The effect of capital structure and legal status on financial sustainability of MFIs in developing countries

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Abstract. Due to limitation of previous researches on sustainability of MFIs in general, and relationship between capital structure and MFIs' sustainability in developing countries after financial crisis, this study has been written to fill this gap by examining the effect of factors such as the effect of capital structure and legal status on MFIs' sustainability. A sample of 434 MFIs operating in developing countries from 2010 to 2014 was used. While multiple regression techniques was used to test relationship between dependent variables and predictors, one-way analysis of variance was used to find differences in mean value of sustainability of MFIs having different legal status. The results revealed that sustainability of MFIs in developing countries was significantly and negatively affected by capital structure. Besides, the effect of legal status on MFIs' sustainability is very small.

Keywords: sustainability, capital structure, legal status, MFIs.

Влияние структуры капитала и юридического статуса на финансовую устойчивость микрофинансовых институтов в развивающихся странах

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Аннотация. Статья подготовлена с учетом неполноты прежних исследований, в особенности взаимосвязи между структурой капитала и устойчивостью микрофинансовых институтов в развивающихся странах после финансового кризиса, с целью проверки результатов влияния на устойчивость микрофинансовых институтов структуры их капитала и юридического статуса. Были использованы данные о 434 микрофинансовых институтах, действующих в развивающихся странах за период с 2010 по 2014 г. Для теста взаимозависимости зависимых параметров и предикторов использовалась техника многофакторной регрессии. Для оценки различий в значениях медианы устойчивости микрофинансовых институтов с разным юридическим статусом применялся однофакторный дисперсионный анализ. Результаты исследования показали, что устойчивость микрофинансовых институтов в развивающихся странах существенно и отрицательно зависит от структуры их капитала. Кроме того, юридический статус незначительно влияет на их устойчивость.

Ключевые слова: устойчивость, структура капитала, юридический статус, микрофинансовые институты.

I. INTRODUCTION

MFIs are simply defined as organisations which are in charge of providing small scale financial services such as microcredits, savings or insurances for poor people (Asian Development Bank (ADB), 2000) to defeat against poverty (Armendariz & Morduch, 2010). By offering small, which is normally between $50 and $500 in short term, between three and twenty-four months with instalments are weekly or monthly (Strøm & Mersland, 2014), MFIs have increased income and consumption of poor households, leading to significant decrease in poverty (Boateng, Boateng & Bampoe, 2015); decrease in income inequality (Mahjabeen, 2008); and improvements in children's education and health (DeLoach & Lamanna, 2011). Therefore, microfinance model has been quickly replicated in many countries (Köhn, 2013) from its first application in Grameen Bank.

Happily, statistic shows that in 2010, 138 million poorest clients have been served by MFIs, and this number is expected to continuously increase to 175 million by 2015 (Reed, Gatti, Awimbo & Awimbo, 2013). Despite that, there are still many poor people, especially who living in developing countries, have had no chance to access basic financial services (Bogan, 2012). This fact leads to concern about by how MFIs can serve more customer in the future, and financial self-sufficiency is considered as a solution (Crabb, 2008; Daher & Le Saout, 2013; Quayes, 2015) because only when they are self-sufficient, they can help poor people become self-sufficient as well.

As a result, there are many researchers have studied factors affecting financial sustainability of MFIs such as Bogan, Johnson and Mhlanga (2007), Iezza (2010), Kinde (2012), Ngo (2012) and Tehulu (2013), in which most of them agree that capital structure is considered as one of key determinants of financial sustainability of MFIs. However, previous researches tended to be fairly limited because they have just been carried out in one economy or small region rather than all emerging economies as a sample. Therefore, this study wants to address this gap by conducting a research based on sample of MFIs in developing countries, and especially during 2010 to 2014 to examine the effect of capital structure on MFIs' sustainability in recent conditions. Be-

sides, general trend in transforming from MFIs to banks or other legal status (Sekabira, 2013) in recent years is also controversial issue among researchers. There are many discussions related to whether these transformations are right or wrong, but the results are mixed. Therefore, in this paper the relationship between legal status and MFIs' sustainability is will be also studied.

The rest of this paper is structured as follows. Section 2 provides literature on the impact of capital structure as well as legal status on MFIs' financial sustainability. Section 3 looks at methods used to collect and analyse quantity data. Section 4 will report and discuss the results from analysis, models and findings. The last section will summarise main findings of this study, and gives some suggestions for future growth of MFIs in developing countries.

II. LITERATURE REVIEW

2.1. Capital structure and MFIs' sustainability

Tehulu (2013) tries to determine factors affecting MFIs' financial sustainability in East Africa. By using panel data collected from 23 MFIs during six-year period from 2004 to 2009, he examines the effect of leverage on MFIs' sustainability. In general, East African MFIs are found to follow pecking order theory that debts is preferred to equity when external financing is required, and for some reasons when debts become "infeasible", the use of equity is necessary to not reduce firm performance (Frank & Goyal, 2007). Particularly, the results obtained from binary prohibit and ordered prohibit regression models, which use outcome indicating MFI is financially sustainable or not as dependent variable, show that the relationship between debts to equity and MFIs' financial sustainability is negative and significant at the level of 5%. According to Tehulu, the main reason for inverse correlation between capital structure and sustainability of MFIs is many researched MFIs operating in developing countries attract investors by offering to make them loans rather than paying dividends to owners. As East African MFIs did not pay dividends to shareholders, equity is cheaper source of finance than debts; consequently, the great use of debts in total capital might reduce MFIs' chance to get sustainability.

Interestingly, also carrying research on sustainability of MFIs in East African countries like Tehulu (2013) does but in relatively smaller scale, differences in funding costs of equity and debts is also considered as main reason for inverse correlation between capital structure and MFIs' sustainability in studies conducted by Nyamsogoro (2010) and Kinde (2012). Particularly, Nyamsogoro (2010) surveys factors affecting financial sustainability of ninety-eight Tanzanian's MFIs in 2008. By running multiple regression, he concludes equity but not debts might significantly improve financial sustainability of MFIs at the level of 5%. Besides, Kinde's study, which is performed on fourteen Ethiopian MFIs during nine-year period from 2002–10, also concludes that the relationship between capital structure and sustainability of MFIs is negative. Clearly, as Tanzania and Ethiopia belong to East African countries, MFIs researched in Nyamsogoro' study and Kinde' study have the same characteristics with MFIs researched in Tehulu's study. Therefore, equity holders of MFIs in both Tanzania and Ethiopia also are not paid dividends by MFIs, and equity is relatively cheaper than debts and positively impact on MFIs' sustainability. These findings again confirm pecking order theory, noting there is no existence of target debt level, but when debts become "infeasible", the use of equity is necessary to not reduce firm's performance (Frank & Goyal, 2007).

However, while the negative relationship between capital structure and sustainability of MFIs in studies of Nyamsogoro (2010) and Tehulu (2013) is significant, Kinde's relationship is not significant. This might be explained by distinctive characteristic of Ethiopian MFIs. Particularly, most MFIs in Ethiopia are backed by government and large public financial institutions but not private investors are major owner of MFIs; therefore, capital market for MFIs is less developed and capital structure matters relatively little in this case (Deribie, Nigussie & Mitiku, 2013).

Sekabira (2013) analyses relationship between capital structure and sustainability of fourteen MFIs during 2004 to 2008 in Uganda — an East African country again. He finds that debts lower MFIs' chance to get sustainability or there is inverse relationship between debts and MFIs' sustainability, which is completely consistent with findings of Kinde (2012), Nyamsogoro (2010) and Tehulu (2013), who also undertake studies in East African countries. Moreover, the reason behind negative relationship between capital structure and MFIs' sustainability in Sekabira' study is also related to funding costs of MFI's financial resource. Particularly, Sekabira indicates that varied interest rate which MFIs have to pay for debt holders might threaten MFIs' performance or sustainability. Besides, debts used by MFIs perhaps come from non-regulated sources, which require high interest rate but have to be paid back in short term, might also contribute to increase financing cost and after that retard MFIs' financial sustainability (Sekabira, 2013). Thereby, limited access to debts for MFIs is what he recommends to Ugandan government.

Moreover, costs of funding is considered again as main reason for findings of Bogan et al. (2007) and Ngo (2012). Particularly, Bogan et al. (2007) complete the study for the effect of capital structure on MFIs' performance from the data of top 300 MFIs in Africa, East Asia, Eastern Europe, Latin America, the Middle East, and South Asia. They use two models, namely regression model and prohibit model, to examine relationship between MFI's sustainability and capital structure. Results obtained from both these models indicate the proportion of debts to total assets is negative and significantly related to operational sustainability. Based on a sample of cross-country MFIs from 1997 to 2010, Ngo (2012) also agrees with Bogan et al. (2007) that in general there is negative relationship between financial leverage and MFIs' sustainability. More importantly, both researchers use costs involved in using debts, such as transaction costs and interest paid to debt holders as main reason for placing financial burden on MFIs, reducing net income and lowering MFIs' chances to be sustainable.

By contrast, positive relationship between leverage and MFIs' sustainability is witnessed in study conducted by Kyereboah-Coleman (2007). Particularly, he reviews the impact of capital structure on financial sustainability of the 52 MFIs in Ghana during 1995 to 2004. In his study, two measures of outreach and default rate are used as proxy for MFIs' sustainability. According to Kyereboah-Coleman, higher leverage enables

MFIs to reach greater level of outreach or serve more customers, get higher income and profitability. Besides, he stresses that the increase in number of clients also helps MFIs to take advantage of economies of scale to reduce average operating costs. Moreover, the econometric result illustrates risk level of MFIs having high leverage is reduced because to cover funding expense of borrowing, managers are encouraged to generate higher income (Jensen, 1986) by diversifying their products, which after that help them to diversify and reduce risks (Kyereboah-Coleman, 2007). The negative relationship between leverage and default rates together with positive correlation between leverage and outreach lead Kyereboah-Coleman arrives at conclusion that highly leveraged MFIs have ability to get better performance and financial sustainability than other MFIs.

An additional confirmation of positive relationship between capital structure and MFIs' sustainability is witnessed in Iezza's study. Iezza (2010) tries to examine factors affecting financial sustainability of 687 MFIs in 63 countries worldwide in 2008. Results obtained by regression model reveal that capital structure keeps important role in improving sustainability of MFIs. Besides, findings of Iezza's study strongly support trade-off theory that MFIs would gain considerable tax advantage from using debts instead of equity; therefore, MFIs should be financed by debts to increase their profitability and sustainability level. However, he also notices that MFIs can take advantage of debts only when they do not step across the threshold of debt ratio.

Recently, Mwizarubi, Singh and Mnzave (2015) aim to explore how financial sustainability of a leading formal MFI in Tanzania responds to change in commercial borrowing. With the quarterly data from 1997 to 2014, their result is as the same as Kyereboah-Coleman and Iezza's findings, that the effect of commercial borrowing on sustainability is positive. However, the relationship between debts and MFIs' sustainability in study of Mwizarubi et al (2015) is insignificant, which might be explained by the changes in Tanzanian microfinance sector since 2003. Particularly, according to the official statistics on Tanzania's microfinance sector conducted by MFtransparency (2011), since 2003 there has

been increase in the number of banks and financial institutions investing in MFIs, but unfortunately these investments have not achieved considerable success.

2.2. Legal status and MFIs' sustainability

Mersland and Strøm (2008) in their research investigate whether governments are right about transforming MFIs from NGOs to private ones and find that there is slight difference in performance of NGOs and private owned MFIs. By analysing data collected from 200 MFIs in 54 countries during 2000 to 2006, Mersland and Strøm (2008) indicate NGOs and other MFIs use the same model in attracting and serving clients, and importantly are affected by the same economic rationality. Besides, authors confirm that NGOs can get sustainability by their own, because their ROA is higher than their counterpart' ones. As a result, undergoing transformation from NGOs to private owned MFIs or making changes in legal status might not be considered as a good idea for improving sustainability of MFIs.

In contrast, Tchakoute-Tchuigoua (2010) indicates there is significant difference in sustainability between MFIs related to legal status. Tchakoute-Tchuigoua' study is based on worldwide sample of 202 MFIs from 2001 to 2006, and documents dissimilarity in form of ownership might lead to difference in organizational structure, which might result in difference in financial performance and sustainability among MFIs. Specifically, he indicates in terms of OSS, private MFIs do perform better than NGOs because NGOs run higher risk in lending money and their board members might pay less attention to monitor management and sustainability (Christen & Rosenberg, 2000).

Similar to Tchakoute-Tchuigoua (2010), Barry and Tacneng (2011) also observe different level of sustainability among different types of MFIs. They examine 281 MFIs in Africa from 1996 to 2008 to find out whether or not sustainability in terms of OSS is affected by organizational structure or legal status of MFIs. Their study's findings reveal under the effect of competition for clients and grants, the behaviour of different types of MFIs is not the same; therefore, the differences in financial performance and level of sustainability among MFIs related to legal sta-

tus is undeniable. Specifically, in terms of OSS, credit unions do perform better than NGOs and in turn, NGOs perform better than Non-Banks.

III. METHODOLOGY

The central topic of this paper is sustainability of MFIs in developing countries, where many poor customers have still found difficult to access financial services (Ghalib, Malki & Imai, 2015); therefore, the sample frame of this study consists of all MFIs operating in less developed countries and disclosing their annually financial information in MIX market. The reason for choosing all MFIs operating in developing countries, which are listed on MIX market as a sampling frame, is because they are assumed to be most accountable and transparent MFIs (Cull, Demirgüç-Kunt & Morduch, 2007).

As data used in this study is numerical data, of which value can be measured numerically (Saunders, Lewis & Thornhill, 2007), quantitative approach was applied. Particularly, quantitative approach was used to measure sustainable level of MFIs, capital structure, revenue, efficiency, risk and liquidity, and development and growth factors of MFIs. Moreover, quantitative analysis was also used to look for connections and spot relationships between dependent variable (Operational self-sustainability) and independent variables, especially capital structure (debt to equity ratio). Particularly, before deciding which statistical tests are appropriate to answer specific research questions, it is important to describe characteristics of all variables used in this study and check assumptions to make sure that study's findings are accurate.

Firstly, as data in this study is continuous variables, descriptives was used to explore basic statistics such as mean, maximum, minimum, standard deviation of dependent variable and predictors. Besides, SPSS graph builder was also used to describe changes in mean value of OSS and DER through years.

Secondly, to access normality of the distribution, which is one of important assumptions should be satisfied to use parametric tests, this paper used the Kolomogorov-Smirnov test on SPSS (Appendix 1). As sig. value of K-S test is less than 0.05; therefore, assumption of normality in this study is violated. Data transformation in general and log transformation in particu-

lar was applied to all variables to deal with this problem as comment of Field (2009) and many researchers in microfinance sector such as Nyamsogoro (2010), Ngo (2012) and Nwachukwu (2014).

Thirdly, not only normal distribution, but autocorrelation, outliers, and multicollinearity were also tested to make sure results of further tests are accurate (Field, 2009; Pallant, 2013). Particularly, in terms of cross section data is used like this study, there might be autocorrelation or "correlation between members of series of observations ordered in time" (Kendall, Buckland & International Statistical Institute, 1971, p. 8). But the important thing is the presence of autocorrelation might lead to many problems such as estimators are biased and inefficient, results of t and F-tests and R^2 are not reliable (Gujarati, 1999). In this study, Durbin Watson d statistic, one of the most celebrated tests used for testing autocorrelation, was used. Fortunately, Durbin-Watson value is approximately 2 (Appendix 2); therefore, autocorrelation might not be problem in this paper.

Fourthly, in regression context, the presence of an outliers, which is defined as cases of which values are quite higher or lower than majority of other cases' ones (Pallant, 2013), might make researchers miss important information and receive confusing results; therefore, it is essential to recognise outlier (Dielman, 2001). Tails of distribution presented in graph named histogram was used to find out there is potential outliers in this study or not. There are some observations are out at the outlier labelling rule, but difference between trimmed mean and mean value is extremely small (0.003 — Appendix 3); therefore outlier problem might not be serious.

Finally, the existence of multicollinearity or explanatory variables are correlated might lead to estimates of parameter values are not reliable, and it is difficult for researchers to access the contributions of each independent variable to overall R^2 (Gujarati, 1999). Therefore, this study used results obtained from correlation matrix, which presents not only correlation between dependent variable and predictors, but also between independent variables to test for multicollinearity. Particularly, Pearson product moment correlation coefficient used, and fortunately the highest absolute value of correlation coefficient

between each of independent variable in this study was 0.543, which was less than 0.7 (Appendix 4); therefore, multicollinearity does not happen in this study.

After checking and correcting problems related to data, the next step is to run appropriate tests to answer specific research questions.

Firstly, to answer whether or not capital structure affect MFIs' sustainability, this paper used multiple linear regression model in which LOSS is dependent variable, LDER is main explanatory variable, LGLTA, LNEA, LDP, LALGNI, LYGL, LCPB, LPAR 30 and LFB are other independent variables.

$$LOSS = \beta_0 + \beta_1 \times LDER + \beta_2 \times LGLTA + \beta_3 \times LNEA + \beta_4 \times LDP + \beta_5 \times LALGNI + \beta_6 \times LYGL + \beta_7 \times LCPB + \beta_8 \times LPAR30 + \beta_9 \times LFB + \varepsilon,$$

where:

LOSS: natural logarithm of operational self-sufficiency.

β_0: constant.

β_{1-9}: slopes of independent variables.

LDER: natural logarithm of debt to equity ratio.

LGLTA: natural logarithm of gross loan portfolio to total assets.

LNEA: natural logarithm of non-earning liquid assets to total assets.

LDP: natural logarithm of deposits to total assets.

LALGNI: natural logarithm of average loan portfolio balance per borrower gross national income per capital.

LYGL: natural logarithm of yield on gross loan.

LCPB: natural logarithm of cost per borrower.

LPAR30: natural logarithm of portfolio at risk of default after 30 days due date.

LFB: natural logarithm of female borrower to total borrowers.

ε: random error.

To estimate parameters ($\beta_0 - \beta_9$), this study used ordinary least square (OLS) estimator because firstly even in some estimating problems, OLS estimator still succeed on some of other criteria, and secondly it is easy to compute (Kennedy, 2008). Besides, when comparing with other method "it is intuitively appealing and mathematically much simpler" (Gujarati, 2003, p. 58).

Secondly, to analyse whether MFIs having different legal status have different sustainability level or not, one-way analysis of variance, which enabled me to compare mean score on sustainability for five groups (NGOs, NBFIs, credit unions, microfinance banks and others) was used.

IV. FINDINGS AND DISCUSSIONS

4.1. The effect of capital structure (DER) on financial sustainability

The econometric result of model supports the argument in literature that capital structure in terms of debt to equity ratio is significantly and negatively related to financial sustainability of MFIs (appendix 5). This finding is consistent with results in studies conducted by Bogan et al (2007), Ngo (2012), Nyamsogoro (2010), and Tehulu (2013).

Similar to this study, all researchers mentioned above use panel data collected from cross country MFIs, and choose operational self-sufficient and debts relative to equity as proxy for financial sustainability and capital structure respectively. For example, by using data collected from over 20 MFIs in East Africa, where many countries are developing ones, regression's result of Tehulu's study (2013) reveals that capital structure is significant and negatively related to financial sustainability of MFIs. According to Tehulu, the reason behind this finding is because there are many researched MFIs attracting investors by offering to make them loans rather than paying dividends. As a result, equity is relatively cheaper than loans, and more importantly equity but not debts can improve financial sustainability of MFIs. Moreover, not only being supported by results of cross-country studies, findings of this research are also backed by findings of Nyamsogoro (2010), who uses a sample of Tanzania's MFIs, which also has common characteristics like East Africa's MFIs.

The negative relationship between debt and financial sustainability is also reflected in study made by Kinde (2012), but not significant. The inconsistency in results obtained by this study and Kinde's study can be explained by differences in characteristics of studied MFIs. Particularly, while Kinde does research only in Ethiopia's MFIs, this study aims at analysing MFIs operating in developing countries. More importantly,

most MFIs in Ethiopia are backed by government, or large public financial institutions still dominate financial sector (Deribie, Nigussie & Mitiku, 2013); therefore, the involvement of private investors in MFIs is not big. That might be the reason why Ethiopia's MFIs investors did not find attractive to MFIs, and capital structure did not significantly affect financial sustainability of MFIs. Another important factor is that the period of time that Kinde's study covers is from 2002 to 2010, when global financial crisis happened. This may also affect financial performance or financial sustainability of MFIs during this time because Ethiopia is one of the countries that are significantly affected by crisis (Te Velde, 2008).

This study's finding is also differ from Kyereboah-Coleman (2007), who indicates that the increase in proportion of debt in capital structure will enhance greater outreach, profit and finally sustainability. However, instead of studying MFIs operating in many countries as this study did, Kyereboah-Coleman only concentrates on analysing the relationship between financing decision and sustainability of MFIs in Ghana. More importantly, Kyereboah-Coleman also does not use operational self-sufficiency as proxy for sustainability of MFIs like this research did, but outreach and default rate are used as variables to evaluate sustainability of Ghana's MFIs. These differences might help to explain why this result is true in case of Ghana's MFIs but not similar to results obtained by this research.

Interestingly, also using data of Tanzania's MFIs like Nyamsogoro (2010) does, but only focusing on leading formal MFI over the period of 18 years from 1997 to 2014, Mwizarubi, Singh and Mnzava (2015) find that debts or commercial borrowings have positive and insignificant impact on financial sustainability of MFIs, which is contradict with this research findings. This inconsistence might be firstly explained by differences in sample size. Particularly, while this study conducts research on MFIs in developing countries, Mwizarubi, Singh and Mnzava study just one MFI in Tanzania. Therefore, their result might be not universally appropriate or does not reflect relationship between capital structure and sustainability in other MFIs. Secondly, during researched period of Mwizarubi, Singh and Mnzava's study, changes in the development of microfinance industry in this country in general, and studied MFI in particular have occurred and might have impact on performance of MFIs. For example, since 2003 Tanzania has been witnessing an increase in the number of funds provided by banks and financial institutions to improve MFI's performance (MFtransparency, 2011). All together perhaps explain why result obtained from Mwizarubi, Singh and Mnzava's study is quite dissimilar to this study's one.

4.2. The effect of legal status on MFIs' sustainability

The significant value for Levene's test, which tests whether variance in financial sustainability for each of five groups is the same or not, was less than 0.5 (0.000) (Appendix 6); therefore, assumption in this study is violated. As a result, I looked at Welch test, which verifies the robustness of ANOVA's results (Field, 2009) and is considered as a major alternative to the ANOVA F test (Jan & Shieh, 2014). Sig. value of Welch test is less than 0.05 (0.000) (Appendix 6), but eta squared value is quite small (0.014 — Appendix 7). This result indicates although there is significant difference among mean scores on OSS for five groups, the actual difference was very small, which is similar to conclusion of Mersland and Strøm (2008). Particularly, Mersland and Strøm (2008) indicate because of small differences in performance of MFIs having different legal status, the transformation from NGOs to private MFIs might not be a good option to encourage financial sustainability of MFIs. To explain for the reason behind this finding, Mersland & Strøm show NGOs and shareholder-owned MFIs might apply nearly the same model in attracting and serving clients. More importantly, Mersland and Strøm notice that a large portion of private MFIs' equity holders are still NGOs, grantors or investors with social orientation.

This study's finding, however, is contrast with results obtained by Tchakoute-Tchuigoua (2010), who documents in terms of OSS, private MFIs do perform much better than NGOs. He explains that NGOs run higher risk in lending their money (Tchakoute-Tchuigoua, 2010), and board members of NGOs pay less attention to monitor their management and sustainability (Christen & Rosenberg, 2000). However, based on legal status Tchakoute-Tchuigoua only classifies MFIs into three

groups (NGOs, cooperatives and private MFIs) but not five groups as this study did, and sample size of his study (202 MFIs) is relatively smaller than this study's one; therefore, there might be an inconsistency in results of two studies.

In addition, this study is also not in line with the conclusions of Barry and Tacneng (2011), who find that credit unions totally dominates NGOs in terms of OSS. However, unlike this study, which analyses data collected from many developing countries in the world, Barry and Tacneng's study is only based on a sample of 281 MFIs operating in African region. Another important point is that not only using OSS as proxy for MFI's financial sustainability as what this research did, but Barry and Tacneng also use return on assets and financial revenue ratio to measure sustainability of MFIs. Therefore, Barry and Tacneng's result might be different with this study's finding.

V. CONCLUSIONS

There are two main results were found in this paper. *Firstly*, it is found that this paper's finding is in line with pecking order theory, which shows that in comparison with equity, debts are favoured among MFIs in developing countries, and the increase in debt to equity ratio led to decrease in MFI's sustainability level. This negative relationship between capital structure and financial sustainability of MFIs in this study might be explained by the lack of accessing full costs associated with financing sources in general, and debts in particular. This reason is also emphasized by a survey conducted by CGAP (2007), which indicates based on price debts are primarily chosen by MFIs' managers but few of them thoroughly understand monetary and non-monetary costs of debts as well as factors affecting on these costs.

Secondly, small difference in financial sustainability among MFIs related to legal status was found and might be explained by great similarities in objectives (Hartarska, 2005) and business model of MFIs having different legal status (Mersland & Strøm, 2008). Besides, as public funders hold up to two thirds of MFIs' share (Köhn, 2013); therefore, they but not commercial investors occupy a crucial role in equity funding for shareholder-owned MFIs (MicroRate, 2013) might also contribute to give a reason for small effect of legal status on MFIs' sustainability.

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APPENDIX

Appendix 1

	Kolmogorov-Smirnov		
	Statistic	**df**	**Sig**
OSS	.158	2060	.000

Appendix 2

Model	**R square**	**Adjusted R square**	**Durbin-Watson**
1	.425	.419	1.971

Predictors: LDER, LGLTA, LPAR30, LYGL, LNEA, LCPB, LALGNI, LFB, LDP.

Dependent variables: LOSS

LOSS = natural logarithm of operational self-sustainability; LDER = natural logarithm of debt to equity ratio; LPAR 30 = natural logarithm of portfolio at risk over 30 days due dates; LCPB = natural logarithm of cost per borrower; LYGL = natural logarithm of yield on gross loan portfolios; LGLTA = = natural logarithm of gross loans to total assets; LNEA = natural logarithm of non-earning assets to total assets; LDP = natural logarithm of deposits to total assets; LALGNI = natural logarithm of average loans to gross national income; LFB = natural logarithm of female borrowers to total clients.

Appendix 3

Descriptives

		Statistic	**Std. Error**
LOSS	Mean	4.71 617 493	.004 613 246
	5 % Trimmed Mean	4.71 935 278	

Appendix 4

	LOSS	LDER	LNEA	LGLTA	LDP	LALG N1	LYGL	LCPB	LPAR30	LFB
LOSS	1	–.471**	–.360**	.188**	.075**	.044*	.174**	–.035	–.227**	–.046
LDER	–.471**	1	.188**	–.038	.021	.184**	–.197**	.042	.004	–.005
LNEA	–.360**	.188**	1	–.248**	–.048	.072**	–.044	.056*	.111**	.028
LGLTA	.1S8**	–.038	–.248**	1	.059*	–.087**	–.074**	–.171**	–.103**	.105**
LDP	.075**	.021	–.048	.059**	1	.082**	–.084**	.013	–.030	–.018
L ALGNI	.044*	184**	.072**	–.087**	.082**	1	–.303**	.543**	.115**	–.462**
LYGL	.174**	–.197**	–.044	–.074**	–.084**	–.303**	1	.081**	–.040	.086**
LCPB	–.035	.042	.056*	–.171**	.013	.543**	.081**	1	.320**	–.540**
LPAR30	–.227**	.004	.111**	–.103**	–.030	.115**	–.040	.320**	1	–.204**
LFB	–.046	–.005	.028	.105**	–.018	–.462**	.086**	–.540**	–.204**	1

** Correlation is significant at the 0.01 level (2-tailed)

* Correlation is significant at the 0.05 level (1-tailed)

OSS = operational self-sustainability; DER = Debt to equity ratio; PAR 30 = portfolio at risk over 30 days due dates; CPB = cost per borrower; YGL = yield on gross loan portfolios; GLTA = gross loans to total assets; NEA = non-earning assets to total assets; DP = deposits to total assets; ALGNI = average loans to gross national income; FB = female borrowers to total clients.

Appendix 5

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	4.854	.176		27.596	.000
LDER	–.114	.007	–.457	–16.803	.000
LGLTA	.154	.031	.136	4.886	.000
LNEA	–.081	.009	–.242	–8.732	.000
LDP	.013	.007	.051	1.963	.050
LALGNI	.074	.009	.291	7.887	.000
LYGL	.116	.020	.186	5.827	.000
LCPB	–.042	.009	–.165	–4.544	.000
LPAR30	–.027	.006	–.135	–4.898	.000
LFB	–.033	.017	–.057	–1.867	.062

Dependent Variable: LOSS.

Predictors: LDER, LGLTA, LNEA, LDP, LALGNI, LYGL, LCPB, LPAR30, LFB.

LOSS = natural logarithm of operational self-sustainability; LDER = natural logarithm of debt to equity ratio: LPAR 30 = natural logarithm of portfolio at risk over 30 days due dates; LCPB = = natural logarithm of cost per borrower; LYGL = natural logarithm of yield on gross loan portfolios; LGLTA = natural logarithm of gross loans to total assets; LNEA = natural logarithm of non-earning assets to total assets; LDP = natural logarithm of deposits to total assets; LALGNI = = natural logarithm of average loans to gross national income; LFB = natural logarithm of female borrowers to total clients

Appendix 6

Levene's test and Welch's test

	Levene test		Welch test	
	Statistics	Sig.	Statistics	Sig.
LOSS	13.134	.000	6.998	.000

Appendix 7

Eta squared value

	Sum of squares
Between groups	4.609
Within groups	321.300
Total	325.909
$Eta\ squared = \dfrac{Sum\ squared\ groups}{Total\ sum\ of\ squared}$	0.014

Dependent variable: LOSS.