MICROFINANCE AND FINANCING OF MICRO-ENTREPRENEURSHIP IN BURUNDI

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ABSTRACT

This article aims to identify the determinants of financing microenterprises in Burundi by microfinance institutions. Using the logit model and exploiting data from the loan portfolios of Burundian microfinance institutions, the econometric analysis reveals that the financing of microenterprises in Burundi is strongly correlated with characteristics of these and/or those of their micro-entrepreneurs on one hand, and to the nature of the guarantee presented when applying for credit on the other hand. We conclude by saying that the consolidation of public financial support, the establishment of monitoring policies for these guarantee funds, and the involvement of all stakeholders could substantially improve the financing of microenterprises in Burundi.

Keywords: *Microfinance; Credit; Micro-entrepreneurs; Microbusiness; Burundi*

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INTRODUCTION

Microenterprises do not have collateral to guarantee access to credit in formal financial institutions. They are a missing link in funding. This study aims to identify the factors that predetermine access to financing for microenterprises. In effect, Microenterprises as well as medium and large enterprises need financial resources during their development. Two sources of financing are offered to them, namely bank resources and microfinance resources.

However, Tallon (1988) and Levratto (1990) show that their access to bank financing is almost non-existent. It's because of their character of high informality and the precarious socioeconomic characteristics of micro-entrepreneurs (Fauré, 1992; Messah & Wangai, 2011).

In this context, the first experiences of microfinance were born (Boyé, Hajdenberg & Poursat, 2006; Abalo, 2007) and considered an alternative financial solution (Obebo, Wawire, & Muniu, 2018).

In practice, microfinance has succeeded in offering financial and non-financial services to this type of clientele, long qualified as insolvent, thanks to the solidarity credit model (Armendariz de Aghion and Morduch, 2005; Boyé, Hajdenber,g and Poursat, 2006; Kobou, Tabi, and Mougou, 2009).

This is how Burundi is trying to encourage MFIs to finance microenterprises through a series of policies, in particular, the rural microcredit fund (FMCR) from 2002, the guarantee fund to support the financing of rural micro-entrepreneurs or to create microenterprises for the benefit of young people, microcredit to the economically active poor (MCPEA), the Burundian youth employment agency (ABEJ) since 2010, the Rural Youth Jobs (EJR) since 2013 and the Burundian Office for Employment and Manpower (OBEM) set up in 2015 to name a few. The population concerned by these training courses is composed particularly of young people and women (Republic of Burundi, 2006, Art.2; Republic of Burundi, 2014b). For example, in 2016 the guarantee supported micro-enterprises for an amount of BIF 321832800 (i.e. USD 176,897.497)[1] and reimburses 60% of the amount of the credit in the event of default by the micro-entrepreneur. The MFI will bear only 40% of the total amount of the credit (Republic of Burundi, 2014b). This encouragement would aim to support the financing of microenterprises of populations on the margins of bank finance (Republic of Burundi, 2014a).

However, the analysis of the portfolios of microfinance institutions reveals that microenterprises are less and less financed. For example, productive microcredits, which represented 53.25% of the portfolios of microfinance institutions in 2012, represented only 25.1% in 2018 (Network of Microfinance Institutions in Burundi, 2003-2015; Bank of the Republic of Burundi, 2012-2018). It is this observation that motivated this research. So, what are the determinants of access to productive financing in MFIs in Burundi?

LITERATURE REVIEW

Theoretical Review

For the financing of microenterprises, these have mainly two formal sources: those banks and those of MFIs. However, Levratto (1990) shows that their access to bank financing remains limited.

[1] At the exchange rate of 19/09/2022, 1USD=156025.772 BIF. But this rate is variable from day to day

For Stiglitz and Weis (1981); Spence (1973) and Stiglitz (1990), this weak bank financing could be explained by the inherent characteristics of these types of activities. Among these factors, there is the informational asymmetry before and after obtaining the loan linked to these activities, the lack of collateral, and the weak and/or almost non-existent organization. Even in certain situations, when these guarantees exist, micro-entrepreneurs do not have the documents which attest to their right of ownership. For this reason, these guarantees cannot be subject to administrative use.

This is the case, for example, in Burundi where micro-entrepreneurs cannot mortgage their land assets since these assets are not registered in the land registry services. Most of these entrepreneurs only have membership documents drawn up by local notables but which are not authenticated with competent services. However, the decree on the land code in Burundi in its article 150, p.27, stipulates that "no hypothesis exists if it is not registered on the land titles or land certificate" (Republic of Burundi, 2011).

So, these documents cannot be the subject of an administrative act, even less in a transactional operation. Also, if possible, these banks would have to incur additional costs through a law firm to sue the defaulting borrower while these costs will not be shared with the customer.

Gomez (2008) shows that the refusal of financing for micro-enterprises would be linked to the risk of their activities compared to large companies. For him, the small size of the ME characterized by its turnover, the number of its employees and its annual balance sheet, the pluriactivity, and the accumulation of all the tasks in the hands of the owner reduce the production potential of the ME and increase the level of vulnerability. So, "poor micro-entrepreneurs are far from pursuing competitiveness strategies based on learning and are not motivated by entrepreneurial objectives […]. They do not accumulate capital by reinvesting profits […]".

For Agarwal, Rahman, and Errington (2009), Deininger, Savastano, and Xia (2017), these risks are aggravated by the lack of accessibility in rural areas, the existence of factors beyond the control of the farmer such as rainfall, lack of skills of the micro-entrepreneur, investments, spatial factors such as accessibility in have a significant impact on the profitability of rural microenterprises. The authors show that the use of land and labor unskilled family labor as factors of production reduces the level of profitability of agricultural MEs.

To minimize these risks related to the poor quality of these guarantees, these banks prefer either to ration the borrower whose only potential guarantee is these types of documents or to partially ration him when he has the possibility of providing an additional guarantee.

Thus, to improve access to finance for microenterprises, Nugroho, Rusydiana, and Tubastuvi (2018) offer a series of solutions that MFIs can exploit. Among these solutions, these authors mention the creation of a communication platform between these MFIs and MEs to promote the quality of information, the application of relatively low-interest rates, technical support for microenterprises after loans, the development of cooperation between MFIs and the State institution responsible for supervision. This last solution will, for example, make it possible to avoid the over-indebtedness of a potential micro-entrepreneur to finance in each MFI.

But this is only possible if there is a platform on which all microenterprises are registered with specific codes to identify each microenterprise and access its financial situation. This is when each MFI will be able to identify the microenterprise that comes to request pre-financing and monitor its debt situation. The basic idea is to ensure that

the borrower will be able to repay his loan on the agreed dates. Added to this is the offer of specific financial products that must meet the needs of these microenterprises. This is the case with mutualized loans, and deferred loans especially for the agricultural sector, with fairly short repayment terms.

Approaching the same idea, Osano and Languitone (2016) affirm that this improvement in access to financing for microenterprises can only be possible if there is a development of guarantee funds at subsidized interest rates, the establishment of a technical support system and post-credit follow-up service. These factors will then make it possible to reduce the phenomena of moral hazard and adverse selection that characterize these micro-enterprises.

Continuing on the same idea, Ramboarison-Lalao (2015) starts from the Malagasy case and shows that the low level of productivity of microenterprises can be linked not only to gender but also to the level of training of their promoters. This author justifies his position by the fact that women are less productive than men on the one hand and that those who are educated generally engage in productive activities than those who are illiterate on the other hand. For this same author, the latter is then less likely to apply for credit from banks.

For Arellano (1994), women invest more in informal microenterprises compared to men and those would disappear in the medium and long term. But, Levratto (1990) concludes that it is not the fact of being a woman which causes a problem with the level of productivity of a company and by there, of access to credit, but rather "their level of education, their level of expertise in the field, their attachment to the activity" (Zidani and Jarboui, 2011; McPherson and Rous, 2010).

Lin, Wang, Gan, Cohen, and Nguyen (2019) conclude that there is a positive correlation between the individual's level of education and access to credit. For example, micro-entrepreneurs who have a low level of education have more difficulty accessing credit than others (FAO (2019). For her, it is essential to be able to read and write to manage transactions and financial affairs, keep records, fill out and sign forms and invoices".

But Djaowe and Maiday (2017) in the case of Cameroon do not confirm this positive effect of the level of education on access to financial services. These authors find that access to formal financial services is linked to "the individual's income level, status, and age than on their level of education or marital status.

Along the same lines, Messah and Wangai (2011) said that it is not the level of education that causes problems in access to finance. These authors show, for example, that the use of rigid administrative procedures in the processing of microenterprise credit application files, the absence of markets for the sale of microenterprise products, and the predominant use of the individual loan model in MFIs force microenterprises to access credit (Mayoukou and Kertous, 2015). They show that the demand for credit is linked not only to the level of the interest rate but also to the income of the borrower. This last factor refers to the level of wealth of the borrower. This demonstrates his ability to keep his commitments. It should also be noted that in the case of the individual loan, each borrower must be able to provide a substantial guarantee to the MFI which covers at least the amount of the loan requested. But at this level, the work of Armendariz de Aghion and Morduch (2005) shows that the solidarity loan model would allow more microenterprises to access financing than the individual loan model.

This is why the most common and oldest model in microfinance is that of group lending. As such, several works (Varian, 1989; Guérin, 2000; Mesquita, 2009; Senior, 2012) show that this mechanism allows MFIs to remedy not only the problem of the lack

of information on the customer or his activity but also to set up and lend to people who were once considered insolvent. With the help of this solidarity loan mechanism, MFIs then managed to prosper where commercial banks could not hold out (Brana & Jégourel, 2011; Mustapha, 2014). This technological flexibility in granting credit has had the corollary of the possibility of granting microcredits to micro-entrepreneurs who, individually, are insolvent (Guérin, 2000; Haldar and Stiglitz, 2016).

On the supply side, Jacquet and Pollin (2012) questioned the relationship between financial systems and growth. They show in their analysis that the presence of financial systems in the locality makes it possible to mobilize savings, which in turn finances the economy. However, in developing countries in general and Burundi in particular, the financial system remains less developed. This is made up of 12 banks. These are more centered in urban towns, especially in Bujumbura and some provinces of the country such as Kirundo where there is no presence of banks.

For Stein, Ardic, and Hommes (2013), the low access to financing for micro-enterprises is explained above all in developing countries by the absence of infrastructure, the weak development of financial markets, the weakness of the legal and institutional framework or the absence of risk management (Doumbia, 2011). All these factors only increase the reluctance of financial institutions vis-à-vis microenterprises. Indeed, this situation of uncertainty plays negatively not only on the supply of financial services but also on their demand. This theoretical work is corroborated by empirical work.

Empirical Review

Empirical work corroborates these theoretical results. For example, Ngige Ng'ang'a and Sakwa (2015) show that the will of the entrepreneur enabled more than 93.9% of the micro-entrepreneurs surveyed to access financing. The level of training as well as the support of his family or circle of his friends explains it in more than 64% of cases and the technique of individual loan would be more preferred by 52% of the micro-entrepreneurs questioned compared to that of shared loan.

For Mol-Gómez-Vázquez, Hernández-Cánovas, & Koëter-Kant (2019), certain factors lead to self-exclusion. These are mainly the interest rate, procedures for granting the loan, the guarantee, and the waiting period for granting the loan. These authors claim that in Lithuania the lack of collateral explains the reasons for not applying for a loan from a bank up to 36.36%. While the procedures would explain it in 21.21% of cases in this same country. In France, in 25.59% of cases, the non-demand for bank loans in SMEs is linked to the complexity of administrative procedures. This proportion is 20.95% in Hungary.

This self-exclusion is more pronounced among women than among men and especially in rural areas (FinAccess, 2009). Indeed, the absence of documentation on the characteristics of the financial products offered, the illiteracy of the micro-entrepreneur, the geographical factors, and the lack of employment or national identity are the main factors that prevent individuals from using the financial services of banks (Al Mamun, Fazal, and Muniady, 2019).

According to Guérineau and Jacolin (2014), the use of these services differs according to "gender, level of education, religion, level of income, age or level of urbanization". These factors are major constraints for women in Africa than in other countries.

Chowdhury & Alam (2017) concluded that the socioeconomic characteristics of the micro-entrepreneur are decisive in access to financing from a financial institution.

For example, the lack of guarantees for small businesses (66%), while the close relationship between the micro-entrepreneur and the lending institution (75%), the level of education of the micro-entrepreneur, his experience in the field allows access to financing (74%). For these authors, the educated micro-entrepreneurs acquired during their training skills and developed capacities allowing them not only to anticipate and/or manage risks in their microenterprises but also to keep accounting books of their activities. These practices allow the bank to have traceability on the background of these microenterprises.

For Karanja, Kiragu Mwangi, and Ngigi Nyakarimi (2014), there is a positive relationship between the nature of the guarantee offered by the micro-entrepreneur and access to credit. Indeed, these authors conclude that the simplification of credit granting procedures as well as the volume of the loan offered to micro-entrepreneurs would increase their access to more than 75% of cases.

Talking about the factors likely to enable microenterprises to access finance, Banerjee & Dufflo (2012) state that any applicant for a loan must meet the minimum conditions required. These conditions refer to the address of the applicant, for the presentation of a guarantee.

This is why Osano & Languitone (2016) conclude in their study in Mozambique that the provision of guarantees for a microenterprise when applying for a loan increases the probability of having one. For these authors, the guarantee constitutes a factor that reduces the risk of default. So, a microenterprise that is unable to provide a guarantee will be denied access to credit, pure and simple. In fact, these guarantees can be monitored, and technical support provided to micro-enterprises.

For Bekolo and Beyina (2009) based on a study on SMEs in general and innovative ones in particular in the Cameroonian case, the main constraints of access to financing for innovative SMEs are the profitability of the project being the subject of credit application (83.33%), personal contribution (75.00%), customer solvency (68.33%) and mortgage (51.67%).

Shaw (2004) in Sri Lanka found that the majority turn to survival activities than high-productivity ones. The author shows that 64.43% of microenterprises surveyed produce for self-consumption. Only 35.57% of the microenterprises surveyed carry out commercial activities. This choice towards self-consumption activities rather than commercial activities would be linked to geographical, socio-cultural, and financial factors which force some micro-entrepreneurs to move towards less profitable MEs.

So, the level of training of the micro-entrepreneur, the level of his experience in the sector, the lack of capital to invest, the sex of the promoter, and the deadlines for the credit requested become decisive in the success of the business (Taka, 2013), Boukar (2009) and Lamiraud & Vranceanu (2018). These characteristics play a decisive role in the development of the microenterprise. These authors show, for example, that women are less productive (1.7%) than their counterparts (36.2%) and that they are also reluctant compared to men when it comes to decision-making, especially in the area of money.

Booth and Nolen (2009) and Barber and Odean (2001) find the same results. According to these authors, microenterprises whose first manager is a woman would be less likely to obtain financing from a lending institution than those headed by a man. According to Djaowe and Maiday (2017), the individual's income level, salary status, and age have a positive impact on access to finance, while their level of education and marital status has no significant effect on access to finance in formal institutions.

This is why in their empirical study on Uganda, Buyinza, Mutenyo, and Tibaingana (2018) conclude that there is a positive relationship between the level of business sales, possession of a bank account, and membership in a professional association and access to formal credit. However, in reality, the majority of micro-enterprises do not have an account in a formal financial institution and produce mainly for consumption and not for marketing (Shaw, 2004).

METHOD

Starting from the fact that the MFI faces two types of microenterprises. This can be either low risk or high risk. In fact, this variant is not observable (Stein, 2002). Microfinance can only optimize its profits based on the socioeconomic characteristics of the microenterprise and/or its promoter, which are observable. It is then based on these characteristics that the MFI can decide whether to grant him a loan or not to grant him a loan. Similarly, these characteristics can lead the micro-entrepreneur either to request a loan or to self-exclude when he finds that he does not have the minimum conditions required by the MFI. In this research, we define the dependent variable as "microenterprise financing" and will be denoted (fin_micr).

To estimate this variable, we rely on the work of Mayoukou and Kertous (2015) and Diaz-Serrano & Sackey (2018). Thus, we assume that for a given micro-entrepreneur, the decision to apply for credit in an MFI depends on the cost-benefit analysis. This means that before deciding to apply for a loan, it analyzes whether it meets the minimum requirements.

Similarly, the MFI before granting a loan to a micro-entrepreneur analyzes whether the latter will be able to repay his credit. In each case, the cost and the gain correspond to private information. By considering a variable that takes into account this private information, it is called "latent variable" representing the obtaining of credit requested by a micro-entrepreneur, given its characteristics. We can then write:

$$Y = \beta X_i + \varepsilon_i$$

For the micro-entrepreneurs who requested and who received the requested loan, the dependent variable takes the value 1. For those who requested and who did not receive the requested amount, the variable takes the value 0. This gives the system of the following equation:

$$Y_i = \begin{cases} 1 \; si \; Y_i^* > 0 \\ 0 \; sinon \end{cases}$$

It is a binary variable that takes the value 1 if the microenterprise requested credit and obtained it and 0 otherwise. The latent variable Y_i^* is unobservable. It depends not only on the socioeconomic and demographic characteristics of the microentrepreneur (age, sex, marital status, level of education, level of wealth) but also on the characteristics of his microenterprise (credit repayment period, amount requested, sector of activity) which are observable.

Empirical model

The modeling of qualitative variables requires the use of particular models such as the logit and probit models which can only take two modalities compared to the Tobit model used in the case of a limited dependent variable or the much larger least squares model used in the case of quantitative variables (Pirotte, 2011).

In this study, we relied on the work of Diaz-Serrano and Sackey, (2018) in the case of Ghana. Because these two countries (Burundi and Ghana) have the same socioeconomic characteristics and microenterprises have the same characteristics.

Thus, in this research, the explanatory variable (financing the microenterprise) is a qualitative variable with two unobservable options. This is the decision of the MFI to grant the microcredit or not. For the theoretical framework of the model, it will be a question of identifying the factors (explanatory variables) likely to influence the decision of the MFI to grant financing to the activities of micro-entrepreneurs (variable to be explained). Due to the dichotomous nature of the variable to be explained, we use a logit model. This model is less information intensive than those obtained from the probit model. The model assumes that the distribution of the error term follows a logistic law.

He has :

$$Y_i^* = \beta_0 + \sum_{i=1}^{k} \beta_i X_{ij} + \varepsilon_i \quad (1)$$

When the variable Y_i^* which represents the decision to obtain or not obtain the credit requested. It is an unobservable variable defined according to a matrix Xi of observable characteristics and which are explanatory variables.

i is the micro-entrepreneur (i= 1……n).

βi is a vector of k parameters or unknown coefficients. εi is the error term associated with the nth observation when y_i takes the value i. It is assumed to be normally distributed with constant variance.

To capture the effect of the size of the credit requested on the probability of obtaining it, we started from the microcredit threshold proposed by Lhériau (2009) and Montalieu (2002). According to these authors, a micro-credit is a loan of an amount not exceeding 150 euros or 20% of national income per capita.

The logit model depends on the assumption of the logistic distribution of the error term in equation (1). Its cumulative probability function (Distribution Function) is given by:

$$P_i = F(Z_i) = F\left(\theta + \sum_{i=1}^{n} \beta_i X_i\right) = \frac{1}{1+e^{-z}} \quad (2)$$

P_i is the probability that a micro-entrepreneur requests and obtains credit from an MFI, given his characteristics or those of his microenterprise X_i. θ and β are parameters to be estimated. The probability that a micro-entrepreneur resort to other sources of financing is given by $(1 - P_i)$. After mathematical manipulations, equation (2) becomes:

$$(1 - P_i) = \frac{1}{1+e^{zi}}$$

Or $\frac{P_i}{1-P_i} = \frac{1+e^{zi}}{1+e^{-zi}} = e^{zi}$ is also the probability of obtaining a loan requested from an MFI. By taking the logarithm of this ratio according to Lemeshow & Hosmer (1982), we have:

$$Z_i = \ln\left(\frac{P_i}{1-P_i}\right) = \theta + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n \ (3)$$

Given the error term in the probability estimate, equation (3) becomes:

$$Z_i = \ln\left(\frac{P_i}{1-P_i}\right) = \theta + \sum_{i=1}^{n} \beta_i X_i + \varepsilon_i \ (4)$$

The coefficients of the logit model, therefore, present the variation of the logarithm of the ratio of the share of a force of each variable associated with a variation of the explanatory variables.

Source of data to be used

To answer our problem, we used secondary data on the supply of performing loans. These were collected from Burundian MFIs. They allowed us to have information on the explanatory factors for the granting of credit (size effect) by MFIs.

Explanatory variables

The explanatory variables concern both the characteristics of the microenterprise or those of the micro-entrepreneur and those related to the guarantees presented when applying for a loan. Using Stata 16, the descriptive statistics of all the variables that have been retained in the econometric model are recorded in Appendix 1 and 2. The quality of the model predicts 76.58% of correct answers (Appendix 3). The econometric results can be found in Appendix 4 and those on the marginal effects in the eighth column of Appendix 4.

RESULTS AND DISCUSSION

The profile of the micro-entrepreneur appears as a determinant in the financing of microenterprises in Burundi. Indeed, micro-entrepreneurs working in trade (+0.05) are more financed than those working in the agro-pastoral sector (-0.57). This may be related to the level of return on investment which is positively correlated with the sector of activity (Bakehe, 2016; Atanasova and Wilson, 2004). They justify this choice by the level of uncertainty in the sector of activity in which the microenterprise evolves as well as the cost that the lending institution must bear to minimize the risk of default. In practice, these costs are not shared between the debtor and his creditor.

According to Bédécarrats & Marconi (2009) and Kodjo, Abiassi, and Allagbe, (2003), micro-entrepreneurs operating in the agricultural sector are riskier than those whose microenterprises operate in trade. Added to this is demand, which remains very uncertain in rural areas than in urban areas. It would therefore be desirable for the Burundian State to further develop mechanisms aimed at supporting agricultural micro-enterprises such as support services for the activities of MFIs in rural areas, in particular guarantee funds for agricultural providence, especially for agricultural products subject to warranty. (Messomo Ellé, 2017).

But this situation could also reveal the absence of follow-up measures on the ground. This would then require the establishment of a monitoring committee by the Burundian State on the use of guarantee funds intended to promote the financing of agricultural microenterprises. Similarly, Burundian MFIs do not tend to target female micro-entrepreneurs more than male micro-entrepreneurs. What matters for MFIs is the ability of the borrower to meet his commitments with his creditor (Wahidi & Paturel, 2016; Nsengiyumva, 2021).

As for guarantees, Burundian MFIs are still reluctant to finance microenterprises based on the solidarity guarantee (cot_sol) only (-0.30), but when this guarantee is associated with other guarantees (cot_solchap) (+1.605). The sign (-) could reflect the quality of solidarity between the solidarity groups or other conditions necessary for the solidarity groups to produce their expected effects. So Kodjo, Abiassi, and Allagbe (2003) show that the action of the MFI in the formation of solidarity groups remains essential and irreplaceable such are the size of the solidarity groups, the homogeneity of the members of the same solidarity group, the independence of the microenterprises of the solidarity groups (Guérin, Palier, and Prévost, 2009).

The use of guarantee funds has a positive effect. This shows that the State must improve the management of already existing guarantee funds for agricultural micro-

enterprises and initiate others for non-agricultural micro-enterprises, ensure their decentralization at the provincial or even municipal level, also initiate a coordination framework at the national level between the different actors involved in the financing of microenterprises so that they produce the expected effects (McPherson and Rous, 2010; Behr, Entzian and Güttler, 2011).

Similarly, the use of the land title as collateral positively affects. In the case of Burundi, most of the land of micro-entrepreneurs is not registered in the cadastre service. According to article 150 of the land code in Burundi, "no hypothesis exists if it is not registered on the land title or land certificate[..]" (Republic of Burundi, 2011). In this context, those documents cannot be used administratively by MFIs, especially when the institutional and legal framework is not independent (Nsengiyumva, 2021).

We find a negative relationship between the size of the credit and the financing of the microenterprise (md_usd = -.2247623). This shows that the more the credit requested by the micro-entrepreneur increases, the less chance he has of obtaining it. According to Stiglitz (1990), the level of risk incurred by the MFI increases with the size of the loan. Likewise, regulation can be a constraint. For example, no MFI can take a risk on a client that exceeds 2.5% of its deposits (Republic of Burundi, 2006). To this end, the formation of MFIs in "consortia" would allow them to build a solid financial base to meet the increasingly important financial needs of microenterprises. However, very few micro-entrepreneurs can afford credit insurance. As such, the establishment of insurance mechanisms by the political authorities could reduce these constraints (Nsengiyumva & Bigirimana, 2021).

CONCLUSION AND SUGGESTION

This article aimed to identify the determinants of access to productive financing in Burundian MFIs by microenterprises. Econometric data revealed that the financing of microenterprises is positively correlated with the profile of micro-entrepreneurs. For example, those in commerce are more likely to obtain financing than those in agriculture. This highlights the need to put in place support measures for agricultural microenterprises in addition to guarantee funds intended for them so that these guarantee funds can produce the expected effects. Without these support measures, MFIs tend to finance microenterprises operating in non-agricultural sectors than those in the agricultural sector. This reflects the importance of setting up guarantee funds to support non-agricultural microenterprises. Some MFIs are also more selective than others. For example, a member of MUTEC, WISE, or CECM would have a better chance of obtaining funding than that of COSPEC or TURAME. Finally, this article opens the possibility of questioning the possibility of improving the use of warranties for agricultural micro-entrepreneurs.

Appendix
Appendix 1: Correlation matrix

	com_as	agr_ass	fem	mar_e	cot_sol	cot_solch	fon_gar	tt	ec_24m	md_usd	zon_urb	imf_mut	imf_cosp	imf_wise	imf_tm	imf_cecm
com_as	1.000															
agr_ass	-0.24	1.000														
fem	0.062	-0.212	1.000													
mar_e	0.055	-0.135	0.078	1.000												
cot_sol	0.042	-0.295	0.039	0.072	1.000											
cot_solch	-0.121	0.392	-0.115	-0.048	-0.331	1.000										
fon_gar	0.063	-0.075	-0.112	0.044	-0.363	-0.084	1.000									
tt	0.283	0.050	-0.089	-0.028	-0.314	-0.071	-0.080	1.000								
ec_24m	-0.071	0.184	-0.088	-0.227	-0.095	-0.064	-0.093	-0.057	1.000							
md_usd	-0.006	0.244	-0.332	-0.041	-0.202	0.094	0.173	0.188	0.144	1.000						
zon_urb	0.053	-0.414	0.357	0.135	-0.003	-0.155	0.125	-0.175	-0.167	-0.299	1.000					
imf_mut	-0.167	-0.175	0.297	0.061	-0.149	-0.095	-0.107	-0.09 0	-0.013	-0.348	0.392	1.000				
imf_cosp	-0.229	-0.081	-0.209	0.029	0.486	-0.171	-0.223	-0.188	0.022	0.064	-0.641	-0.252	1.000			
imf_wise	-0.105	-0.110	0.204	-0.004	.062	-0.059	-0.010	0.075	-0.067	-0.176	0.247	-0.076	-0.158	1.000		

imf_tm	-0.123	-0.129	-0.121	0.049	-0.308	0.112	0.663	-0.066	-0.097	0.127	0.288	-0.089	-0.185	-0.056	1.000	
imf_cec	0.247	-0.200	0.064	0.065	0.190	-0.132	-0.128	-0.125	-0.070	-0.031	0.543	-0.167	-0.348	-0.105	-0.123	1.000

Appendix 2: Descriptive statistics					
Variable	Obs	Mean	Std. Dev.	Min	Max
com_as	901	.1887	.3915	0	1
agr_ass	901	.2031	.40254	0	1
fem	901	.3962	.48938	0	1
mar_e	901	.9079	.28936	0	1
cot_sol	901	.5927	.4916	0	1
cot_solch	901	.0699	.2552	0	1
fond_gar	901	.0866	.2814	0	1
tt	901	.0633	.2436	0	1
ec_24m	901	.1254	.3314	0	1
md_usd	901	.6115	.4877	0	1
zon_urb	901	.4395	.4966	0	1
imf_mut	901	.1077	.3101	0	1
imf_cosp	901	.3441	.47533	0	1
imf_wise	901	.0456	.20852	0	1
imf_tm	901	.0610	.2395	0	1
imf_cec	901	.1876	.39059	0	1

Appendix 3: Quality of the model			
Logistic model for fin_micr			
Ranked values	D	~D |	Total
+	615	169	784
-	42	75	117
Total	657	244	901
Sensitivity		Pr(+| D)	93.61%
Sensitivity		Pr(-|~D)	30.74%
Predicted positive values		Pr(D| +)	78.44%
Predicted negative values		Pr(~D| -)	64.10%
True value prediction rate		Pr(+|~D)	69.26%
False value prediction rate		Pr(-| D)	6.39%
Rate of values + in the total+		Pr(~D| +)	21.56%
Rate of values - in the total -		Pr(D| -)	35.90%
Model quality			76.58%

Appendix 4: Robustness of the model

Logistic regression					Number of obs = 901		
					Wald chi2(16) = 127.73		
					Prob > chi2 = 0.0000		
					Pseudo R2 = 0.1279		
fin_micr	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]		dy/dx
com_ass	.0576227	.2568949	0.22	0.823	-.445882	.5611275	.0100842
agr_ass	-.5733642**	.2884327	-1.99	0.047	-1.138682	-.0080464	-.1102846
fem	.0161844	.1970665	0.08	0.935	-.370059	.4024277	.0028575

mar_e	.1911735	.3112085	0.61	0.539	-.4187839	.801131	.0351974
cot_sol	-.3000215	.3007498	-1.00	0.318	-.8894803	.2894374	-.0522124
cot_solchap	1.605397***	.6355079	2.53	0.012	.3598241	2.850969	.1870835
fond_gar	.5277134	.8213677	0.64	0.521	-1.082138	2.137565	.0822619
tt	.3292349	.6532231	0.50	0.614	-.9510588	1.609529	.0536396
ec_24m	1.060096**	.3770867	2.81	0.005	.3210192	1.799172	.1483116
md_usd	-.2247623	.1853599	-1.21	0.225	-.588061	.1385363	-.0391769
zon_urb	-2.102229***	.7596891	-2.77	0.006	-3.591192	-.6132658	-.3858782
imf_mute	1.997048***	.5393658	3.70	0.000	.939911	3.054186	.2217968
imf_cosp	-1.311784**	.5996394	-2.19	0.029	-2.487056	-.1365126	-.2536635
imf_wise	.9812315*	.547498	1.79	0.073	-.0918449	2.054308	.1328479
imf_tm	-1.148978	.9304703	-1.23	0.217	-2.972666	.6747108	-.2495521
imf_cecm	1.11126***	.4197587	2.65	0.008	.288548	1.933972	.1605512
_cons	2.118753***	.6424827	3.30	0.001	.8595102	3.377996	

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