector with respect to clients served and volume of loans and deposits attracted. MFIs provide loans, payment services, insurance and consultancy amongst the broadening products and services offered by microfinance. Competition has also redefined the microfinance sector as large players in the form of commercial banks down-scale in search of new business and new clients. Interestingly, deposits exceed the total loan book of MFIs, explaining the role of commercial banks, savings and credit cooperatives (SACCOs) and new regulated MFIs in attracting savings (Karim et al. 2011). Financing challenges which limit the scope of operations of many SADC MFIs has led them to consider savings as an alternative financing methodology given the recent statutory provisions allowing MFIs to collect deposits (Karim et al. 2014).

Whilst there are a number of hybrid MFIs operational in SADC, this section presents the most common forms of MFIs, that is, commercial banks, profit motivated MFIs (non-bank financial institutions - NBFIs), SACCOs and NGOs.

Commercial banks

Karim et al. (2011) noted that commercial banks have become a dominant part of the microfinance sector in SADC, notably in South Africa, Zimbabwe, Angola, DRC, Mozambique, Tanzania and Malawi. According to CGAP (2010), commercial banks account for 81 per cent and 83 per cent of Southern African total borrowers and savers.

16 These are NGOs which maintain the ‘NGO’ tag whilst they have commercialized their operations. This can be inferred from their ‘commercialized’ financing structure which mimics that of commercial MFIs. Balance sheets of these NGOs provide traces of commercial financing. Such NGOs transform into commercial institutions at a later stage.
respectively. Services include loaning to salaried low income earners, with some banks extending even unsecured loans under group loaning schemes. However, there are microfinance inclined banks in Angola, Mozambique and DRC which particularly serve the poor as the origins of such banks trace back to MFI roots.

For-profit MFIs (NBFIs)

For-profit MFIs do not operate purely as banks and neither are they registered as banks, thus some of them do not provide ‘banking’ services though they seek profits. These have been on the increase in SADC, are mostly salary-based and operate on a commercial basis. The proliferation of these MFIs is linked to commercialization, where microfinance is pursued with a commercial mind of earning profits (Kapper 2007). Countries like Zambia, Zimbabwe, Angola, Botswana and Tanzania have seen the increase of such MFIs especially in urban and peri-urban areas. Most profit motivated MFIs institute either group or individual lending methods. Although loans granted are thought to be meant for SME investment (because of the bigger size), most of such loans are for consumption as well as enabling clients to access either education or health facilities. It is worth noting that NBFIs are now the major microfinance players in small economies such as Swaziland, Lesotho and Namibia (Karim et al. 2011). Former NGOs in countries like Zambia and DRC turned into NBFIs as a way of broadening their financing base as they pursue profits in executing microfinance.

Savings and Credit Cooperatives (SACCOs)

SACCOs are voluntary member-based institutions which attract deposits from members and lend amongst members. Profits realized cover operating expenses whilst excess profits might be shared amongst members. SACCOs are the most common form of MFIs in SADC and are most visible in DRC, Tanzania, Lesotho, Malawi, Swaziland and Mauritius. Despite the volumes of deposits attracted by SACCOs, it still remains difficult to quantify their activities as they normally do not report to any regulatory authorities. This has affected efforts meant to regulate SACCOs. Regulation of SACCOs remains critical as they attract deposits thus the protection of depositors become essential. Small countries such as Swaziland and Mauritius are mostly served by SACCOs. These institutions remain vital in extending microfinance services as they allow the very poor to save and access funds (Lafourcade et al. 2006). Tanzania tops the region with such institutions reaching nearly a million individuals (Karim et al. 2011).

NGOs

NGOs do not distribute profits as they are normally funded by donors who are not keen on financial returns. All gains are redeployed in the operations of the institution. These institutions pursue more rural finance as they are socially oriented. NGOs are either locally or internationally controlled. The scope of outreach of NGOs is poor in SADC compared to other African regions (Lafourcade et al. 2006). However, Tanzania has the highest number of NGOs active in deepening outreach. Such institutions chose to remain NGOs thus do not consider transforming into NBFIs owing to prohibitive regulations. South Africa also has large NGOs in the name of the Small Enterprise Foundation

17 These MFIs issue loans to clients on account of monthly salaries that the clients receive.
Figure 1 – Global distribution of MFI funding sources. 

Source: Lafourcade et al. (2006).

(SES) and Marang Financial Services. However, their significance in South Africa is overshadowed given the size of the economy and the presence of large microfinance-inclined commercial banks. Mozambique also has a significant NGO presence in the region mainly because of the need to address social imbalances created by the 15-year-long civil war and humanitarian issues covering health, education and fiscal support. NGOs are commendable for maintaining their coverage on the poor and women clients (Karim et al. 2011).

SADC MFI financing

Funding for MFIs in SADC mimics that of commercial banks. It includes deposits, equity and retained earnings as well as wholesale priced funds from wholesale markets. International donor societies, philanthropic individuals and public donations also provide funding to NGOs. Figure 1. shows the global distribution of MFI financing options. Though the distribution does not distinctively identify SADC, Lafourcade et al. (2006) noted that the financing structure for MFIs does not vary much in Africa. The indication is that savings or deposits play an important role in the financing of microfinance activities in SADC. This is explained by a marked increase in regulated MFIs which are capable of attracting deposits, same as do SACCOs and commercial banks (Lafourcade et al. 2006). Attraction of deposits by MFIs has forced regulatory authorities to compel MFIs to obtain deposit-taking licences to protect the public. However, funding remains a challenge for SADC MFIs (Karim et al. 2011).

Of importance is that equity financing is limited as there is no MFI on record so far for listing on any stock exchange in SADC. The exception is that of microfinance-inclined commercial banks which were already listed before venturing into microfinance. Nevertheless, commercial banks still have more liabilities (deposits) than equity given the nature of their business. Most SADC MFIs cannot access debt because they are mostly financially unsustainable – an indication of impending credit risk (Karim et al. 2011). The costs associated with debt financing considering weak debt markets limit debt usage in SADC.
Financial sustainability in SADC

Making use of return on assets (ROA) as a measure of the ability of an MFI to earn positive returns given the expenses it incurs, Lafourcade et al. (2006) noted that SADC MFIs constantly recorded negative returns. Poor profitability characterizes both small and large MFIs. The regional ROA average for SADC ranges from 0–2 per cent, signalling the unprofitability of the microfinance sector. Soaring financial costs and provisioning for losses weigh down the OSS measure of SADC MFIs. Since rural areas have low population densities and poor infrastructure, MFI costs are magnified. Innovation such as use of technology in extending microfinance products and services and improved communication could lessen such costs to some extent (Lafourcade et al. 2006).

It is worth noting that profitability varies with MFI type. Regulated MFIs record the highest average ROA whilst SACCOs report the lowest average ROA. This translates into OSS measures which are high for regulated MFIs compared to cooperatives. Interestingly, unregulated MFIs generate the highest revenues and still incur the most expenses when compared with other MFIs.

4 Methodology

Data and sample

The study considers the commercialization trend in MFI financing. Cull et al. (2009) noted that ‘a rough estimate of classification of the extent to which MFIs in the sample are profit-oriented is based on their sources of funding. We hypothesize that greater reliance on commercial sources of funding than non-commercial sources would lead an MFI to be more profit-oriented.’ We adopt the same classification in this study. Being profit-oriented is an indication of an MFI adopting commercialization. We noted, however, that MFIs which are hugely commercially financed still have low subsidies in their financing structure. This substantiates claims by de Aghion and Morduch (2005) that ‘smart subsidies’ can still finance either fully commercialized or financially sustainable MFIs. The study also considers MFIs operating as NGOs whose financing structure is now hugely commercialized and are mostly profitable, indicating their commercialization alignment (Quayes 2012). As shown earlier, NGOs gradually transform into commercial MFIs by meeting certain regulatory requirements, although their business and financing models would have long adjusted to imitate those of commercial MFIs.

Microfinance Information Exchange (MIX) reporting MFIs are assumed in this study. Though MIX data has a self-selection bias, it remains a publicly available and reliable source of microfinance data given that a multiplicity of studies relies on it. The data accessed span from 1997 to 2013 although marred by reporting inconsistencies. Periodic SADC Finscope microfinance surveys always lament the lack of data in the

18 Microfinance literature equates the seeking of profits by MFIs to commercialization. Social mission oriented MFIs naturally do not seek profits but endure to serve the poor.

19 In this study, subsidies are interpreted to mean donations or grants hence are interchanged.

20 A website which reports financial data for MFIs from across the globe.
Table 1 – Sample details

| Characteristic     | Number of MFIs | % of the sample |
|--------------------|----------------|-----------------|
| NGOs               | 21             | 35%             |
| Banks              | 10             | 17%             |
| Cooperatives       | 11             | 18%             |
| NBFIs              | 17             | 28%             |
| Rural Bank         | 1              | 2%              |
| New                | 8              | 13.3%           |
| Young              | 15             | 25%             |
| Mature             | 37             | 61.7%           |
| Regulated          | 46             | 77%             |
| Collect deposits   | 51             | 85%             |
| Profit motivated   | 23             | 38%             |

Source: Authors’ compilation.

Table 2 – Sample MFI distribution by country

| Country      | Number of MFIs selected |
|--------------|-------------------------|
| Angola       | 2                       |
| DRC          | 10                      |
| Madagascar   | 10                      |
| Malawi       | 7                       |
| Mozambique   | 8                       |
| Namibia      | 1                       |
| South Africa | 3                       |
| Swaziland    | 1                       |
| Tanzania     | 12                      |
| Zambia       | 4                       |
| Zimbabwe     | 2                       |

Source: Authors’ compilation.

region. Given the need to maximize data points, sampling resorted to the selection of a period with the best MFI reporting incidence. The period 2005–2010 recorded a remarkable MFI reporting incidence thus was selected for the study. Subscribing to the MIX allowed for premium access to MFIs’ financial statements. The selection criteria yielded 60 MFIs. A full description of the sample is provided in Table 1. Whilst the SADC comprises 15 countries, the MFIs in only 11 countries met the selection criteria, thus 4 countries (Botswana, Seychelles, Lesotho and Mauritius) were not represented in the sample (Table 2). MFI-specific variables such as MFI age, gross loan portfolio, portfolio at risk, interest rate charged on loans (proxied by real yield), cost per

21 Angola, Botswana, DRC, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

22 De Sousa-Shields and Frankiewicz’s (2004) classification was assumed (0–4 years = New; 4–8 years = Young; >8 years = Mature). The same classification criteria were adopted by Bogan (2012).

23 Outstanding loans in excess of 30 days as a percentage of the gross loss portfolio (Bogan 2012).

24 This is the lending rate adjusted for inflation prevalent in the host country thus also captures the macro-economy.
borrower, number of active borrowers and the degree of outreach are readily available on the MIX.

We assume that regulation refers to any basic legal provisions that MFIs are subjected to or are required to conform to. However, there is a cost attached to regulation such as capital requirements, reporting and information system upgrades. These costs may constrain financial sustainability. Non-involvement of regulators makes the formation and operation of MFIs less costly. MFIs can thus operate as regulated or unregulated MFIs (Hartarska and Nadolnyak 2007). Whilst we note that profit-motivated MFIs are the same as commercial MFIs, profit orientation does not imply anything about the MFI age. An MFI can be profit-motivated but can still be new, young or mature. Also, profit orientation does not necessarily define whether an MFI is regulated or not.

Estimation technique

Binary outcome models (probit and logit) are assumed in this study given that an MFI can either be financially sustainable or not at any given time (Arellano and Hahn 2005). Probit and logit models are run under 0 or 1 outcome scenarios. These are non-linear regression models which restrict the output (predicted values) to either 0 or 1. Taking the probability of an MFI being financially sustainable to be \( D(x\beta) \), then the probability of an MFI being financially unsustainable is \( 1 - D(x\beta) \). Probit and logit models confer the same results (where differences exist, they are insignificant). Logit models are based on cumulative standard logistic distribution (\( F \)) whilst probit models are based on cumulative standard normal distribution (\( \Phi \)) (Torres-Reyna 2014):

\[
\text{Logit model} \quad \Pr(Y = 1|X_1, X_2, \ldots, X_k) = \frac{1}{1 + \exp(-X'\beta)}
\]

\[
\text{Probit model} \quad \Pr(Y = 1|X_1, X_2, \ldots, X_k) = \Phi(X'\beta) = \frac{1}{\sqrt{(2\pi)}} \exp\left(-\frac{x^2}{2}\right)
\]

These models are based on maximum likelihood, i.e. the possibility of an MFI being financially sustainable on condition of a specific explanatory variable. Though the magnitudes of coefficients in probit and logit models are not interpreted, their direction is interpreted in the maximum likelihood framework (Söderbom 2009). Instead, marginal effects are estimated to quantify the likelihood of an MFI being financially sustainable given any explanatory variable. Average marginal effects are assumed since ‘means’ convey a wrong meaning under 0 or 1 outcome scenarios – this is because where two extremes exist, that is, either an MFI is financially sustainable or not, no mid-point (mean) exists.

Probit models are assumed. We ran four different probit models to infuse robustness (i.e. standard probit, robust standard probit, cluster robust probit and

25 0 for non-financial sustainability and 1 for financial sustainability.
26 Torres-Reyna (2014) notes that it is a matter of choice between probit and logit as they give similar results.
random effects probit model). Random effects probit model accommodate unobserved MFI heterogeneity and time variant effects. Robust standard probit model addresses heteroskedasticity and autocorrelation weaknesses (Torres-Reyna 2014). The cluster robust probit model increases confidence intervals by relaxing the independence condition for observations. It also incorporates the ‘group’ effect in analysing the relationship between financing structure and financial sustainability. The standard probit model does not incorporate robust standard errors. Sound models are informed by the $\chi^2$ and the associated probability which must be significant at 5 per cent level. Results are interpreted assuming the maximum likelihood method. We compute the percentage correctly classified to reflect a model’s predictive power.\(^{27}\)

Model specification

We adopt the panel framework based on its strength to trace individual MFI features as well as addressing ‘inter’ and ‘intra’ MFI features. The essence is that MFIs are not the same hence heterogeneity has to be accounted for by allowing for multiple observations per institution (Greene 2002, Wooldridge 2002). Given the micro panel assumed in this study, adopting panel framework increased the data points (degrees of freedom). Also, panel methods allow for the running of regressions where panels are un-balanced thereby addressing the problem of omitted variables given gaps in the reporting of MFIs (Hsiao 2006, Baltagi 2001).

Based on Coleman (2008), the structural panel equation is presented as follows:

$$Y_{it} = \alpha + \beta X_{it} + u_{it},$$

where $Y_{it}$ is dependent variable, $\alpha$ is a constant, $i = 1, \ldots, N$ and $t = 1, \ldots, T,^{28}$ whilst $X_{it}$ stands for a $K$-dimensional vector of explanatory variables (financing options, MFI-specific and macro-economic variables) exempt from the error term $u_{it}$. Most important is that $u_{it}$ can be decomposed into the un-observed MFI-specific effects ($u_i$) whilst the rest of the disturbances are embedded in $v_{it}$. We re-state equation (1) to capture the financing options, MFI characteristics and macro-economic fundamentals obtaining in the host countries:

$$\text{Financial Sustainability}_{it} = \beta_0 + \sum \beta_j X_{it} + \sum \beta_k Y_{it} + \sum \beta_i Z_{it} + \epsilon_i,$$

where $X$ denotes financing structure variables (BA-borrowing or debt, EA-equity, DA-donations, DTA-savings – expressed as a proportion of total assets); $Y$ captures MFI characteristics (MFI age; deposit attraction dummy; for-profit dummy; regulation dummy; portfolio at risk, PAR; natural log (log) for: assets, number of active borrowers, NOAB; gross loan portfolio, GLP; and the cost per borrower, CPB), while $Z$ represents the macro-economic variable (real interest rates, RY) obtaining in the host country. Financial sustainability, being the dependent variable, is measured using OSS estimates

\(^{27}\) The higher the percentage, the better the model.

\(^{28}\) $i$ represents MFIs 1–60 whilst $t$ stands for time in years, that is 1–6.
adopted from MIX as defined in the next section. Equation (2) can thus be expressed as follows:

\[
\text{fin.sus}_{it} = \beta_0 + \beta_1 DA_{it} + \beta_2 EA_{it} + \beta_3 BA_{it} + \beta_4 DTA_{it} + \beta_5 \text{mature}_{it} + \beta_6 \text{new}_{it} + \\
+ \beta_7 \text{attract.deposit}_{it} + \beta_8 \text{for.profit}_{it} + \beta_9 \text{log.assets}_{it} + \beta_{10} \text{log.NOAB}_{it} + \\
+ \beta_{11} \text{log.GLP}_{it} + \beta_{12} \text{regulated}_{it} + \beta_{13} \text{log.CPB}_{it} + \beta_{14} \text{RY}_{it} + \beta_{15} \text{PAR}_{it} + \\
+ \beta_{16} \text{small.outreach}_{it} + \beta_{17} \text{large.outreach}_{it} + \beta_{18} \text{log.NOLO}_{it} + \epsilon_{it}.
\]

(3)

**Description of variables and expected results**

Literature notes that financial sustainability can be estimated making use of FSS, OSS and the Subsidy Dependency Index (SDI). OSS quantifies how adequate MFI revenues are to cover the total costs (operating costs, loan loss provisions and financial costs) disregarding all grants, subsidies and donations. FSS is a subsidy-adjusted measure of financial sustainability popular with NGOs (Yaron and Manos 2007). Revenues are adjusted to cater for soft loans, in kind donations and inflation adjustment. SDI, though touted as the best measure of financial sustainability, is least used owing to lack of data to estimate it (Rosenburg 2009). SDI measures the margin by which an MFI has to increase its interest rates for it to cover all costs including adjustments. This study assumes OSS as it is readily estimated in the data accessed. Recent microfinance studies (Bogan 2012; Sekabira 2013; Tehulu 2013 and Kipesha and Xianzhi 2013) used OSS as a measure of financial sustainability. OSS is estimated as follows:

\[
\text{OSS} = \frac{\text{Total Operating Revenue}}{\text{Expenses (Financial Expenses + Operational Costs + loss on loan expenses)}}.
\]

Operating revenue includes interest income from both current and past loans, interest from restructured loans, interest from all investments, fares, service charges and penalties from late settlement of loans. Expenses include financial, operating and loan loss expenses (Cull et al. 2009). An OSS < 1 = unsustainable; 1 < OSS < 1.1 = Operationally Sustainable and OSS > 1.1 = Financial sustainability. Financial unsustainability means an MFI cannot meet its operating costs and thus is bound to fail unless it gets financial aid. Effectively, an OSS in excess of 1 defines an MFI’s ability to meet its operating costs. Besides operational costs, an MFI has to meet the financial costs of capital resources it uses. An OSS of at least 1.1 defines an MFI’s knack to meet both operating and financial costs (Bogan 2012).²⁹

Funding options (equity, borrowings, donations and deposits) are scaled against assets to manage the huge variability in the actual dollar amounts of various financing sources. Retained earnings are the omitted MFI financing variable in the estimations.³⁰ This tackles collinearity emanating from the possibility of one financing variable being fully determined by other financing variables. According to the LCT, MFIs are expected to be financially sustainable when they are ‘mature’. This is because, management, by learning through experience gained across time, is expected to sharpen the business

²⁹ For comparability with other studies, we use a threshold of 1.1%.
³⁰ The \( n – 1 \) rule on degrees of freedom is applied here. See Bogan (2012).
model, widen financing options and reduce risk. In this realm, ‘new’ MFIs are expected to be financially unsustainable (Kapper 2007, Bogan 2012). The ‘growth’ LCT phase is omitted to cater for the \( n - 1 \) degrees of freedom rule.\(^{31}\) Regulation of MFIs entails that the operations of an MFI are under either a formal banking regulatory authority or a financial services watchdog. Cull et al. (2009) noted that regulation increases costs for MFIs; thus to stay alive, regulated MFIs improve the quality of their loan portfolios in the same way as efficiency improvements, and hence are expected to be financially sustainable. We do not delineate between prudential regulation (for deposit-taking MFIs) and non-prudential regulation (for credit-only MFIs) as both come at a cost to MFIs.\(^{32}\) It is worth noting that deposit attraction is expected to enhance financial sustainability due to the low cost attached to deposits (Iezza 2010, Lafourcade et al. 2006).

The CPB and the PAR if kept minimal increase the chances of an MFI being financially sustainable (Kar 2012). As noted in the literature, interest rates on loans determine the revenue generated hence an MFI’s ability to cover costs. Real yields (RY) are assumed as they are adjusted for inflation and hence incorporate the macro-economic fundamentals in each country.\(^{33}\) The higher the real yield, the more likely an MFI is to be financially sustainable (Ayayi and Sene 2010). We also expect that, the more the number of clients served (number of active borrowers, NOAB) the better the chances of financial sustainability. With regard economies of scale, the larger the outreach (number of clients served – not necessarily borrowers), the more likely an MFI is to be financially sustainable. Common financial knowledge states that outstanding loans limit financial resources available for MFIs. In this realm, the more the number of outstanding loans (NOLO) the lesser the chances of an MFI being financially sustainable. It is also the intuition of this study to question whether MFIs’ assets contribute to financial sustainability. The MFI size is captured by the log of assets whilst the economies of scale are evident in the scope of outreach – large or small.

Descriptive statistics

Table 3 shows the summary of the financing structure for the sampled MFIs. Equity is the most popular financing source averaging 42.13 per cent of the assets for the whole sample. Given that 85 per cent of MFIs in the sample attract deposits, deposits finance 32.19 per cent of the assets. Karim et al. (2011) noted that SADC countries have adopted regulatory provisioning for deposit attraction by MFIs augmenting Lafourcade et al. (2006) assertion that African MFIs attract deposits better than any other region in the world. The pecking order of popularity descends to borrowings, donations and retained earnings. Donations are losing their central role as a financing option for MFIs (Ayayi and Sene 2010). Obligatory costs attached to debt and the high costs associated

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31 Note that the LCT has three phases, hence only two can be included in the analysis based on the \( n - 1 \) degrees of freedom rule.
32 MIX data report the regulation status of an MFI and does not separate prudential and non-prudential regulation.
33 Real yields differ with countries as the inflation adjustment captures the country-specific macro-economy. This variable in part stood in for analysis based on sample disaggregation by country. Given the micro sample assumed, sample disaggregation by country does not provide sound results as some countries have few MFIs captured in the sample.
Table 3 – Summary of financing structure for selected SADC MFIs

| Variable                     | Mean    | Std Dev. | Min     | Max     |
|------------------------------|---------|----------|---------|---------|
| Retained earnings to assets (%) | 4.38   | 20.95    | −94.51  | 101.86  |
| Borrowings to assets (%)      | 19.70  | 23.67    | 0       | 124.49  |
| Donations (%)                 | 12.94  | 38.49    | 0       | 345.76  |
| Equity to assets (%)          | 42.13  | 29.94    | −7.51   | 115.36  |
| Deposits to assets (%)        | 32.19  | 102.49   | 0       | 879.29  |

Source: Authors’ compilation.

Table 4 – MFI financing by country

| Country | Mean donations | Mean equity | Mean borrowings | Mean deposits | Mean retained earnings |
|---------|----------------|-------------|-----------------|--------------|-----------------------|
| Angola  | 0.22           | 43.49       | 25.49           | 25.19        | 15.34                 |
| DRC     | 14.24          | 40.03       | 14.05           | 17.15        | 2.94                  |
| Madagascar | 7.00       | 34.26       | 19.53           | 27.27        | 0.70                  |
| Malawi  | 15.89          | 48.20       | 17.23           | 14.45        | 0.33                  |
| Mozambique | 33.60    | 49.95       | 12.29           | 21.17        | −0.78                 |
| Namibia | 17.93          | 32.63       | 49.79           | 12.45        | −2.21                 |
| South Africa | 0.21      | 38.21       | 32.75           | 16.16        | 6.85                  |
| Swaziland | 0            | 37.73       | 45.07           | 8.41         | 5.94                  |
| Tanzania | 8.74          | 38.36       | 25.35           | 85.06        | 9.20                  |
| Zambia  | 9.75           | 62.08       | 9.93            | 8.79         | 21.15                 |
| Zimbabwe | 0             | 19.04       | 4.43            | 0            | −2.53                 |
| Total   | 12.94          | 42.13       | 32.19           | 32.19        | 4.38                  |

Source: Authors’ compilation.

The financing structures of MFIs differ by country too. Mozambique records the highest donor financing at 33.60% of assets owing to existence of humanitarian-aligned NGOs. Zambia has the pole position in the use of equity (69.80%) while Namibian MFIs got the highest proportion of assets financed by borrowings (49.79%) followed by Swaziland at 45.07%. In line with Karim et al. (2011) Tanzania has the largest SACCOs which collect deposits hence the 85.06% of assets being financed by deposits. Whilst Zimbabwean MFIs recorded the least retained earnings (−2.54%), Zambia recorded the highest retained earnings of 21.15% (Table 4).

Considering MFI development phases; donations, deposits and retained earnings are popular with mature MFIs (17.10%, 40.82% and 9.33% respectively). New MFIs lead in the use of borrowings (25.13%) and equity (47.27%) (Table 5).

We explored the financing structures used by different MFI charters (Table 6). We note that banks use the least donations (1.34% of assets) whilst NGOs recorded the maximum (26.60% of assets). NGOs also top other MFI charters in the use of equity (51.34% of assets) with the least usage being that of SACCOs (22.72%). Since banks are traditionally meant to collect deposits, deposits account for 109.06% of bank assets. NBFIs have the least deposit to assets ratio (8.33%) since few of them are licensed to attract deposits hence the high borrowings to assets for NBFIs (27.25% of assets).
Table 5 – MFI financing by MFI development stage

| Variable                  | Mean new MFIs | Mean young MFIs | Mean mature MFIs |
|---------------------------|---------------|-----------------|------------------|
| Donations to assets (%)   | 3.30          | 11.41           | 17.10            |
| Retained earnings to assets (%) | −5.90        | 1.74            | 9.33             |
| Equity to assets (%)      | 47.27         | 41.49           | 40.46            |
| Deposits to assets (%)    | 15.33         | 25.82           | 40.82            |
| Borrowings (%)            | 25.13         | 20.55           | 17.37            |

Source: Authors’ compilation.

Table 6 – Financing structure by MFI charter

| Variable                  | Mean banks | Mean NGOs | Mean SACCOs | Mean NBFIs |
|---------------------------|------------|-----------|-------------|------------|
| Donations to assets (%)   | 1.34       | 26.60     | 5.20        | 7.70       |
| Retained earnings to assets (%) | 7.36       | 6.31      | −1.67       | 4.01       |
| Equity to assets (%)      | 37.09      | 51.34     | 22.72       | 46.34      |
| Deposits to assets (%)    | 109.06     | 12.86     | 28.31       | 8.33       |
| Borrowings (%)            | 9.92       | 23.43     | 9.92        | 27.25      |

Source: Authors’ compilation.

Table 7 – Summary of efficiency measures for selected SADC MFIs

| Variable                  | Obs.  | Mean    | Std Dev. | Min    | Max    |
|---------------------------|-------|---------|----------|--------|--------|
| Cost per borrower         | 291   | 237.624 | 343.7253 | .1018  | 2854.531 |
| Portfolio at risk         | 291   | .0769458| .1317546 | −.0039 | .928   |
| Number of loans outstanding | 291   | 30848.44| 114234.2 | 14     | 1356770|

Source: Authors’ compilation.

Literature has shown that financial sustainability is attained where MFI efficiency is adhered to. The portfolio at risk, cost per borrower and number of outstanding loans must be kept at a minimum (Kar 2012). Table 7 provides summary statistics of these variables based on the sample.

To infuse meaning to these statistics we compared them with global averages computed by Bogan (2012). Bogan showed an average CPB of $160 for a global sample implying that SADC MFIs are not as efficient ($237.62). More resources are thus channelled towards loan disbursement and monitoring lessening the profitability of MFIs. NOLO, though not cited in most studies is alarmingly high, averaging 30,848. This is a measure of loans which are likely to degenerate into non-performing loans. This partly explains the portfolio at risk of 7.69% which exceeds the global average of 5%. This means SADC MFIs accrue more losses on their lending operations thereby taxing financial sustainability as provisions have to be made on all losses on loans.

We found that efficiency varies amongst countries. PAR is defined in Madagascar, Zambia, DRC and South Africa (Table 8). NOLO is high in Madagascar, DRC, Swaziland and South Africa, with the lowest being recorded in Namibia. Countries with high NOLO tend to have a high PAR. Post-conflict countries (Angola and DRC) recorded high CPB given the increased cost of reaching remote clients. Efficiency also varies with MFI age (Table A3). The CPB decreases as MFIs age. Start-up MFIs (new) recorded the highest
Table 8 – Efficiency measures by country

| Country      | Mean cost per borrower (CPB) | Mean portfolio at risk (PAR) | Mean number of outstanding loans (NOLO) |
|--------------|-----------------------------|-----------------------------|----------------------------------------|
| Angola       | 636.42202                   | 0.0336                      | 6314.2222                              |
| DRC          | 464.99293                   | 0.0711                      | 8755.119                               |
| Madagascar   | 194.10485                   | 0.1159                      | 9134.6226                              |
| Malawi       | 138.10145                   | 0.0944                      | 34834                                  |
| Mozambique   | 237.1226                    | 0.0298                      | 9061.814                               |
| Namibia      | 88.90988                    | 0.0103                      | 2453.4                                 |
| South Africa | 261.90181                   | 0.1605                      | 296198                                 |
| Swaziland    | 387.72758                   | 0.0631                      | 8165.3333                              |
| Tanzania     | 114.19952                   | 0.0503                      | 24967.678                              |
| Zambia       | 206.15117                   | 0.1178                      | 8630.3684                              |
| Zimbabwe     | 239.4331                    | 0.0430                      | 5468.5                                 |
| Total        | 237.62406                   | 0.0769                      | 30848.443                              |

Source: Authors’ compilation.

CPB of $438.18 whilst mature MFIs have the least CPB ($172.58). However, mature MFIs lead with respect to NOLO (44 667.23) and PAR (10%).

The CPB decreases as the level of outreach increases (Table A4). Where outreach is small, CPB is $294.51 and where outreach is large the CPB is $130.20, implying economies of scale for the large MFIs helps them to reduce CPB. The PAR is also high (11%) for MFIs supporting large outreach compared to 7 per cent for small and medium outreach MFIs.

5 Empirical results

We first explore the level of financial sustainability for the sample. Statistics show that the sampled MFIs are mostly financially unsustainable (63.92%) (Table A1) and the level of financial sustainability varies with countries. Using the average OSS as a measure of financial sustainability, Swaziland has the highest OSS (83.33%), followed by Angola (55.56%), Zimbabwe (50%) and Madagascar (43.40%) (Table A2). We further our analysis by adopting correlation analysis.

Correlation analysis

A preliminary link between financing and financial sustainability was established through correlation analysis (Table 9).

Donations got a significant negative relationship with financial sustainability. This can be explained by their meagre contribution (12.95%) in the financing of MFIs as shown in Table 3. Deposits averaging 32.19 per cent of the assets (Table 3) have a significant positive relationship with financial sustainability. Deposits being cheap can support and expand operations of MFIs (Cull et al. 2009). Though equity has a positive relationship with financial sustainability, the relationship is insignificant.
We also traced the connection between financial sustainability and MFI development stages using correlation analysis (Table 10). Whilst the life cycle seem to be supported by the results (positive link between financial sustainability and young and mature MFIs), the link remains insignificant. The high cost per borrower ($438.18) and high use of borrowings (25.13%) for new MFIs explains the significant negative relationship between new MFIs and financial sustainability.

Financial sustainability is also a function of efficiency measures (portfolio at risk, cost per borrower and the number of outstanding loans. We did a correlation analysis to check this relationship (Table 11).

---

**Table 9 – Correlation between financial sustainability and financing methods**

|            | fin.sus | Donations | Equity | Borrowings | Deposits |
|------------|---------|-----------|--------|------------|----------|
| fin.sus    | 1.0000  |           |        |            |          |
| Donations  | −0.1556*| 1.0000    |        |            |          |
| Equity     | 0.0078  | 0.1428*   | 1.0000 |            |          |
| Borrowings | −0.1097 | −0.0759   | −0.2548*| 1.0000     |          |
| Deposits   | 0.1624* | −0.0468   | 0.1871*| −0.1473*   | 1.0000   |

*Source: Authors’ compilation.*

**Table 10 – Correlation analysis: financial sustainability and MFI development phases**

|                          | Financial sustainability |
|--------------------------|--------------------------|
| Financial sustainability  |                         |
| mature                   | 1.0000                   |
| young                    | 0.0976                   |
| new                      | −0.1987*                 |

*Source: Authors’ compilation.*

**Table 11 – Correlation analysis: financial sustainability and efficiency variables**

|                      | Financial sustainability | Cost per borrower | Number of outstanding loans | Portfolio at risk |
|----------------------|--------------------------|-------------------|-----------------------------|-------------------|
| Financial sustainability | 1.0000                  |                   |                             |                   |
| Cost per borrower    | −0.0393                  | 1.0000            |                             |                   |
| Number of outstanding loans | 0.1639*                 | −0.0374           | 1.0000                      |                   |
| Portfolio at risk    | −0.1201*                 | −0.1059           | −0.0448                     | 1.0000            |

*Source: Authors’ compilation.*
The high average portfolio at risk of the sample (7.69%) explains the significant negative relationship between portfolio at risk and financial sustainability. Contrary to expectations, the number of outstanding loans recorded a significant positive relationship with financial sustainability. To better understand this relationship, we run probit regressions observing various robustness forms as stated earlier.

Probit model empirical results

We ran four probit models: standard probit (1), robust standard probit (2), random effects probit (3) and cluster robust probit (4). Only model (3) is insignificant implying that time-variant effects are immaterial in explaining financial sustainability. Whilst there is possibility of inconsistent results emanating from the correlation between variables (McCullagh and Nelder 1989), the results for the cluster robust model are the same as those for the standard robust model. Table 12 shows empirical results for the four models and a discussion of the same is presented hereunder.

Financing structure and financial sustainability

Donations, the only significant financing variable, reduces the likelihood of MFIs to be financially sustainable. This finding remains significant considering the four different models assumed – confirming the significant negative relationship observed under correlation analysis (Table 9). Disregarding retained earnings, donations account for the least part of assets (12.94%) thus they cannot support significant MFI operations (Johnson 2015). This finding confirms an earlier finding by Bogan (2012) based on a global sample. Impliedly, SADC MFIs might require more donations if their level of financial sustainability is to improve. Though equity and deposits increase the likelihood of MFIs to be financially sustainable, the relationship is not significant.

MFI characteristics and financial sustainability

All models confirm that being a new MFI significantly reduces the likelihood of an MFI to be financially sustainable. New MFIs have the highest cost per borrower ($438.18) compared to young and mature MFIs (Table A3). This signals inefficiency of new MFIs as more resources are devoted to the extension of loans. Also, new MFIs use the highest portion of borrowings (25.13%) as compared to young and mature MFIs. Borrowings have a fixed debt-servicing cost which has to be paid whether MFIs realise profits or not. Also, the underdeveloped debt markets in Southern Africa make borrowing to be expensive (Bayai 2017). These attributes for new MFIs explain the limited chances for new MFIs to be financially sustainable.

In line with Tehulu (2013) and Kauffman and Riggins (2012), attraction of deposits pencil-in regulatory costs (capital requirements, expensive IT upgrades and hiring of IT experts). This might signify that MFIs that attract deposits are less likely to be financially sustainable in the short run (Mwangi et al. 2015). At 1% significance level
|                      | (1)       | (2)       | (3)       | (4)       |
|----------------------|-----------|-----------|-----------|-----------|
| fin_sus              | −0.014    | −0.014    | −0.020    | −0.014    |
|                      | (2.27)*   | (2.70)**  | (1.92)    | (2.73)**  |
| Equity to assets     | 0.006     | 0.006     | 0.009     | 0.006     |
|                      | (1.45)    | (1.50)    | (1.51)    | (1.25)    |
| Borrowings to assets | −0.008    | −0.008    | −0.007    | −0.008    |
|                      | (1.81)    | (1.87)    | (1.08)    | (1.83)    |
| Deposits to assets   | 0.002     | 0.002     | 0.002     | 0.002     |
|                      | (0.41)    | (0.51)    | (0.37)    | (0.43)    |
| mature               | −0.387    | −0.387    | −0.473    | −0.387    |
|                      | (1.66)    | (1.75)    | (1.37)    | (1.67)    |
| new                  | −0.884    | −0.884    | −0.920    | −0.884    |
|                      | (3.10)**  | (2.90)**  | (2.27)*   | (2.49)*   |
| attract_deposit      | −0.818    | −0.818    | −1.097    | −0.818    |
|                      | (3.06)**  | (3.28)**  | (2.70)**  | (2.75)**  |
| For_profit           | −0.101    | −0.101    | −0.019    | −0.101    |
|                      | (0.24)    | (0.26)    | (0.02)    | (0.19)    |
| log_Asests           | 0.022     | 0.022     | 0.169     | 0.022     |
|                      | (0.10)    | (0.11)    | (0.53)    | (0.11)    |
| log_NOAB             | −0.594    | −0.594    | −0.717    | −0.594    |
|                      | (1.02)    | (1.37)    | (0.93)    | (1.71)    |
| log/GLP              | 0.392     | 0.392     | 0.397     | 0.392     |
|                      | (1.74)    | (2.06)*   | (1.25)    | (1.96)*   |
| regulated            | −0.313    | −0.313    | −0.592    | −0.313    |
|                      | (0.98)    | (1.01)    | (0.99)    | (0.75)    |
| log/CPB              | −0.239    | −0.239    | −0.436    | −0.239    |
|                      | (2.95)**  | (2.38)*   | (2.64)**  | (1.94)    |
| RY                   | 0.609     | 0.609     | 1.901     | 0.609     |
|                      | (1.36)    | (1.45)    | (2.06)*   | (1.28)    |
| PAR                  | −2.049    | −2.049    | −1.530    | −2.049    |
|                      | (2.51)*   | (1.62)    | (1.47)    | (1.52)    |
| log/NOLO             | 0.334     | 0.334     | 0.339     | 0.334     |
|                      | (0.58)    | (0.79)    | (0.45)    | (0.96)    |
| small_outreach       | 0.197     | 0.197     | 0.011     | 0.197     |
|                      | (0.76)    | (0.85)    | (0.03)    | (0.64)    |
| large_outreach       | −0.091    | −0.091    | −0.228    | −0.091    |
|                      | (0.27)    | (0.30)    | (0.49)    | (0.30)    |
| NGO                  | −0.428    | −0.428    | −0.556    | −0.428    |
|                      | (1.06)    | (1.28)    | (0.73)    | (0.89)    |
| saccos               | 0.032     | 0.032     | 0.468     | 0.032     |
|                      | (0.07)    | (0.08)    | (0.54)    | (0.06)    |
| bank                 | −0.379    | −0.379    | −0.154    | −0.379    |
|                      | (1.14)    | (1.17)    | (0.25)    | (0.82)    |
| _cons                |           |           | −2.317    |           |
|                      |           |           | (1.04)    |           |
| _cons                | −1.644    | −1.644    | −1.644    | −1.644    |
|                      | (1.26)    | (1.11)    | (0.80)    |           |
| N                    | 291       | 291       | 291       | 291       |

*p<0.05; **p<0.01.
Source: Authors’ compilation.
for all probit estimations, attraction of deposits reduces the likelihood of MFIs to be financially sustainable. The recent introduction of statutory provisions allowing MFIs to attract deposits (Karim et al. 2014) means that regulation costs might still be heavy on MFIs. On the other hand, accumulating surmountable deposits might take a long time before deposits start to improve financial sustainability. Therefore, despite deposits being the second most popular financing option, their effect on financial sustainability though positive is insignificant.

The scale of operations as proxied by the gross loan portfolio (log of GLP) increases the likelihood of MFIs being financial sustainability. This finding is supported where standard errors are robust and where clustering is considered. Nurmakhanova et al. (2015) also observed a supportive relationship between outreach and financial sustainability. Since revenues are generated from the lending activities of the MFI, it is logical to magnify revenues by way of growing the loan portfolio. Small portfolios thus are bound to limit revenues and profitability of MFIs. Abate et al. (2013) noted the contribution of outreach on financial sustainability in Ethiopia. However, growing the loan portfolio has to be matched with the commensurate risk of default. The loan portfolio ought to remain of quality to limit outstanding loans, in the same way as the portfolio at risk.

**Efficiency variables and financial sustainability**

Abate et al. (2013) and Paul (2010) underscored the importance of overcoming lending costs linked to markets if MFIs are to attain financial sustainability. An increase in cost per borrower (CPB) significantly reduces the likelihood of an MFI attaining financial sustainability. Descriptive statistics show that average CPB is pegged at $237.62 for the selected SADC MFIs compared to the global average of $159.97 (Bogan 2012). Such costs limit MFIs’ chances of financial sustainability. The portfolio at risk (PAR) as a measure of untenable loans reduces the likelihood of MFIs being financially sustainable. This variable thus has to be kept in check if MFIs are to be financially sustainable. Summary statistics show that portfolio at risk (7.69%) exceeds that of the global average (5%) cited by Bogan (2012). This implies that SADC MFIs have not been efficient in managing credit risk.

**Life cycle and the contribution of financing methods on financial sustainability**

The life cycle theory connotes that NGOs adopt a commercial business model, become profit-motivated and further develop into microfinance banks at maturity stage. At each stage the financing structure changes and contributes to financial sustainability of MFIs (Bayai 2017). We disaggregate the sample accordingly to test the role of financing methods on financial sustainability for profit-motivated, mature, banks and NGOs. Table 13 summarizes the probit results for profit-motivated, mature, banks and NGOs.

We found no financing variable to be significant in explaining financial sustainability for for-profit MFIs. Equity increases the likelihood of mature MFIs to be financially sustainable given the great reliance on equity financing (41% of assets). Minimal donations at 17.10% of assets owned by mature MFIs reduces the likelihood of mature MFIs to be financial sustainability. Donations also significantly reduce the likelihood of banks to be financially sustainable as banks use the least of donations (1.34% of assets). Though unsubstantiated by empirical results, deposits for NGOs might be below the threshold which edifies financial sustainability given that for banks, deposits account...
### Table 13 – Financial sustainability: For profit-motivated, mature, banks and NGOs

| Financial sustainability                  | For-profit | Mature MFIs | Bank | NGO |
|-------------------------------------------|------------|-------------|------|-----|
|                                            | Coef.      | Std Err.    | Coef. | Std Err. | Coef. | Std Err. | Coef. | Std Err. | Coef. | Std Err. |
| Donations to assets                       | -0.054896  | 0.0333892   | -0.0167164* | 0.0090514 | -0.6921* | 0.402968 | -0.012795 | 0.012162 |
| Equity to assets                          | 0.011257   | 0.0084815   | 0.02470*** | 0.0065513 | 0.0483408 | 0.034641 | 0.0015017 | 0.010323 |
| Borrowings to assets                      | -0.011898  | 0.0094728   | -0.0008236 | 0.0070144 | 0.0053501 | 0.035274 | -0.019166 | 0.012027 |
| Deposits to assets                        | 0.0140851  | 0.0098378   | -0.0010653 | 0.0044398 | 0.037156  | 0.03370  | -0.05***  | 0.09506  |
| Mature                                    | 0.0816725  | 0.4515251   |                  |            | 0.55772  | 0.89001  | -1.64***  | 0.56269  |
| New                                       | -9.1232*   | 0.4833416   |                  |            | -9.1731  | 1.5357   | -3.37582  | 0.632997  |
| attract_deposit                           | -0.93403*  | 0.5412562   | -1.2023***     | 0.3643885 | 0       | omitted  | 0.7819126 | 0.786617  |
| For_profit                                | -1.137217* | .6546542    |                  |            | 4.3621   | 3.12101  | -7.976097 | 0.8065338 |
| log_Assets                                | 0.4653272  | 0.505429    | 0.1053672      | 0.3728119 | 36.243   | 25.9087  | -15.5598  | 10.9319   |
| log_NOAB                                  | -0.902557  | 1.404829    | -1.039334      | 0.9794191 | -2.5637  | 2.26667  | 2.889***  | 0.942742  |
| log_GLPA                                  | 0.4782087  | 0.4771751   | 0.5270192      | 0.374807  | 0       | omitted  | -0.440523 | 0.651409  |
| regulated                                 | 0          | omitted     | -4.229297      | 0.510619  | 0       | omitted  | 0.7819126 | 0.786617  |
| log_CPB                                   | -1.026**   | 0.3741392   | -0.29635***    | 0.0918484 | -7.6969  | 0.933729 | -1.71***  | 0.500766  |
| RY                                        | 1.735147   | 1.098141    | 1.062785       | 0.6947748 | 2.7393   | 3.88769  | 2.665515  | 1.62319   |
| PAR                                       | -5.155**   | 2.435202    | -1.73998*      | 0.9634283 | 88.2***  | 44.1801  | 1.048025  | 1.02135   |
| log_NOLO                                  | 0.441747   | 1.424443    | 0.5464048      | 0.9701679 | 35.873   | 24.8874  | 13.3894   | 10.3629   |
| smallOutreach                             | 0.975866*  | 0.547148    | 0.103539       | 0.3896586 | 1.871678 | 2.01741  | -1.00455  | 1.05075   |
| large_outreach                            | 0.0983662  | 0.784681    | 0.183056       | 0.4930416 | 0.392094 | 1.80727  | -0.355151 | 0.792460  |
| NGO                                       | 0          | omitted     | -1.31800**     | 0.6510045 | 32.7104  | 22.2689  | 0.7819126 | 0.786617  |
| saccos                                    | 0          | omitted     | -5.667153      | 0.6335432 | 0       | omitted  | 0.7819126 | 0.786617  |
| bank                                      | -8.38751   | 0.5219321   | -2.952684      | 1.987585  | -32.7104 | 22.2689  | -6.50919  | 5.17213   |

*p<0.05; **p<0.01.

Source: Authors’ compilation.
for 109.06% of the assets. At 12.86% of NGO assets, deposits significantly reduce the likelihood of NGOs to be financially sustainable.

Contrary to the expectations of the life cycle theory, maturity limits the likelihood of NGOs to be financially sustainable. Mature MFIs have a cost per borrower of $172.58, exceeding the global average of $138. Also, mature MFIs have a high portfolio at risk of 10% which limits chances of financial sustainability. New for-profit MFIs suffer from high cost per borrower of $438.18 hence the significant limitation of ‘new’ MFIs on financial sustainability. Attraction of deposits significantly reduces the likelihood of for-profit and mature MFIs to be financially sustainable. The scale of operation proxied by the gross loan portfolio significantly increases the likelihood of NGOs to be financially sustainable. NGOs can thus raise more revenues by expanding their loan books and gain from increased loan interest. However, a small outreach increases the likelihood of for-profit MFIs to gain financial sustainability. A small outreach enables efficient management of default risk and also the cost per borrower. The cost per borrower significantly limits the possibility of for-profit MFIs, mature MFIs and NGOs. The overall cost per borrower for the sample exceeds the global average by a margin of $78 thereby explaining this finding. The risk of losses on loans (portfolio at risk: 7% for for-profit and NGOs; and 10% for mature MFIs) significantly reduces the likelihood of for-profit MFIs, mature MFIs and NGOs to attain financial sustainability. Though unsupported by theory and earlier studies, small outreach increases the likelihood of for-profit MFIs to attain financial sustainability. We connote that a small outreach allows for efficient screening and monitoring of clients thereby limiting both portfolio at risk and bad loans.

Limitations

This study addresses how MFI financing options can explain financial sustainability. However, there is possible endogeneity as it is still possible for the level of financial sustainability to have an effect on the financing structure assumed by MFIs. For instance, debt levels might be based on the ability of the MFI to repay the debt as defined by its financial sustainability. All the same, whilst donations may spoil financial sustainability, we cannot disregard the fact that MFIs may need donations for them to attain viability (de Aghion and Morduch 2005). We choose not to query this reverse relationship on the basis of our motivation for this study. Our introduction notes the commercialization trend in the financing of MFIs and we seek to explain how this trend informs the level of financial sustainability of MFIs and not the other way round. With approximately 80% of the results being correctly classified, we are convinced of the explanatory power of the model. Our subsequent effort shall analyse this relationship whilst incorporating possible endogeneity.

Also, the analyses is based on MIX data which naturally has a self-selection bias. The essence is that, not all MFIs in the region are analysed and the conclusions are mainly based on the selected MFIs thus might fail to mimic the regional trends and reality on the ground. We however acknowledge the usefulness of this source of data as it remains one publicly-accessible source of microfinance data and has been widely used too. It is also worth noting that the study did not make inference on the implications and trade-offs of the various financing options and financial sustainability on mission drift. Important to note too is that the financing structure of MFIs is not the only determinant of financial sustainability of MFIs. Other variables still have their relevant trade-offs.
with financial sustainability\textsuperscript{36} and might still need to be investigated. Moreover, data limitations\textsuperscript{37} constrained country-specific analyses of the relationship between financing structure and financial sustainability.

6 Conclusion

The study sought to analyse the role of financing structure on financial sustainability in selected SADC MFIs given the commercialization trend. The selected MFIs are mostly financially unsustainable and both the financing structure and the level of financial sustainability vary with countries. Financing structure is vital in defining financial sustainability. Probit analysis subjected to various robustness checks confirm that donations, contributing the least to MFI assets reduce the likelihood of MFIs to be financially sustainable. Given this finding, the notion that an increase in donations reduces the chances of MFIs to be financially sustainable is unsupported. MFIs may still use donations as a stepping stone to financial sustainability to counter the poor efficiency noted in this study.

Besides the financing structure, appropriate cost and risk management must be practised to infuse financial sustainability. The costs attached to the attraction of savings (hiring banking experts, investment in IT and capital requirements) explain the restraining effect of deposit attraction on financial sustainability. Lessening regulatory costs associated with deposit attraction by SADC governments may enhance the role of deposits in stimulating financial sustainability. Otherwise, costs related to deposit collection might require a substantial accumulation of deposits before a positive effect on financial sustainability can be noticed.

Poor cost efficiency as confirmed by the high cost per borrower and high debt financing for ‘new’ MFIs explain the reduced likelihood of new MFIs to be financially sustainable. Cost efficiency has to be effected by embracing innovation in lending and adopting IT in MFI operations. Also, using cheap financing options helps to ensure financial sustainability. We propose quality risk management methodologies to address the build-up of non-performing loans. The study also noted that equity increases financial sustainability chances of mature MFIs whereas a small outreach supports financial sustainability for profit-oriented MFIs.

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\textsuperscript{36} Increasing interest rates might improve financial sustainability chances.
\textsuperscript{37} Stata failed to estimate the relationship on account of inadequate data (refer to Table 2 for the number of MFIs per country).
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## Appendix

### Table A1 – Summary of financial sustainability of the sample

|                | Freq. | Percent | Cum. |
|----------------|-------|---------|------|
| Financially unsustainable | 186   | 63.92   | 63.92|
| Financially sustainable     | 105   | 36.08   | 100.00|

*Source: Authors’ compilation.*

### Table A2 – Financial sustainability (OSS) by country

| Country         | Mean        | Std Dev.    | Freq. |
|-----------------|-------------|-------------|-------|
| Angola          | .55555556   | .52704628   | 9     |
| DRC             | .35714286   | .4849656    | 42    |
| Madagascar      | .43396226   | .50036271   | 53    |
| Malawi          | .14285714   | .3550358    | 35    |
| Mozambique      | .39534884   | .49471179   | 43    |
| Namibia         | .4375       | .51234754   | 16    |
| South Africa    | .83333333   | .40824829   | 6     |
| Swaziland       | .38983051   | .49189812   | 59    |
| Tanzania        | .15789474   | .37463432   | 19    |
| Zambia          |              |             |       |
| Zimbabwe        | .5          | .57735027   | 4     |

*Source: Authors’ compilation.*

### Table A3 – Efficiency variables by MFI age

| Variable | Mean new | Mean young | Mean mature |
|----------|----------|------------|-------------|
| CPB      | 438.18   | 212.27     | 172.58      |
| NOLO     | 8274.02  | 16051.72   | 44667.23    |
| PAR      | 0.05     | 0.04       | 0.10        |

*Source: Authors’ compilation.*

### Table A4 – Summary of efficiency variables by outreach level

| Variable | Mean small outreach | Mean medium outreach | Mean large outreach |
|----------|---------------------|----------------------|--------------------|
| CPB      | 294.51              | 180.63               | 130.20             |
| NOLO     | 12541.02            | 16051.72             | 120000             |
| PAR      | 0.07                | 0.07                 | 0.11               |

*Source: Authors’ compilation.*