Microfinance Failures: the Case of Microfinance in West African Economic and Monetary Union

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Abstract

This paper investigates on the determinants of MFIs'failure in WAEMU. It carries out the analysis on the panel data from 2000-2014 by estimating logit regression of this probability. It reveals that the driven factors of the probability of being unsustainable for these institutions are related to the poor risk management and the poor management of the operating expense. These factors are administrative expense ratio and Portfolio at risk for more than thirty days that have a positive effect on this probability. At a lower level, the depth of financial system has also a positive effect. Some factors such as Equity, portfolio yield, and the MFIs type (NGOs and Credit Union) have a negative effect on the probability of being unsustainable. One of the main findings is related to the indicators of outreach used here. In effect, the size of loan and the number of borrowers influence negatively and significantly the probability of failure.

Keywords: Microfinance, Failure, WAEMU

Introduction

By the end of March 2018, the Central Bank of West African States revealed that seven (7) microfinance institutions of the West African Economic and Monetary Union (WAEMU) were under temporary government administration against seventeen (17) microfinance institutions under temporary government administration in 2017 Amongst these troubled institutions, two are located in Togo, two in Benin, one in Côte d'Ivoire, one in Mali and one in Senegal. Then at this same period of 2018, the number of microfinance institutions listed by the BCEAO in WAEMU was 596 compared to 649 at the end of March 2017, a decrease of 53 units (Banque Centrale des Etats de l'Afrique de l'Ouest, 2018).

This fact is not only true to the microfinance industry in WAEMU but it is observed around the world. According to Rozas (2011), FOCCAS a Ugandan MFI and WEEC an up-coming Kenyan MFI were closed because of insolvency in June 2006 and April 2007 respectively. However as Riquet & Poursat (2013) noted, defaults and temporary government administration processes sometimes have negative consequences such as loss of customer confidence and reduced investment in MFIs (eg refinancing of loan portfolios by banks / investors). This could lead to a loss of confidence in microfinance institutions in the WAEMU zone. Togba (2016), in analyzing the cost efficiency of MFIs in WEAMU found they are inefficient in terms of minimizing their costs. These poor financial performances raise questions about the health and financial situation of these institutions despite the exponential growth of the MFIs'activities and some successes observed. Besides for Sainz-Fernandez, Torre-Olmo, Lopez-Gutiérrez & Sanfilippo-Azofra. (2015), it is essential to make an analysis of failed microfinance, especially when the large MFIs have failed and disappeared.

In microfinance literature, there exist few studies conducted in analysing the failure of microfinance institutions (Sainz-Fernandez et al, 2015; Dorfleitner, Leidl & Priberny, 2014; Riquet & Poursat, 2013; Marulanda, Fajury, Paredes & Gomez, 2010; Rozas, 2009). Among these studies, some were case studies and focused on the descriptive studies (Riquet and Poursat, 2013; Marulanda et al., 2010; Rozas, 2009). Riquet & Poursat (2013) revealed that the failure of MFIs in WAEMU and Economic and Monetary Community of Central Africa are due to MFI fraud, poor governance, or poor management. Marulanda et al. (2010) analysed 10 microfinance institutions in Latin America that failed in identifying the contributing causes and factors but also to derive some lessons from these failures. The authors found that the most common causes of capital deterioration were methodological flaws in credit technology, systematic fraud, uncontrolled growth, loss of focus, design flaws in the conception of the institution itself, and a suffocating level of government intervention. Rozas (2009) analyzing the failure of five MFIs also finds among other factors leading to the failure, the case of fraud by the managers or a rapid growth of MFIs explaining the failure. But the primary purpose of this study was to stress the difference between liquidation of MFIs and the traditional financial institutions, and how to make this liquidation successful in the context of microfinance.

At the empirical level, Dorfleitner et al. (2014) study the determinants of failures of microfinance institutions based on the CAMELS (the capital adequacy (C), the asset quality (A), the management capability (M), the earnings (E), and the sensitivity to market risk (S)) rating components and microfinance-specific measures by applying probit regression techniques. They found CAMELS as explaining factors of failures of microfinance

institutions. This study revealed that the percentage of female borrowers, on regulation, the presence of donations, and the rapid growth of MFI affects the probability of failure. Sainz-Fernandez et al (2015), analysing the reasons for crises in microfinance institutions (MFIs), find different factors such as company's performance, country's economic growth, political stability, and existence of a private credit bureau that reduces the likelihood of a crisis. On the contrary, the authors also finds that, excessive liquidity, a higher proportion of deposits over loans and more loans per employee all increases the probability of a crisis.

However, these studies differ on the definition of failure. Dorfleitner et al (2014) considered a MFI failed when it was liquidated by a legal authority due to bankruptcy, or defaulted on a loan or merged with other MFIs after financial distress. Sainz-Fernandez et al (2015) uses the term microfinance in crisis and define this situation as microfinance institutions with a portfolio at risk for more than thirty days (PAR 30) and write-off ratio higher than 20 per cent. According to Marulanda et al (2010), two scenarios could better reflect the concept of failure. The first situation is the case where an MFI is not able to achieve financial sustainability or MFI reaches negative equity. That leads to the disappearance of this institution. And the second situation is that where the existence of entities remain in operation while experiencing minimal growth or development.

This paper uses the first situation to analyze the failures of microfinance in the WAEMU zone by determining the factors leading to MFIs' failure. Two reasons could explain this choice. First of all, we agree with Marulanda et al (2010) that it is the lack of financial sustainability that leads to insolvency and therefore requires the injection of fresh capital. Second, temporary government administration (TGA) is imposed by regulators when the poor management of a financial institution threatens its financial health, its institutional sustainability and/or the interests of its clients, especially depositors. Therefore, this paper intends to identify the factors which are most useful and significant in the prediction of MFIs failure. In effect, the unsustainable microfinance institutions could not be useful for the poor in the future (Schreiner, 2000). Then the financial sustainability of MFIs is a necessary condition for institutional sustainability (Hollis & Sweetman, 1998).

The rest of the paper is structured as follows. The section one explains the methodological issues and data. The section two presents the results obtained. Finally, the last section gives a conclusion of the study.

1. *Methodological framework*

This section presents the definitions and measurements of the variable using in the study. It also intends to define the modeling framework and describe the data used.

1.1. The sustainability Measurements

Several methods of measurement exist but for the purpose of this paper, as Quayes (2012) and Kipesha and Zhang (2013), the operational self-sustainability (OSS) will be retained as measure of sustainability. OSS indicates how the MFI' generated operational revenue covers the total costs (operating costs, loan loss provisions and financial costs). Several reasons justify the choice: first, as stated by Malanchini and Nègre (2005), the analysts may use different adjustment methodologies, depending on their objectives and the availability of data. That would have an impact on the results. Therefore, it is important to be careful concerning the use of the adjusted measures. Second, in reality, sustainability requires avoiding the subsidies. Consequently, the SDI or Financial Self Sufficiency (FSS) could be a good measure. But, these indicators are difficult to compute because of lacks of information on the implicit subsidy. In addition, SDI is also an indirect measure.

1.2. Definitions and Hypotheses on the explanatory variables

The factors influencing the failure of a MFI include both internal external factors. The internal factors concerns the factors related to the institution management or own characteristics. The external factors represents the factors uncontrolled by the institution but related to the environment in which it evolves. The internal factors used here are the main factors driving the financial sustainability according to the literature on microfinance performance (Gershwin & Marwa, 2015; Tehulu, 2013); Quayes, 2012; Ayayi & Sene, 2010). The internal factors are:

Administrative expense (Admexp): It is measured by the total administrative expense divided by the average loan portfolio. This is the most widely used indicator of institutional efficiency. An increase in the administrative expense ratio is assumed to be associated with a decrease in operational self-sufficiency. Therefore, the expected effect would be positive on the MFIs failure.

Equity (EQu): Equity takes a value 1 if the MFI has an equity funds and 0 when an MFI experiences 0 or negative value of equity. We expect that having equity contributes to a decrease of the probability of being unsustainable.

Portfolio at risk >30 (Par30): It serves as proxy for asset quality. Given its negative effect on Microfinance sustainability, the expected effect is

here that the higher portfolio-at-risk will have a positive influence on MFI's failure.

The average loan size (Avloan): The average loan size (defined as the ratio gross loan portfolio over total number of active borrowers and it is taken in the natural logarithm.) is a proxy for depth of outreach. Generally, smaller loans indicate greater depth of outreach. The average loan size is also a proxy for the poverty level of the borrowers of a MFI. The relationship between this variable and the probability of being an unsustainable MFI can be either positive or negative. For example, the large average loan size increases the operational self-sufficiency of the MFIs, therefore the probability of being unsustainable is low. But a lower average loan size is expected to lead to higher risk, so as to increase the probability of being unsustainable.

Portfolio yield (*portfyield*): It is equal to total interest income divided by average loan portfolio. Portfolio yield is used as a proxy for the effective interest rate. Most of practitioners call the increase of interest rate for attaining the sustainability. Acclassato (2006) (cited in Ayayi and Sene, 2010), in his studies finds that in West Africa, the financially sustainable MFIs must charge interest rate of 84% and that in Indonesia the Bri Unit Desa charge interest rate between 35% and 60%. However, to attain financial sustainability, MFIs must apply high but not exorbitant interest rates. Therefore, the expected effect is that interest rate has a negative effect on the MFIs failure.

Savings (depo_loan): Savings is commonly viewed as a key, integral part of the future of microfinance, not only as an important service for the poor, but also as a means to fund MFIs. It represents the capital required to fund the loan provision. Some authors argue that the savings is the departure for the reaching of sustainability. We assume that savings would positively affect sustainability and allow increase in the number of borrowers. It is measured by the deposit-loan ratio.

Size of the MFI (mfisize): we include this variable to take into account the effect of MFIs growth. In effect, the fast growth can lead to less efficiency in the management (Marulanda et al., 2010; Rozas, 2009). Therefore, a large size may also increase the probability of a MFIs failure. It is measured by the natural logarithm of total assets of a MFI.

Borrowers (Borr): The number of borrowers represents the active borrowers in the loan portfolio and is taken in natural logarithm form. It represents the breadth of outreach. The relationship between breadth of outreach and sustainability is assumed positive.

Following Mieno & Kai (2011) and A. Gonzalez (2007), the variable "MFI's *age*" was included in the present study's model. To measure this variable, the paper here uses the Micro banking Bulletin structure which categorizes the age of the institutions as follows: from 1 to 4 years old: *new*; 5-8 years old: *young*; beyond 8 years: *mature*. The reference variable for our

analysis is new. According to the hypothesis of Learning by doing, the older the MFI, the more experiences it has and the better it manages its activities for a good performance. Therefore, the assumption is made about a negative relationship between the *young* variables and probability of failure, but also about a negative relationship between mature and failure. We also include different types of microfinance. There are three types of MFIs in our sample: Non Governmental Organizations (*NGOs*), Credit Union (*Cred_union*) and Non Financial Bank institutions *(NFBI*). In effect, Madiha Riaz and Parthiban S. Gopal (2014) in their study found Non Government Organization would be more efficient and sustainable than Microfinance Banks and Rural support programmes. Therefore the issue of the effect of the type of microfinance is relevant.

Lastly, the external factors related to the country where the MFI is based could influence the probability of being sustainable. For A. Gonzalez (2007), different countries are likely to be differently endowed in terms of infrastructure (whether physical, financial or other), which will affect the MFIs' operational costs differently. This could be the basis of the different levels of efficiency observed. Therefore we include macroeconomic variables such as:

Economic growth (Growth): This is a macroeconomic variable indicating the country's level of economic development. According to Sainz-Fernandez et al (2015), the favourable economic situation increases the income of the companies and families that contributes to decrease the MFIs failure.

*Depth of the financial system (DFins***):** Measured as domestic credit to the private sector as a percentage of GDP (Ahlin, Lin & Maio, 2011). The depth of the financial system may have a positive or negative effect on the MFIs' situation.

Country: Certain characteristics of MFIs vary depending on the geographic region where they are located (Bogan, 2012, Ahlin et al., 2011). Related to this, dummy variables were created for the seven countries in the sample *Benin*, *Burkina Faso*, *Côte d'Ivoire*, *Mali*, *Niger*, *Senegal* and *Togo*. *Côte d'Ivoire* was taken as the reference.

1.3. Modeling framework for the probability of being unsustainable

Some studies suggest using discriminant analysis and logistic regression to identify the determinant of the financial performance of a firm. Indeed, Beaver (1966) and Altman (1968) suggested several models of financial health which begin with discriminant analysis and progress to logit regression models. Many of these models use some form of logit model to estimate the financial state of an organization.

Other authors suggest the multinomial model as an alternative model to this approach to analyze the financial state of an organization or firm (Pinder, 1996; Fontenla & F. Gonzalez, 2007). Pinder (1996), in his paper on the valuation of a mortgage portfolio, demonstrated multinomial models as alternative to the traditional approaches can be used in a decision analysis framework to provide estimates of expected monetary value rather than as estimators for the state of the organization's financial status. The given reason by this author is that, since the early works of Beaver (1966) and Altman (1968), several models of financial health based on this approach have been constructed and tested. Consequently, it is important to test other models as multinomial. Fontenla & F. Gonzalez (2007) also use a multinomial model to examine the factors associated with the occurrence of both self-fulfilling and fundamental banking crises. In their paper, they construct an index that differentiates between the two types of crises. This allows them to use a multinomial logit model, instead of the previously used binomial logit, to investigate the determinants of self-fulfilling and fundamental banking crises. However, the overall Logit and probit models seem to be the most popular and applicable methods of estimation used in the previous works (Sainz-Fernandez et al.2015, Dorfleitner et al., 2014; Jin et al., 2011). Then, a model of logistic regression will be derived to find the probability of MFIs failure in the WAEMU case.

We assume that, when a MFI does not achieve a financial sustainability it makes a failure experience as Marulanda et al. (2010) stated. The simplest way is to represent the dependent variable as a dummy variable, coded 1 (if the MFI has an OSS less than 100) and 0 (if the MFI has an OSS higher than 100). As the dependent variable is binary, conventional regression methods are inappropriate.

For the first way, It is assumed that the states of y_{it} correspond to the values of an unobserved latent variable y_{it}^{*}. The derived model from our specification is:

$$y_{it} = 1 \; if \quad y_{it}^{*} < 100$$
$$y_{it} = 0 \quad otherwise \qquad (1)$$

The latent financial sustainability measure y_{it}^{*} is obtained using a linear equation: Here,

$$y_{it}^{*} = x_{it}\beta + c_i + \varepsilon_{it} \qquad (2)$$

Where x_{it} represents the set of is factors explaining y_{it}^{*}, with associated parameters β, and the error term ε_{it} and c_i indicates the effect of all unobserved factors on y_{it}^{*}.

This model can be estimated by the Probit or Logit model. The random effect Probit or Logit model requires strict exogeneity and zero correlation between the explanatory variables and c_i . The fixed effects Logit relaxes the latter assumption but the estimates of c_i could be inconsistent and so it will be difficult to compute the marginal effects in general. However, there is one important advantage of the random effects Logit model over the Probit model which is; it is possible to obtain a $\sqrt{N}$ consistent estimation of β without any assumption about how c_i is related to x_i (Wooldridge, 2002). Therefore the random effects logit model is implemented here.

1.4. Data Source and Sample

The paper relies on databases provided mainly by the Microfinance Information eXchange known as MIX Market. MIX publishes information on the financial statements and financial indicators of microfinance institutions around the world. This site ranks the data on the MFIs from scale 1 to 5 stars according to the level of reliability of the published data. For the construction of our sample, we first selected the MFI with 2 stars and more as global ranking. Then we add the MFIs that had one star in global ranking but had at least 3 stars and more. The social indicators came from the *World Development Indicators,* published by the World Bank. Due to the irregularity in transmitting financial data, the panel selected for the present study is non-cylindrical. However, the study's sample took into account the MFIs that had big market shares in terms of savings mobilization and loan allocation in each country. The study period runs from 2000 to 2014. Finally, the sample includes the annual data of 69 MFIs from seven countries of WAEMU that have at least three years of observation over the period of analysis. It should be noted that the study does not cover the MFIs operating from Guinea Bissau due to lack of data on them.

The basic summary statistics are presented in tables 1, 2 and 3 below and A1 to A3 in the appendix. From the table 1, overall, the average rate of failure observed is 47.3 per cent.

Portfolio risk ratio is high (8.90%) and above the 5% norm required for microfinance institutions. Sometimes it could attain 100% and 76.96% respectively for credit unions institutions and NGOs (see tables in appendix A). The portfolio yield (which is the proxy of the effective nominal interest rate) is around 22% in average, just below the 27% usury rate set by the central bank. But a closer look at this ratio, according to the type of Microfinance, reveals that this rate could reach 78.1%, 40.8% and 36.18% respectively for Non Financial bank institutions (NFBI), credit unions and NGOs.

Table 1: Descriptive statistic of the variables

	N	Mean	Min	Max
MFIs'Unsustainable	558	.473	0	1
Administrative expense	558	8.84	2.04	113.08
Equity	558	.891	0	1
Average loan	558	680.01	0	4685
Portfolio risk at 30days	558	8.90	0	100
Portfolio yield	558	21.96	6.2	78.1
Deposit to loan	556	16.11	0	1343.67
MFI'size	558	19.12	9.8	24.21
borrowers	558	20201.73	0	167089
age	558	12.8	1	42
Financial Development	558	17.11	3.92	37.51
GDPpc	558	655.21	179	1545

Source: computed by authors from sample

The table 2 presents the descriptive statistics according to the Microfinance Information eXchange categorization of financial sustainability. It expresses as follows: OSS < 100% = unsustainable; 100% < OSS < 110% = operationally sustainable, and OSS > 110% = financial sustainability. This table 2 shows that the rates of failure for the NGOs and Credit unions are close to the average rate of the whole sample. Only the Non Financial Bank institutions have a rate of failure which is high.

Table 2: Descriptive statistics on MFI's failure according to the Microfinance exchange categorization

	Overall sample		NGOs		Credit union		NFBI	
	N	*(%)*	*N*	*(%)*	*N*	*(%)*	*N*	*(%)*
Unsustainable	*264*	*47.31*	*69*	*46.31*	*152*	*44.44*	*43*	*64.18*
Operationally sustainable	*99*	*17.74*	*27*	*18.12*	*60*	*17.54*	*12*	*17.91*
Financial sustainability	*195*	*34.95*	*53*	*35.57*	*130*	*38.01*	*12*	*17.91*
Total	*558*	*100*	*149*	*100*	*342*	*100*	*67*	*100*

Source: computed by the authors from sample

The table 2 shows, again, the credit union institutions are more financial sustainable than the others.

The average age is about 12.8 years. Following Microbanking Bulletin structure which categorizes the age of the institutions as follows: from 1 to 4 years old: new; 5-8 years old: young; beyond 8 years: mature, that means the MFIs are mature. Then, according to the hypothesis of Learning by doing, the older the MFI, the more experiences it has and the better it manages its

activities for a good performance. The table 3 confirms this hypothesis. In effect, the new institutions have a higher rate of failure.

Table 3: Descriptive statistics on the MFIs failure according to MFIs'age

	New		Young		Mature	
	N	Mean	observations	Mean	Observations	Mean
MFIs'Unsustainable	76	.67	80	.487	402	.432

Source: computed by authors from sample

2. *Results of the estimation of MFIs'failure*

The results of the present study's estimation are presented in Table 4. This table presents two models: the model (1) gives the result of the estimation with the factors internal to MFIs. The model (2) goes beyond the model (1) by adding the external factors. The results reveal the two models are globally significant since the LR statistic Chi2 test rejects the null hypothesis that all coefficients are zero.

The factor *admexp* has a positive and significant effect on the probability of MFIs'failure. That means it contributes to the increase of this probability. In effect, higher administrative expense means that the MFIs do not run efficiently at the administrative level. Consequently, it has negative effect on operational self -sustainability. That shows that a poor management of transaction costs could increase the probability of failure. The high level of transaction costs could be also related to the technology of lending mainly used by microfinance in WAEMU, here individual lending. The individual lending has high transaction costs which become a more important face to asymmetric information problems. In addition, for many MFIs, lack of independent transportation to reach their clients contributes to increase in their administrative costs. In fact, they rely on an inadequate public transportation system, taxis, and their feet to reach their clients. That has a great effect on loan monitoring and loan repayment.

The equity (*EQU*) decreases the probability of being unsustainable and this effect is significant at 1 percent level under the two models. When a MFI a MFI has an equity funds, it increases its operational self-sustainability. So the probability of failure is reduced. The reason is that Equity is the owned resource of the microfinance institution; the managers put in place the good practices of management and restrictive rules of loans delivering in order to reduce the losses.

Portfyield is negatively related to the probability of being unsustainable. That means raising the effective interest rate improves the financial sustainability. That corroborates the results of most of the studies. Indeed, Acclassato (2006) cited in (Ayayi and Sene, 2010) notes that in West Africa, financially sustainable MFIs have had to apply interest rates of 84%, and that in Indonesia the Bri Unit Desa charges rates of between 35% and 60%.

Par30 has a positive impact on the MFIs failure. That suggests an inefficient management of loans portfolio or poor management of risk could increase the nonperforming loan of the MFI and reduce their operational self-sustainability. In effect, portfolio quality is mainly dependent on the relationship between loan officer and the borrower. Sometimes the loan officer can provide the loan to a borrower and leave the MFI for another before loan maturity because of several reasons (claiming their bonuses and quitting before having to face repercussions for their bad placement practices). That threatens the loan recovery. Therefore a MFI could fail to reach a financial self sustainability.

The following variables *avloan* and *Borr* related to the outreach also have a negative effect on the MFIs failure. Compared to the non-bank financial institutions (NBFIs), the NGOs and the credit Union (cred_union) had been found to be significant for the MFIs failure. The depth of financial system *(Dfin)* also has a positive effect on the MFIs failure. The constant term is also positively and significantly correlated to the probability of being unsustainable. It assumes without the inclusion of the variables related to MFIs, some external factors, e.g. the regulation policies, corruption, the government's attitudes towards microfinance institutions, market structure, etc., would influence the long lasting of the microfinance.

Table 4: Logit Estimation of MFIs failure

	Model (1)	**Model (2)**
Admexp	.388***	.373***
	(.092)	(.095)
EQu	-2.42***	-2.51***
	(.556)	(.622)
Par30	*.057***	.049*
	(.028)	(.026)
Avloan	-.986***	-1.06***
	(.252)	(.254)
portfyield	-.174***	-.196***
	(.038)	(.055)
depo_loan	.0003	.000
	(.001)	(.001)
mfisize	.206	.197
	(.128)	(.121)
Borr	-.579**	-.649***
	(.232)	(.234)
young	-.231	-.372
	(.492)	(.515)
Mature	.040	-.263
	(.610)	(.621)
NGOs	-1.78**	-1.75**
	(.768)	(.736)
Cred_union.	-1.78***	-1.75**
	(.690)	(.661)
Growth		-.037
		(.053)
DFins		*.081**

		(.042)
Benin		*-.86*
		(1.27)
Burkina Faso		*-1.11*
		(1.33)
Mali		*-.207*
		(1.29)
Niger		*-.353*
		(1.28)
Senegal		*-1.50*
		(1.33)
Togo		*-1.30*
		(1.48)
Constant	*11.16*** *(2.17)*	*12.85*** *(3.05)*
N	556	556
LR chi2(.) test	LR chi2(12)= 141.25(.000)	LR Chi2(20)= 151.45(.000)

Robust standard errors in brackets where *, **, and *** indicate statistical significance at the 10%, 5% and 1 %. Except for LR test where the p-value in brackets

Conclusions

In this paper, we investigated on the determinants of MFIs failure for an unbalanced panel of countries from 2000 to 2014 in the West African Economic and Monetary Union. This investigation is intended to help management of most microfinance institutions to take proper precaution and prevent the occurrence of any fall. Microfinance has to be considered as the provision of financial services to low-income, poor and very poor self-employed people neglected by banks. These services generally include savings, credit as well as other financial services such as insurance and payment services usually using non-standard forms such as character-based lending, group guarantees and short term loans. Then, MFIs' improves the socio-economic conditions for the main part of the population in WAEMU.

Evidences from some countries indicate that the failures of MFIs are as great as their successes. As the results can be used as an early warning system, various factors are assumed to be the cause MFI's collapse. The study revealed that the main drivers of MFIs'failure are related to the poor risk management and the poor management of the operating expense. Risk management is one of the crucial issues necessary for the growth and development of MFIs. The ability to manage operational risk will put the MFI's at competitive positions hence enabling them to survive in their business environment.

The study also found the indicators of outreach reduced the probability of failure. The study came out also that some factors (as portfolio yield, equity and the MFIs'types) contribute to the decrease of the MFIs failure. These results suggest that the MFIs should improve their mechanisms design of loan repayment but also revise the organizational management.

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Appendices A

Table A1: Descriptive statistic of the internal factors from NGOs

	N	Mean	Min	Max
MFIs'Unsustainable	149	.463	0	1
Administrative expense	149	7.97	2.04	24.54
Equity	149	.919	0	1
Average loan	149	503.2	25	3015
Portfolio risk at 30days	149	9.43	0	76.96
Portfolio yield	149	22.27	7.68	36.18
Deposit to loan	149	1.17	0	24.49
MFI'size	149	18.95	9.806	22.61
borrowers	149	15653.25	232	72583
Age	149	12.04	1	23

Source: computed by authors from sample

Table A2: Descriptive statistic of the internal factors from Credit unions

	N	Mean	Min	Max
MFIs'Unsustainable	342	.444	0	1
Administrative expense	342	8.23	2.37	60.99
Equity	342	.883	0	1
Average loan	342	763.81	0	4685
Portfolio risk at 30days	342	9.80	0	100
Portfolio yield	342	20.26	6.2	40.8
Deposit to loan	341	24.05	.001	1343.67
MFI'size	342	19.09	10.27	24.21
borrowers	342	22616.63	0	167089
age	342	14.33	1	42

Source: computed by authors from sample

Table A3: Descriptive statistic of the internal factors from NFBI

	N	Mean	Min	Max
MFIs'Unsustainable	67	.641	0	1
Administrative expense	67	13.90	3.82	113.08
Equity	67	.865	0	1
Average loan	67	645.47	0	3463
Portfolio risk at 30days	67	3.12	0	17.19
Portfolio yield	67	29.92	8.42	78.1
Deposit to loan	66	8.78	0	190.20
MFI'size	67	19.66	11.40	22.86
borrowers	67	17990.23	0	114351
age	149	6.67	1	22

Source: computed by authors from sample