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**Capital structure and financial sustainability of Microfinance Institutions (MFIs) in  
Rwanda**

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**Abstract**

The aim of this study was to assess the effect of capital structure on financial sustainability of microfinance institutions (MFIs), and find out the extent to which capital structure affects financial sustainability of MFIs in Rwanda. Data was collected from annual financial reports of MFIs and SACCOs for the period 2014-2018. Due to data availability, only a panel of 20 MFIs and SACCOs was considered using fixed effects OLS regression models. Findings from this study reveal that the use of debt as financing sources adversely affects firms' financial self-sufficiency and performance.

In contrast, the use of share capital strongly improves firms' operational and financial sustainability as well as their return on assets. Using retained earnings moderately and positively increases firm's financial sustainability. Results from sample splits show that compared to MFIs, SACCOs are more likely to be adversely affected by debt financing than their MFI counterparts. With respect to share capital, there is significant difference between the two groups.

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Using share capital to finance MFIs' investments significantly increases their return on assets, their operational and financial self-sufficiency. With respect to SACCOs, results show that using share capital as means of financing firms' assets negatively and significantly affects their return on total assets as well as their operating and financial self-sufficiency.

**Key words:** Capital structure, microfinance, operating efficiency, financial self-sufficiency, financial sustainability

## 1. Introduction

Traditionally, microfinance institutions (MFIs) were considered as not for profit organisations, social oriented and donor-based capital financing. However, since recently, commercial financing, expansion of financial services and the emerging of cooperative financial institutions as well as SACCOs are the emerging trends in microfinance sector. It has been noted that recent trends in microfinance such as commercialised source of capital, competition, withdraw of grants and subsidies by donor providers and deposit mobilisation bring forward the importance of linking sources of capital and financial sustainability<sup>4</sup> of MFIs (Bayai&Ikhide, 2016; Bogan, 2009;2012; Mwongeri&Ariemba, 2018; Njenga, 2014; Siddik, Kabiraj, &Joghee, 2017).

Indeed, the above mentioned trends in microfinance sector necessitate MFIs to be financially viable and sustainable to ensure their continuity of financial mission and continue to answer the question of financial inclusion as it is on the for front of the economic development strategies in developing countries (Abate, Borzaga, &Getnet, 2014). Studying the financing of MFIs and their efficiency is important for a number of reasons. Muriu (2011) argues that MFIs are vital sources of finance for small and micro firms since they most often lack access to alternative financing from larger banks and capital markets. This is so because given higher opaqueness, larger banks

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<sup>4</sup>Financial sustainability refers to the ability of MFI to cover its operating expenses or continue with its operations even without grants and subsidies. In other words, it is the ability to meet its expenses using its operating revenue and generating a margin that can be used to fund its growth (Bowman, 2011).

are reluctant to lend to these firms. MFIs are in a position to finance these firms since they hold information on borrowers.

However, Bogan (2008) argues note that although many developing countries have operating MFIs, millions of households and individuals still do not get credit and other financial services from these banks. This is because MFI incur higher operating and capital costs which hinder them from meeting customer demand and achieving their financial and social goals. Parvin, Hossain, Mohiuddin, & Cao (2020) also adds that MFIs face two main problems notably, the size of financing provided by these firms is very low and at the same time, they are not in a position to efficiently cover their expenditure and grow their businesses.

In this regard, commercialisation of financial services by MFIs has become an overriding strategy in developing countries. It goes without saying that the fundamental aim consists of availing commercialised capital and ensuring access to basic formal financial services for poor people. Moreover, monetary policies created a conducive environment for profit seeking by MFIs with the capability to attract commercial capital such as deposit, equity and loans from investors (Abdulai& Tewari, 2016; Mwongeli&Ariemba, 2018). Thus, it has become imperative for MFIs to remain sustainable and survive the forces of high competition and flourish in a changing environment.

Previous studies in area of microfinance have put more attention on sustainability of microfinance and attempted to assess the relationship between capital structure and microfinance institutions sustainability. Majority of these studies used samples of listed, large firms in higher income countries (Bogan, 2008; 2012; Tchuigoua, 2015; Khachatryan, Hartarska, &Grigoryan, 2017). Some other studies have used international samples to analyse the effects of capital structure on the performance of MFIs. Ayayi, &Sene (2010) used a sample of 217 MFIs from 101 countries to study the determinants of MFI financial sustainability.

Arrassen (2017) recently used a sample of 120 MFIs, drawn from the World Bank MIX database for the period 2000-2009, to analyse the determinants of their financial performance. However, the two studies did not include financing structures. In a study of MFIs in South Africa Development Community (SADC) Bayai&Ikhide (2018), assessed the effects of commercialized

financing on MFIs financial sustainability. However, the study was cross-sectional in nature. Muriu (2011) examined 167 MFIs in 32 African countries to assess the effects of financing structure on the profitability of MFIs.

The current research extends the findings of the study above by using most recent single country firm-level evidence to ascertain the effects of financing on MFI financial sustainability.

This study argues that there are cross-country heterogeneities with regard to the size of MFIs in Africa which could affect results if cross-country samples are used. Using a single country firm-level data, the study analyses the causality between capital structure and financial decision in Rwanda. It completes single countries' studies that have also been conducted to assess the effects of financing on the performance of MFIs. More recently, Parvin, Hossain, Mohiuddin & Cao (2020) use a panel sample of 187 MFIs to study the effects of capital structure and performance in Bangladesh. Kyereboah- Coleman (2007) uses a panel of 52 MFI firms in Ghana to assess the effects of capital structure on MFI performance during the period 1995-2004.

In more detail, the current study aims at determining the extent to which the capital structure contributes to the financial sustainability of MFIs in Rwanda using the following measures of financial sustainability: operating self-sufficiency (OSS), financial self-sufficiency (FSS) and return on assets (ROA). A sample of 20 MFIs and SACCOs (Savings and credit cooperatives) is used over the period of 2014-2018.

A fixed model that caters for firms' heterogeneities and overcomes omitted variables biases is applied. The findings show that use of debt as financing sources adversely affects firms' financial self-sufficiency and performance. In contrast, the use of share capital strongly improves firms' operational and financial sustainability as well as their return on assets. Using retained earnings moderately and positively increases firm's financial sustainability.

Results from sample splits show that compared to MFIs, SACCOs are more likely to be adversely affected by debt financing than their MFI counterparts. With respect to share capital, there is significant difference between the two groups. Using share capital to finance MFIs' investments significantly increases their return on assets, their operational and financial self-sufficiency. With respect to SACCOs, results show that using share capital as means of financing

firms' assets negatively and significantly affects their return on total assets as well as their operating and financial self-sufficiency.

This study contributes to the existing literature that assesses the effects of capital structure on performance of MFIs in different ways. First, it uses single country firm-level evidence to assess this effect. The argument is that there are cross-country heterogeneities with regard to the size of MFIs in Africa which could affect results if cross-country samples are used. Single countries studies can overcome this problem. Second, a sample splits of MFIs and SACCOs is performed. The study shows that combining these two groups in estimations may produce inconclusive results. There may be distinctive characteristics of each of these groups which might affect overall results. Splitting these two groups and run separate estimations produces robust results. The study proceeds as follows: Chapter two reviews the empirical literature on the variables used in this study. Chapter three describes the sources of data, methods, and measurement of variables. Chapter four discusses results. Chapter five concludes.

## **2. Literature review**

### **2.1. Capital structure in MFIs**

The objective of microfinance institutions (MFIs) is, according to the internationally recognized definition, “*the provision of formal financial services to poor and low-income people and those systematically excluded from the financial system*” (Christensen, 2012). In this regard, it is held that MFIs are characterized by their sense of social business stimulation (Yunus, 2009) as they are non-profit making. They deal with high risk loan borrowers who face difficulties of accessing loans from banks. However, it could be argued that even though they are non-profit making, they are neither non-loss making (Struthers, 2011; Kamran, 2014).

Thus, they have to make some reserves which could be re-invested in order to continue operating and become sustainable. Considering their characteristics and the types of clients they deal with. MFIs started as not for profit cooperatives and their main sources of capital included: subsidies, donations and concessional loans from government (Atkinson; 2012 and Bogan, 2012) because their clients look for loans without collaterals or guarantees and do not earn regular income.

But, according to Hoque (2011) and Lodgerwood (2013) since recent years, most of MFIs have shifted from not for profit cooperatives to regulated commercial institutions and their capital structure has also changed accordingly. They have various sources of finance at their disposal including: donations and grants, savings, debt, commercial loans, guarantee funds, bonds, securitization, retained earnings and equity (Fehr & Hishigsuren, 2006).

As the sources of funding are diversified, the main decision for MFI managers is to minimize funding cost and ensure financial sustainability. But, as mentioned by Marwa & Mouna (2017), MFIs managers have to deal with conflicting objectives on one hand to extend the financial inclusion of poor and low-income people and on the other hand to achieve the financial performance and sustainability objectives.

## **2.2. Financial sustainability and MFIs**

The financial sustainability of MFIs can be discussed in reference to life cycle theory (Fehr & Hishigsuren, 2006) which has been applied in various academic areas such as marketing; strategy formulation, financing strategies and firm development for the purpose of explaining the different stages that a business firm or product line pass through from its introduction up to its death. However, its application in MFIs is not popular (Bayai & Ikhide, 2016), the theory states that life cycle of MFIs can explain the level of its financial sustainability whereby at its maturity stage (above 9 years of existence) when it becomes large and stable, it becomes financially sustainable. The theory also suggests that at its early stage (before five years) MFI may be characterized by higher operating expenses, lower productivity and higher cash outlay and relying on external sources of financing, such as subsidies, grants, and soft loans (Fersi & Boujelbéne, 2017; Ofeh & Zangue, 2017).

While approaching its growth stage, MFI focuses on aspects that are crucial for microfinance institution to gain experience, and improvements on the main operational activities should be a priority. At its maturity stage, an MFI can be able to cover total costs incurred from its operations and all activities (Massele & Fengju, 2016).

Moreover, recent debate on financial sustainability of MFIs, dominated by the welfare and institutional schools of thoughts, is focused on whether it should be the best performance

indicator or not. Despite the disagreement between the two views, recent discussion among scholars in microfinance sector is oriented towards financial viability and sustainability of MFIs. The argument is that a sustainable MFI can be able to remain offering services without relying on donors or government funds (Marwa&Aziakpono, 2015; Velnamby&Algathurai, 2013).

As aforementioned, MFIs are shifting from the old paradigm of grants and social oriented to the new fashion of regulated commercial organizations and institutional viability which has created essence of accountability, transparency, efficiency, and have freedom of setting interest rate, financing decision and appropriate management remuneration (Bayai&Ikhide, 2016). In this regard, like any other lending institutions, financial sustainability of MFIs can be estimated by considering operational self-sufficiency (OSS); financial self-sufficiency (FSS) as well as return on assets (Aveh, Krah, &Dadzie, 2013; Bayai, 2017; Bogan, 2012; Marwa&Aziakpono, 2015; Njenga, 2014; Rao &Pathrudu, 2016)

### **2.2.1. Operational self-sufficiency (OSS)**

Operational self-sufficiency is a ratio indicating the existent to which a financial institution is able to cover operational costs using generated income. The operational costs include: administration costs, financing costs, wages and other costs incurred to run MFI activities (Aveh, Krah, &Dadzie, 2013, Schafer &Fukasawa, 2011). Therefore, the higher the ratio, the higher is the operational self-sufficiency and the ability of a MFI to be financially sustainable.

The operational self-sufficiency is determined in taking into account operating revenues on one hand and on the other hand: financial expenses, operational costs and loss on loan expenses:

$$OSS = \frac{\textit{TotalOperatingRevenues}}{\textit{FinancialExpenses + operatinalcosts + lossonloanexpenses}} \times 100$$

The OSS is determined in percentage. If the OSS ratio is greater than 100%, it would indicate that the MFI has a sustainable self-operational sufficiency while a OSS ratio equals to 100% would mean that the MFI break-evens and a ratio less than 100% would mean that the MFI is unable to cover its operational costs or to grant loans to its customers (Bayai&Ikhide, 2016; Bogan, 2012; Schafer &Fukasawa 2011).

### 2.2.2. Financial self-sufficiency (FSS)

The financial self-sufficiency ratio indicates the extent to which the adjusted business revenue of an MFI, covers adjusted costs (Yaron & Manos, 2007). The ratio takes into account the adjusted operating revenue on one hand and on the other hand the adjusted financial expenses, operational costs and loss on loan expenses. The higher the ratio, the higher is the financial self-sufficiency. The computation of self-sufficiency ratio uses adjusted amounts for both revenue and costs as it is assumed that MFI raises funds from financial markets (Bayai, 2017; Bogan, 2012; Fersi & Boujelbéne, 2017; Fersi & Aziakpono, 2015).

Beg (2016) argues that the financial self-sufficiency ratio reflects the financial sustainability better than the return on equity or the return on assets. The ratio is calculated as follows (Rosenburg, 2009):

$$FSS = \frac{\text{Adjusted financial revenues}}{\text{Adjusted (financial expenses + net loan loss provision expenses + operating expenses)}}$$

The FSS can be also determined as follows:

$$FSS = \frac{\text{Revenues} - (\text{Grants} + \text{extraordinary items})}{\text{operating expenses} + \text{Cost of funds adjustment} + \text{in kind subsidy adjustment} + \text{Inflation adjustment}}$$

The higher the FSS ratio, the higher is the MFI financial sustainability. A ratio of FSS greater than 100% means a financial sustainability and a ratio less than 100% indicates a MFI unable to grant loans to customers unless funds are provided by donors ((Bayai & Ikhide, 2016; Marwa & Aziakpono, 2015).

### 2.2.3 Return on asset (ROA)

The return on assets ratio is another indicator of financial sustainability. It shows how a microfinance institution uses its assets efficiently to generate operating revenues after the payment of interest and taxes (Gitman, Zutter, Elali, & Al-Roubaie, 2013). The ratio is determined as follows:



$$ROA = \frac{\text{Netoperatingprofits}}{\text{Totalassets}}$$

Calculated as percentage, a higher return on assets is an indication that a microfinance institution manages efficiently its assets to generate income.

Although numerous studies have been conducted on capital structure of MFIs and on their financial sustainability factors (Bogan, 2012; Schäfer & Fukasawa, 2011; Tehulu, 2013; Wambua, 2018), the findings are not conclusive. It is imperative to carry out a study and examine the extent to which the capital structure affects the financial sustainability of MFIs in Rwanda.

### **3. Material and Methods**

#### **3.1 Sources of data:**

Data was collected from annual financial reports of MFIs and SACCOs for the period 2014-2018. The focus was on data pertaining to measures of capital structure (debt, retained earnings, deposits, and share capital) and financial sustainability (operating and financial self-sufficiency, and return on assets). Due to data availability, this study only covers 20 firms (10 MFIs and 10 SACCOs). We considered only those firms that had complete financial records for the period 2014-2018. This period was considered also based on the data availability.

#### **3.2 Measurement of capital structure:**

Capital structure is measured using four proxies namely, debt ratio, loans to deposits, retention ratio, and share capital ratio. Debt ratio is computed by scaling total firm debt to its total assets. Deposit ratio is computed by using the proportion of loans resulting from deposits. Retention ratio is obtained by scaling retained earnings to firms' net income or net profits. Finally, share capital ratio is computed by scaling share capital to total assets.

- **Measurement of financial sustainability:**

Three proxies are used to measure financial sustainability as reviewed in the literature chapter. These are operating self-sufficiency (OSS), financial self-sufficiency (FSS), and return on assets.

- (1) The operational self-sufficiency shows the extent to which a microfinance institution is able to cover operational costs using generated income and is measured as follows:

$$OSS = \frac{\text{Total Operating Revenues}}{\text{Financial Expenses} + \text{operational costs} + \text{loss on loan expenses}}$$

- (2) The financial self-sufficiency shows the MFI ability to use its own financial resources to cover the total costs and is determined as follows:

$$FSS = \frac{\text{Revenues} - (\text{Grants} + \text{extraordinary items})}{\text{operating Expenses} + \text{CFA} + \text{ISA} + \text{IA}}$$

- (3) The return on assets indicates how a microfinance institution uses its assets efficiently to generate operating revenues:

$$ROA = \frac{\text{Net operating profits}}{\text{Total assets}}$$

A summary of variables and their description is provided below:

**Table 1: Variable description:**

Variable	Variable description	Source
Debt ratio	Total debt/Total assets	Annual report
Loans to deposit ratio	Proportion of loans from deposits	Annual report
Retention ratio	Retained earnings/Net income	Annual report
Share capital ratio	Share capital/Total assets	Annual report
OSS	Total operating expenses/financial expenses + operating costs + loss on loan expenses	Annual report
FSS	Adjusted financial revenues/Adjusted expenses	Annual report
ROA	Net operating profit /Total assets	Annual report

## Econometric modelling

For data analysis, the linear regression and fixed effects models used to analyze the effects of capital structure on financial sustainability in MFIs:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:  $X_1$ = Proportion of debt,  $X_2$ = Proportion of deposits,  $X_3$ = Proportion retained earnings, and  $X_4$ = Proportion of ordinary share capital, (all are independent variables) While  $\beta_1$ ,  $\beta_2$ ,  $\beta_3$ , and  $\beta_4$ , are coefficients of determination and  $\varepsilon$  is the error term.

## 4. Results

### 4.1. Descriptive results:

Table 2 depicts descriptive statistics for the variables used in the current study. The sampled firms were observed for the period 2014 to 2018. Out of twenty firms observed, half of them are micro finance institutions (MFIs) Ltd and the remaining are savings and credit cooperatives (SACCOs). Total Debt ratio contributes to firms' assets on average 7 percent. The contribution of deposits to loans is on average as high as 91 percent. Retained earnings contributed to net income (retention ratio) by 16 percent, where the contribution of firms' share capital to total assets is on average 8.6 percent.

Table 2 also reports results for dependent variable (financial sustainability). On average, operating self-sufficiency (OSS) is as more than 100 percent; financial self-sufficiency (FSS) is on average at 120 percent while total return on assets (ROA) is 5 percent.

**Table 2: Descriptive statistics**

Variable	Obs	Mean	Std. Dev.	Min	Max
Category	100	1.5	0.503	1	2
Debt ratio	100	0.071	0.065	0	0.23
Loans to deposit	100	0.910	0.470	0.49	2.43
Retention ratio	100	0.161	0.170	0.01	0.9
Share capital	100	0.086	0.055	0	0.2
OSS	100	1.011	0.267	0.69	1.635
FSS	100	1.218	0.625	-0.86	2.37
ROA	100	0.055	0.081	-0.27	0.13

In other descriptive results, Table 3 reports descriptive statistics by firm category. Total debt to assets is slightly higher for MFIs (0.08) compared to SACCOs (0.06). However, SACCOs do convert more deposits to loans compared to MFIs as reported in Table 3. MFIs have lower retention ratio compared to SACCO implying that the latter are more likely to use more internal funds in funding their assets than the former. In contrast, MFIs are more likely to use share capital to finance their assets compared to SACCOs. For other variables, MFIs' OSS and ROA are higher than those of SACCOs. However, SACCOs show higher operating self-efficiency than MFIs as reported in Table 3 below:

**Table 3: Descriptive statistics by firm category**

Category	Debt ratio	Loans to deposits	Retention ratio	Share capital	OSS	FSS	ROA
MFIs	0.080	0.688	0.060	0.125	0.849	1.134	0.057
SACCOS	0.062	1.131	0.262	0.047	1.174	1.302	0.054
Total	0.071	0.910	0.161	0.086	1.011	1.218	0.055

Table 4 reports results from the correlation matrix. The main goal of constructing a correlation matrix is to examine whether there are no possibilities of multicollinearity. That is, to show that variables are not highly correlated and that they might mean the same thing thus not to be used jointly in subsequent econometric estimations (regressions). Results in Table 4 show that overall, variables are not highly correlated which raises our confidence that all of them are fit to be used in regression estimations as the highest correlations is 67 percent between ROA and FSS.

The two are used as separate sub-constructs of dependent variable (financial sustainability) and are not used as independent variables. Thus, although the correlation seems to be high, they are not used together in our equations. This assures us that there is no multicollinearity among our variables used.

**Table 4: Correlation matrix**

	Debt ratio	Loans to deposit ratio	Retention ratio	Share capital	OSS	FSS	ROA
Debt ratio	1.00						
Loans to deposit ratio	-0.21	1.00					
Retention ratio	-0.18	0.72	1.00				
Share capital	-0.17	-0.44	-0.59	1.00			
OSS	0.15	-0.09	0.20	-0.56	1.00		
FSS	-0.01	-0.28	-0.08	-0.17	0.41	1.00	
ROA	0.19	-0.44	-0.16	-0.29	0.45	0.67	1.00

### Regression results

The current study investigates the relationship between firms' capital structures and financial sustainability. Firms' capital structure is proxied by debt ratio, loan to deposit ratio, retention ratio and share capital ratio. Financial sustainability is proxied by operational self-sufficiency (OSS), financial self-sufficiency (FSS), and return on total assets (ROA). The econometric modelling is represented by Equation 1 below:

$$\text{Financial sustainability } y_{it} = \alpha_{it} + \text{debt ratio}_{it} + \text{Loans to deposit ratio}_{it} + \text{Retention ratio}_{it} + \text{share capital}_{it} + \epsilon_{it} \dots \text{Eqn. 1}$$

Whereby:

As mentioned above, financial sustainability is proxied by OSS, FSS and ROA,  $i$  represents individual firms (MFIs and SACCOs) and observed at time  $t$ ,  $\alpha$  is the constant and  $\epsilon_{it}$  the error term (noise).

A fixed effects model is used in the regressions to account for unobserved heterogeneity and to reduce endogeneity bias in the estimations. Time effects are also included in the estimations and the regression results are reported in Tables 5 & 6. ROA, OSS and FSS are shown as dependent variables representing the main dependent variable (financial sustainability).

Results in Table 5 show that debt ratio negatively contributes to financial sustainability. Specifically, a higher debt ratio significantly reduces firms' financial self-sufficiency and

modestly reduces firms' operating self-sufficiencies and return on total assets. This implies that the more the firms are using debt as their source of financing, the more adverse this will affect its financial sustainability. These findings are consistent with results obtained in Bich (2016) who used a sample of 434 MFIs operating in developing countries the period of 2010 to 2014 and found that debt to equity ratio is pervasive to MFI's sustainability of the firms sampled. However, findings run in contrast to those obtained by Kyereboah-Coleman (2007) who found that highly leveraged MFIs perform better as they enjoy higher economies of scale which enables to deal with moral hazards.

In addition, the more firms use deposits as loans, the more they are likely to improve their operational and financial self-sufficiency. However, more deposits to loans conversion negatively affects return on assets. Intuitively, this implies that more firms' assets are tied in loanable assets. Results in Table 5 also show that using retained earnings as financing mechanism moderately affect firms' financial sustainability. Results are insignificant for ROA, OSS, and FSS. Finally, firms' share capital significantly contributes to their operational and financial self-sufficiency.

Both statistical and economic sizes are higher implying that firms are more likely to improve their financial sustainability if they choose to finance their assets/investments using share capital. Specifically, a higher share capital positively and significantly increases firms' return on assets, and also increases firms operating and financial self-sufficiency levels for all sampled firms. Our main findings on share capital as funding sources concurs with most results obtained in Parvin et al. (2020) who found that higher equity significantly and positively increases firms' return on assets. Regression results are reported in Table 5 below:

**Table 5: Baseline regression results**

	ROA	OSS	FSS
Debt ratio	-0.0877 (-0.87)	-0.191 (-0.56)	-1.817** (-1.87)
Loans to Deposit ratio	-0.122*** (-6.43)	0.296*** (-4.60)	0.686*** (-3.77)
Retention ratio	-0.0197 (-0.33)	0.255 (1.24)	0.0358 (0.06)
Share capital	0.947*** (-6.43)	3.441*** (-6.89)	4.828*** (-3.42)
cons	0.257*** (9.73)	1.549*** (17.26)	2.381*** (9.38)
N	100	100	100

t statistics in parentheses.  $p < 0:10$ ,  $p < 0:05$ ,  $p < 0:01$

FE model, year effects included:

### **Additional regression results-sample splits**

We performed additional regression results by using sample splits as our basis for estimation. In Table 5 above, results pertain to all firms together. There is a short coming to this model. The fact that firms are not all of the same sizes which might produce biased results given firms' heterogeneities. Although we used a fixed effect to this short coming, there are possibilities for firm specific effects if this issue is not addressed. To overcome this limitation, we split our sample into two distinct groups and ran separate regressions. Using same modelling as in Equation 1, we again used fixed effects model for our panel and year effects were also included. Results are reported in Table 6 below:

**Table 6: Regression results for sample splits**

	MFIs			SACCOs		
	ROA	OSS	FSS	ROA	OSS	FSS
Debt ratio	-0.411*** (-3.37)	-0.132 (-0.78)	3.766*** (3.95)	-0.411*** (-3.37)	-0.0185 (-0.04)	-4.464*** (-2.89)
Loans to deposit ratio	0.0921 (0.77)	0.432** (-2.58)	1.863* (1.98)	0.0921 (0.77)	-0.362*** (-5.02)	-0.833*** (-3.23)
Retention ratio	-0.0429 (-0.83)	0.0364 (0.51)	0.0205 (0.05)	-0.0429 (-0.83)	0.0332 (0.12)	-0.339 (-0.35)
Share capital	0.603*** (-3.06)	1.699*** (6.21)	0.274 (0.18)	-0.603*** (-3.06)	-3.994*** (-4.65)	-10.66*** (-3.47)
Cons	0.104 (1.38)	0.943*** (9.00)	-0.487 (-0.83)	0.104 (1.38)	1.762*** (16.49)	3.110*** (8.13)
N	50	50	50	50	50	50

t statistics in parentheses.  $p < 0:10$ ,  $p < 0:05$ ,  $p < 0:01$

Fixed effects model, Year effects included.

Results in Table 6 show that there are observable differences in results among the two groups in signs, significance levels, and economic sizes. Specifically, whereas debt ratio adversely affects ROA, OSS, and FSS, the economic effects on FSS are relatively very high for SACCOs compared to those of MFIs. This implies that SACCOs are more likely to be adversely affected



by debt financing than their MFI counterparts. The results for the effects of loans to deposits are also very different for the two groups.

Whereas it is positive and significant for the MFI group with respect to ROA, OSS, and FSS, it is adverse for SACCO with respect to OSS and FSS. This implies that should SACCOs use more of their deposits to lend to customers; their operational and financial performance will significantly reduce. Retention ratio does not show any significant difference among the two groups.

With respect to share capital, there is significant difference between the two groups. Using share capital to finance MFIs' investments significantly increases their return on assets, their operational and financial self-sufficiency. With respect to SACCOs, results in Table 5 show that using share capital as means of financing firms' assets negatively and significantly affects their return on total assets as well as their operating and financial self-sufficiency.

Results in Table 6 reveal interesting findings for our study. They show that combining these two groups in our estimations as is the case in Table 4 produces inconclusive results. There may be distinctive characteristics of each of these groups which might affect overall results. Splitting these two groups and run separate estimations seem paying off in terms of complete results as it is shown in Table 6.

## **5. Conclusion**

The aim of this study was to analyse the effect of capital structure on financial sustainability of MFIs in Rwanda. A panel of 20 MFIs and SACCOs over the period 2014-2018 was considered using fixed effects OLS regression models. Findings from this study reveal that use of debt as financing sources adversely affects firms' financial self-sufficiency and performance. In contrast, the use of share capital strongly improves firms' operational and financial sustainability as well as their return on assets. Using retained earnings moderately and positively increases firm's financial sustainability. Results from sample splits show that compared to MFIs, SACCOs are more likely to be adversely affected by debt financing than their MFI counterparts. With respect to share capital, there is significant difference between the two groups. Using share capital to finance MFIs' investments significantly increases their return on assets, their operational and financial self-sufficiency. With respect to SACCOs, results show that using share capital as

means of financing firms' assets negatively and significantly affects their return on total assets as well as their operating and financial self-sufficiency.

This study attempts also to establish the differences in the impact of sources of capital on financial sustainability and assess the extent to which capital structure affect financial sustainability between MFIs Ltd and SACCOs. Therefore, the study concludes that the effect of debt, retained earnings, deposits and ordinary share capital on financial sustainability indicators differ between MFIs Ltd and SACCOs. Based on research findings, the study also concludes that, capital structure influences financial sustainability of MFIs in Rwanda to the extent of 72% on average and other factors that have not been considered in this research influence about 28%.

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