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Agricultural credit supply and the performance of microfinance institutions in southern Togo

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ABSTRACT

The problem of underfinancing in the agricultural sector has always been a subject of consideration for governments. Thus, for decades, programs have been implemented to eradicate poverty and facilitate access to financial services for the most disadvantaged segments of the population, represented mainly by the rural population. Among these programs, microfinance holds a predominant place. However, the latter is increasingly moving away from the agricultural sector, depending on its assessment of the risky nature of agricultural investments. This study sought to analyze the effect of agricultural credit supply on the performance of microfinance institutions (MFIs). Data from the two largest microfinance institutions (FUCEC-Togo and WAGES) were analyzed. The linear regression model was used for the analysis. The results show that the supply of agricultural credit has a negative impact on financial performance ratios of both MFIs in this study. The study recommended that microfinance institutions improve their agricultural financial services to adapt them to the needs of rural populations. The introduction of financial products should be adapted to the needs of producers and compatible with the profits of microfinance structures.

1. Introduction

The agricultural sector in Togo contributes extensively to the economic development of the country. Thus, the problem of underfinancing has always been the subject of consideration by various governments. According to Adessou et al. (2017), several studies were conducted between 2008 and 2012 to assess the constraints of the agricultural finance sector in Togo and to propose appropriate solutions at the request of the Ministry of Agriculture and the UNDP. These studies have proposed various financing mechanisms for the rural sector, both for farmers but also for small businesses in the sector, such as the establishment of a "Fund for Agricultural Development" and a "Guarantee Fund for Agricultural Investments." However, these recommendations have not led to the establishment of public or private mechanisms for sustainable finance in agriculture.

Despite its importance for poverty reduction, the agricultural sector has little or no access to financial services. Nowadays, banking institutions are mainly located in urban areas and do not finance the rural sector, especially not small-scale farmers without the necessary guarantees (land title, direct debit, etc.), to apply for a loan (Adessou et al. 2017). Given the exclusion or insubstantial consideration of the agricultural sector by banks or traditional financial institutions, microfinance is the most important financing source for agriculture in developing countries (Sossou et al. 2017). The microfinance sector has been booming for the past ten years in Togo. According to data from BCEAO (2020), the number of beneficiaries (clients) of MFIs rose from 1.6 million to 2.6 million between 2015 and March 2019. Each year, transactions (credits and deposits) exceed $540 million.

In Togo, as in most West African countries, many microfinance institutions have ignored the underfinancing problems of the rural sector. According to Adessou et al. (2017), in addition to the geographic distance of MFIs from rural areas, which remain concentrated in urban areas, their loan-accessing conditions frequently exclude many farmers.

Several studies have looked at the determinants of the financial performance of microfinance institutions (Adongo and Stork 2005; Tehulu 2013; Ibrahim 2015; Bui 2017; Kanyenda 2019; Gadedjisso-Tossou et al. 2021), etc. According to Adongo and Stork (2005) the viability of the evaluated microfinance institutions is provided by the support funds from donors. For Tehulu (2013), the size of the microfinance and loan intensity, the efficiency of the management staff and the portfolio at risk are the main factors influencing the financial sustainability of East Africa microfinance institutions. According to the findings of Ibrahim (2015) risk-assessing factors such as risk coverage, write-off ratio and outreach indicators e.g. the number of active borrowers and the average loan size, are the determinants of the sustainability of microfinance institutions in Togo. Gadedjisso-Tossou et al. (2021), also mentioned social responsibility (CSR) as a relevant factor for the sustainability of microfiance institutions. Few studies have examined the performance of microfinance institutions concerning the agricultural credit supplies. Empirical studies on agricultural credit and the performance of microfinance institutions are almost nonexistent

in Togo. Given the importance of access to agricultural credit and the role of microfinance institutions, it is necessary to investigate this subject, which is of vital importance. Thus, certain performance ratios of microfinance institutions were analyzed to evaluate the role of agricultural credit supplies.

Investors and government supervisors evaluate the achievement in terms of financial return of microfinance institutions, financial performance is one of the indicators employed (Rosenberg et al. 2003; Bui 2017). According to the literature, the performance of an institution can be viewed from two angles namely: social and financial performances. According to Boye et al., cited in (Fersi and Boujelbéne 2016), social performance measures the MFI's intent to have a social impact and provide a suitable integration in its operation area which highlights the vision of the microfinance institution to fight and eradicate poverty in the community. The social performance itself can be separated into four dimensions: targeting and outreach, adaptation, and quality of services, economic benefits, and social responsibility (Amersdorffer et al. 2015).

Financial performance is the capacity of a microfinance institution to meet its expenses with its income and finance its growth Fersi and Boujelbéne (2016). Financial performance, which is the subject of our study, has attracted a lot of interest from analysts and researchers because it is a key point in achieving the financial sustainability of microfinance institutions. According to Bui (2017), all microfinance institutions need to achieve good financial performance, i.e., must be profitable over the long term to be self-sustaining. Profitability allows an MFI to continue operating and growing.

To assess the financial performance of microfinance institutions, various indicators have been used by different authors. Thus some authors used profitability ratios such as return on asset (ROA) and sustainability ratios like operational self-sufficiency and financial self-sufficiency (Cull et al. 2007; Crombrugghe et al. 2008; Quayes 2015; Fersi and Boujelbéne 2016). On the other hand, some authors have only used profitability ratios to understand the financial performance of microfinance institutions. Given the structure of this paper and according to the findings of some previous research only the return on assets ratio will be used in this paper as a proxy for the analysis of the financial performance of microfinance institutions.

The term “financial viability” in the microfinance sector is often used by many authors to refer to financial sustainability and financial self-sufficiency. As we will see, for some, financial viability is a component of financial sustainability. Thus, according to Ledgerwood (1999), microfinance is considered to be financially viable when it meets its costs with earned revenue. This implies that microfinance relying on donor funds to run its operation cannot achieve financial viability. Self-sufficiency indicators are used to evaluate the financial viability of microfinance institutions. Financial self-sufficiency and operational self-sufficiency are the two levels of self-sufficiency employed to compare MFIs (Ledgerwood 1999).

Christen et al. (1995) suggested three degrees of self-sufficiency be gradually achieved by an MFI. The first one should be operational self-sufficiency. It occurs when the operating revenue covers both the operating costs and the loan loss provision. The second degree is the ability of the MFI to meet its financing costs, operating expenses, and loan loss provision from the earned revenue. The last one, financial self-sufficiency, means the institution can cover both non-financial and financial expenses. Zerai and Rani (2011) listed operational self-sustainability and financial self-sustainability as the two degrees of financial sustainability for an MFI to achieve. The first is reached at the moment when the “institution earns sufficient income from its own earned revenue sources to cover all administrative or operational expenses but relies on a wholly or partially subsidized capital base”. The operational sufficiency indicator is the one most commonly used for this purpose. Operational self-sufficiency is equal to the ratio of total operating income to total operating expenses (including administrative expenses, interest expenses, and loan loss provisions). The last one is reached when the microfinance institution has enough profits to be able to meet all its operating expenses, the inflation cost, its loan losses, and the market cost of funds. Here, the adjusted return on assets ratio is employed.

Finally, the MIX Market defines the term financial sustainability as having an operational sustainability level of 110 percent or more, while operational sustainability is defined as having an operational self-sufficiency level of 100 percent or more. But Meyer (2002) indicated, "Measuring financial sustainability requires that MFIs maintain good financial accounts and follow recognized accounting practices that provide full transparency for income, expenses, loan recovery, and potential losses."

2. Materials and Methods

This study focuses on microfinance in southern Togo. Given the difficulties of collecting data, only the FUCEC and WAGES microfinance institutions located in the south of Togo, more precisely in Lomé, and their branches throughout the country, are the subject of this study. According to an anonymous source, in 2010, the microfinance sector in Togo was heavily dominated by FUCEC, which accounted for 60% of the sector's activity across all parameters, followed distantly by WAGES with 15%. Thus, these two microfinance institutions represent about 75% of the national market share and have more branches serving the agricultural sector.

2.1. Econometric model

Since the data for this research are in the longitudinal form commonly called panel data, we need an appropriate model. The general model can be written as follows:

$$Y_{it} = \beta X_{it} + \varepsilon_{it} \qquad [1]$$

Where Y_{it} represents the value of the dependent variable of unit i at time t (i= 1 …. N and t= 1…T), X_{it} represents a vector of explanatory variables and β its coefficients, and Ɛit is the error term.

This model has a double dimension, so two variation schemes are proposed. These are the fixed effect model and the random effect model.

Fixed effects model:

The model is presented as follows;

$$Y_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it} \qquad [2]$$

In this first model, we assume the uniformity of the coefficients from one individual to another except for the constant. α_i individual effect that is constant over time but specific to each individual.

Random effects model:

$$Y_{it} = \beta X_{it} + \varepsilon_{it} \quad [3]$$

With $\varepsilon_{it} = \alpha_i + \square_{it}$ which are uncorrelated random disturbances. These are the individual effect (individual-specific disturbance) and the residual effect respectively.

2.2. Model specification

In an analysis of the financial performance determinants of microfinance institutions, different ratios or indicators of sustainability are used as dependent variables. Cull et al. (2007); Bogan (2009); Zerai and Rani (2011); Ibrahim (2015); Bui (2017) among others, have examined the financial performance of microfinance institutions using the operational sustainability ratios of ROA (Return On Asset) and ROE (Return On Equity).

This study only uses the operational sustainability ratio as well as the ROA to reach its objectives. These two ratios were chosen because they are the ones that allow the comparison of microfinance structures on the same basis and because their interpretation remains the same regardless of the microfinance structure.

Extending equation 1 and after defining the variables (Table 1), the following regression model was obtained:

$$ROA_{it} = \beta_0 + \beta_1(\text{CREDAGR}_{it}) + \beta_2(\text{CPB/GNI}_{it}) + \beta_3(\text{OETA}_{it}) + \beta_4(\text{PROD}_{it}) + \beta_5(\text{INFRAT}_{it}) + \varepsilon_{it} \quad [4]$$

With i= 1..2 and t= 2014 to 2018.

This same model was estimated for the operational sustainability variable.

3. Results and Discussion

This chapter presents the results of the statistical and econometric analyses. The purpose is to analyze the effect of agricultural credit supply on the financial performance of microfinance institutions.

3.1. Descriptive statistics

As shown in Table 2 below, the operational sustainability variable has a mean of 1 with a minimum and maximum of 0.789 and 1.192 respectively. The variable Return on Asset has a mean of 0.003 with a minimum of -0.04 and a maximum of 0.0279. The mean of the operational sustainability ratios of the two microfinance institutions studied undermines the institutions' good control over their operating expenses and income. In contrast, the low return on asset ratio is proof of the misuse of the majority of the microfinance assets, leading to economic losses. As for the variable CREDAGR, its average is 3 with a minimum of 0.995 and a maximum of 6.44. The agriculture credit variable, according to the needs of the sector is very low and shows a decline year after year. The variables CPB/GNI, OETA, PROD, and INFRAT have a mean of 0.159; 0.122; 127.25, and 0.176 respectively.

3.2. Econometric analysis result

Based on the data structure used in this study, which is unbalanced panel data, it is necessary to determine if random effect or fixed effect best fits our model. Using STATA, the Hausman test was performed and the result was not significant which led us to choose the random effect model as more appropriate for the purpose. Further, the LM test is used to compare whether the random effect regression model is better than the simple OLS regression. The prob. value of the chi-square in the LM test is greater than 0.05, which shows the null hypothesis is accepted and the alternative is rejected. Therefore, the OLS regression model is an appropriate model for this study. Correlation and multicollinearity analysis were carried out. The results are presented in Table (3) and (4) in the appendix.

As presented above, two ratios were used to achieve the objectives of this section. For each ratio, two models were estimated. The first one includes all variables and the second one excludes the country's inflation rate variable.

3.2.1. Return on asset

In the first model (Table 5), only two variables (operational expenses on total assets and the productivity ratio measured by borrowers per staff member) significantly influence the return on asset ratio of the two microfinance institutions analyzed in this study. These two variables have a negative influence on the ROA of the two microfinance institutions and are statistically significant at the 10% level. All other things being equal, any increase in these ratios would lead to a decrease in the ROA of these two structures. These findings can be explained by the fact that the use of the institutions' assets is not providing enough return compared to the expenses. Furthermore, the institution's staff is not efficient enough in serving its customers on time. Most of the time, clients complain about the slow processing of their loan applications, according to anonymous sources. This result confirms that of Kar and Swain (2013); who found a negative correlation between the ROA and the operating expense ratio. On the other hand, this result contradicts that of Bui (2017) who found a positive and significant relationship between the management efficiency ratio (OETA) and ROA.

Table 1. Model variables

Variables	Definition and measurement	Predicted signe
Dependent	ROA= Return On Asset (Net Operating Income - Taxes) / Average Total Assets	
	OS= Operational sustainability (operational self-sufficiency level of 100% or more)	
Independent variable	CREDAGR= the value of agricultural credit in the portfolio of MFIs.	+/-
	CPB/GNI= Cost per borrower/GNI per capita ratio (%) (CPB is a cost per borrower for firm i, in period t)	-
	OETA= Management inefficiency, Operating expense to total asset	+
	PROD= is the productivity of firm i, in period t, which is measured by borrowers per staff member	+
	INFRAT= The country's inflation rate.	-

Table 2. Descriptive statistics

Variables	Mean	Std Dev	Min	Max
OS	1.063	0.144	0.789	1.192
ROA	0.003	0.023	-0.040	0.027
CREDAGR	3.630	2.356	0.995	6.440
CPB/GNI	0.159	0.034	0.133	0.237
OETA	0.122	0.071	0.077	0.286
PROD	127.250	28.694	73	175
INFRAT	0.176	0.030	0.132	0.215

Table 3. Variance inflation factor

Variables	VIF	1/VIF
CREDAG	2.248	0.445
OETA	2.048	0.488
CPB/GNI	1.099	0.910
PROD	1.072	0.930
Mean VIF	1.617	.

Table 4. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) ROA	1.000				
(2) CREDAG	-0.557	1.000			
(3) PROD	-0.575	-0.228	1.000		
(4) CPB/GNI	0.112	-0.277	0.151	1.000	
(5) OETA	-0.716	0.710	-0.099	-0.139	1.000

Table 5. Econometric model results

	ROA1		ROA2		OS1		OS2	
Variables	**coef**	**p-value**	**coef**	**p-value**	**coef**	**p-value**	**coef**	**p-value**
CREDAG	-0.003	0.339	-0.003	0.066*	-0.021	0.234	-0.030	0.028**
CPB/GNI	0.056	0.586	0.039	0.496	0.181	0.765	-0.168	0.675
OETA	-0.195	0.065*	-0.186	0.011**	-1.026	0.085*	-0.837	0.039**
PROD	-0.001	0.053*	-0.001	0.002***	-0.003	0.064*	-0.004	0.003***
INFRAT	0.041	0.812	-	-	0.855	0.453	-	-
Cons	0.089	0.240	0.104	0.003***	1.464	0.047*	1.758	0.000***
	R-squared 0.985		R-squared 0.985		R-squared 0.986		R-squared 0.980	
	F-test 27.141		F-test 49.069		F-test 28.055		F-test 36.653	
	Prob > F 0.036		Prob > F 0.005		Prob > F 0.035		Prob > F 0.007	

Note: ***: 1% significance; **: 5% significance; *: 10% significance.

In the first model, the agricultural credit variable, although having a negative coefficient, is not statistically significant. The negative sign of the coefficient implies that this variable would have a negative impact on the return on assets of these two structures. In the second model, the inflation variable was excluded. In addition to the two previous significant variables, we find that the agricultural credit variable is now statistically significant. All three variables have negative coefficients, which imply that any increase in these variables would have a negative influence on the return on assets of microfinance. As in the first model, the agricultural credit variable has the same coefficient and is statistically significant at 10%. According to this result, any augmentation of 1 million dollars of the fund allocated to the agricultural sector will decrease the return on asset ratio of the microfinance institutions by 0.3%. This can be explained by the fact that the low population density in rural areas increases the need for assets and the expenses to provide financial services but at the same time the repayment rate is general very low (Avocevou 2003). This can justify the unwillingness of some microfinance institutions to serve the rural sector. However, according to some microfinance experts, nowadays it is the knowledge that some institutions have of the agricultural credit services that make the difference in the results at the end of the year.

3.2.2. Operational sustainability

The first estimation results show that only management efficiency (OETA) and productivity have a significant impact on the operational sustainability ratio. The negative sign of their coefficients indicates the opposite direction of this impact. An increase in these variables would lead to a decline in the operational sustainability ratio of these microfinance institutions. This result is confirmed by the findings of Rai et al. (2012); Kar and Swain (2013); Tehulu (2013); Heng (2015); Hossain and Khan (2016); and Usman et al.(2016) who also found a negative influence of the operating expense ratio on operational sustainability. Operating expense indicates the cost of providing services (loans) to generate revenue. Operating expense/assets provide a more accurate picture of the average performing assets for those MFIs that mobilize deposits. It covers the efficiency of the specific cost elements such as salaries and benefits as well as occupational expenses such as rent utilities and travel against the total assets. The inefficiency of handling operations for giving deposits and loans to customers can have a negative impact on MFI (Heng 2015).

Here again, the coefficient of the agricultural credit variable has a negative sign but is not statistically significant. In the second estimation, the agricultural credit variable still has a negative coefficient and is statistically significant at the 5% level. This implies that any increase of 1 million dollars in the value of agricultural credit in the portfolio of these microfinance institutions would lead to a decrease of 3% in the operational sustainability ratio. As in the first estimation, the variables management efficiency and productivity also have negative coefficients, which indicate the negative impact of their increase on the operational sustainability ratio. The reason justifying these findings is the same as in the case of the return on asset ratio.

4. Conclusion

The results of these analyses show us that the supply of agricultural credit has a negative impact on the two financial performance ratios of the MFIs in this study. In fact, according to the negative sign of the coefficients of this variable, we can conclude that any increase in the supply of agricultural credit in the portfolio of these microfinance institutions would worsens financial performance. This could justify the decline in microfinance structures vis-à-vis the agricultural sector. Although the two structures studied are the largest in terms of market share and financial services offered, the insufficiency of the data used in this research does not allow for generalizing the results of this research. There is therefore a lack of detail that would allow us to confirm the detrimental nature of the agricultural credit offer on the financial performance of microfinance structures. It would be even more interesting to obtain data from several microfinance institutions on the 30- and 90-day PAR for the agricultural sector, the repayment rate of agricultural loans, the write-off ratio, the loan loss rate for the agricultural sector, and many other variables over a longer period. It should also be noted that the variables most likely to influence the ROA are missing from our data. One can at least agree on the innovative character of this study which opens the way for other observation on the subject.

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