Determinants of Microfinance institutions' access to bank credit in Senegal

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Abstract

The financial relationship between banks and microfinance institutions (MFIs) is a key element of the debate on establishing accessible financial systems in sub-Saharan countries. Today, MFIs face strong and growing pressure in terms of resources, especially due to an increasing demand for funding, both in number and volumes. However, there is virtually no academic literature on refinancing between banks and MFIs. Also, the existing empirical literature on microfinance access to external funding has to some extend neglected the importance of bank financing funds, focusing more on international external funds. The purpose of this paper is to analyze the access of MFIs to external funds from the local banking system. Specifically, we examine the link between an MFI's access to Banks funding and its maturity and performance. From a panel of 156 Senegalese MFIs, we have created a fixed-effects model to help explain the influence of key variables (MFI size, profitability, risk, etc.) on an MFI's ability to raise funds from the local banking system. The results show that bank financing generally benefit large MFIs, those with significant tangible assets and with a high quality portfolio. Profitability does not seem to be a key determinant of MFI's access to bank funding. However, the funds deposited by microfinance organizations in banks act as a financing guarantee and strongly help MFIs to raise funds from local commercial banks.

1. Introduction

At the sectors' current level of development, access to external funding is an important issue for microfinance institutions (MFIs). Today, many MFIs have matured and aspire to external financing to meet the increasing needs of their clients. This strategic orientation towards external resources is explained, in particular, by the willingness of mature MFIs to emancipate themselves from donors and certain regulatory constraints. In Latin America, for example, NGOs are turning into banks to increase their resource mobilization potential (see D'Espallier et al., 2017; Hartarska and Nadolnyak, 2007). This phenomenon is discernible through the increasing number of publications on access to the capital market of microfinance (Dorfleitner et al., 2016; Brière and Szafarz, 2015; Mersland, 2013; Mersland and Urgeghe, 2013; Mersland and Strøm, 2010; Ghosh and Tassel, 2013; Reille and Forster 2008; Reille *et al*., 2011; Tchuigoua, 2016; Jayadev and Rao, 2012). This research often analyze the link between the access to foreign capital and certain MFIs characteristics such as size, financial and social performance, regulation, and governance. These studies have focused mainly on Latin America and Asia, where microfinance has the largest access to foreign capital. However, this trend is less evident in other regions such as West Africa, where MFIs have access to public savings and less developed financial markets. In this context, local banking resources are the main source of external funding for mature MFIs. Where local resources exist, it is preferable for MFIs to mobilize them. Unlike foreign capital subject to foreign exchange risk, internal banking resources may be less risky and more beneficial to the domestic economy. Unfortunately, the literature has paid little attention to the role of banks in the refinancing of MFIs. We attempt to remedy this by analyzing the access of MFIs to external resources from local commercial banks.

In Senegal, the microfinance sector has experienced exceptional growth since its appearance in the late 1980s (Fall, 2015). The number of microfinance institutions jumped from 18 in 1993 to over 800 in 2008 then fell to 238 in 2011, due to the new regulation that came into force in 2008[1]. The microfinance sector is organized by the Ministry of Economy and Finance in collaboration with BCEAO[2]. The sector is dominated by a few large networks that hold most of the market share in terms of the amount of savings, the credit, and the number of members. One of the current major challenges for microfinance in Senegal is working together with the traditional banking sector. Their cooperation is handled by State authorities. A National Microfinance Support Fund has been set up to promote the refinancing of microfinance by local banks. Investment funds are created by NGOs and development partners to further encourage banks to refinance the microfinance sector. Considering the structure of the financial system and the diversity of the demand, the cooperation between banks and MFIs—especially for refinancing—is a decisive factor in the success of financial intermediation in Senegal and in the rest of the sub-region. However, there have been no studies examining this issue. This lacuna is neither specific to Senegal nor to the UEMOA region. Empirical studies on the relationship between banks and MFIs have generally focused on the possible ways in which both sectors can move closer together (Fall, 2010, 2009).

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[1] Prior to 2008, the sector was composed of three categories of MFIs: the mutual benefit societies or savings and credit cooperatives (MEC), the savings and credit groups (GEC) and the structures under convention (SSCC). Currently, there is single license regime and GECs have disappeared. One of the objectives of this new regulation has been the concentration of the sector, with the disappearance of the savings and credit groups (GECs).
[2] Central Bank of West African States

The purpose of this paper is to analyze the access of MFIs to external funds from the local banking system. Specifically, we examine the link between an MFI's access to Banks funding and its maturity and performance. The existing empirical literature on microfinance access to external funding has to some extend neglected the importance of bank financing funds, focusing more on international external funds (Mersland, Randøy, and Strøm, 2011; Mersland and Urgeghe, 2013; Hartarska and Nadolnyak, 2008). We extend this strand of literature by exploring the importance of the factors that influence the ability of MFIs for their access to domestic bank financing. To our knowledge, this article is the first, to empirically investigate the financial relationship between banks and Microfinance. To date, no empirical study has been conducted on this issue, especially in sub-Saharan Africa. From a panel of 156 Senegalese MFIs, we have created a fixed-effects model to help explain the influence of key variables (MFI size, profitability, risk, etc.) on an MFI's ability to raise funds from the banking system. The results show that bank financing generally benefit large MFIs, those with significant tangible assets and with a high quality portfolio. Profitability does not seem to be a key determinant of MFI's access to bank funding. However, the funds deposited by microfinance organizations in banks act as a financing guarantee and strongly help secure funds from partner banks. The first section of this paper (Section 2) highlights the significant role financing plays in the relationship between banks and MFIs in West Africa. Section 3, details the methodology of the study, and then turns to a more detailed explanation of the fixed-effects econometric model, addressing the issues of heterogeneity and autocorrelation of errors. Finally, section 4 analyzes the various results while section 6 summarizes the main conclusions.

2. Reasons for the financing relationship between Bank and Microfinance in Sub-Saharan Africa

There are four major reasons why banks and MFIs need to work together in sub-Saharan Africa. First, the businesses of microfinance customers are growing and many of them are moving towards the meso scale. It stands to reason that these larger customers translate into additional resource constraints for MFIs. MFIs need to meet these funding needs, which are increasing in volume and for longer periods. Moreover, due to their limited capacity in terms of transformation, it is clear that the external contribution of resources will be decisive in maintaining the loyalty of customers who are now mature (Tchuigoua, 2016; Dorfleitner et al., 2016). Thus, it is important for the microfinance sector to draw closer to the banking sector. The second reason lies in the fact that a large number of SMEs operate on the border line between both sectors, and crucially lack access to financing from both sectors. The literature uses the notion of "missing middle" to designate this type of SME. These are SMEs, which in terms of size and funding are somewhat out of the reach of microfinance but have not yet reached a level of institutional and organizational viability that can generate confidence among banks. Some of these are microfinance clients who have reached maturity and need financing that exceeds the capacity of microfinance. While banks have the long-term resources to support SMEs' projects, MFIs have the most effective funding technology through ensuring far less risky commitments (Fall, 2011). Thus, banks and MFIs need to work together to ensure that all companies have access to financing, especially SMEs who traditionally fall into the gap between both. The third reason that both sectors must work in

combination is due to the fact that banks within the UEMOA[3] area have an excess liquidity (see Caprio and Honohan, 1993). During the past few years, banks in this region have gained attention because of their liquidity surpluses. There seems to be a consensus that the idle resources of the banking sector could be optimized by financing microfinance institutions, which are faced with vital financing needs. Therefore, the banking sector would do well to join forces with the microfinance sector. The fourth reason relates to the current trend of development funding policies. After years of setbacks in these policies, which were based on receiving external funds, the mobilization of local resources now seems to be unanimously approved by development cooperation stakeholders. Such cooperation is now considered as the greatest need and the most powerful driving force behind development (Younossian, Fino & Servet, 2007). If funding is now to come from local resources, a particular emphasis should be placed on banking and microfinance working together, since neither can effectively meet the needs of all segments of the population on their own. Their coordination is crucial for effectively mobilizing local resources to promote development. Consequently, it should be stressed that for MFIs, resorting to local resources (thus to banks) is often preferable to relying on external funds, which are subject to the exchange risk. Thus, there are several good reasons that the financing of microfinance institutions by banks is at the heart of the debate. Contrary to other regions such as Latin America, where microfinance is mature and has integrated with the rest of the financial system, microfinance in the UEMOA region, as in most African countries, is still seeking viability and maturity. Most microfinance institutions still depend on increasingly dwindling grants due to financial viability reasons. Moreover, very few of them have the same power to create money as traditional banks or the ability to raise funds in regional or international financial markets. In such a context, funding remains a major concern for the majority of MFIs, all the more so as *mesofinance* activities are expanding.

3. **Data and methodology**

In this study, 156 unbalanced Senegalese MFIs were analyzed from 2001 to 2008. A database was made from the consolidated financial statements that MFIs provide to the Senegalese Economy and Finance Ministry through the AT/CPEC[4] Unit. Table 1 provides the descriptive statistics of certain variables: financing (BkFund), equity capital, medium-term and long-term credit (CMLT), deposits, and size. Financing resources obtained by MFIs in the sample amounted to 109 million CFA francs on average, with a maximum amount reaching 10.3 billion. The medium-term and long-term credit granted by MFIs totaled 420 million CFA francs on average, with a maximum of 40.7 billion. On average, funds obtained from banks constituted around 26% of the medium-term and long-term loans of MFIs sampled, which clearly shows the importance of bank financing in handling MFIs' medium-term and long-term credit. Consequently, since the banking system provided 26% of MFIs' external resources, the remainder was covered by MFIs' savings, but above all by donors' external[5] funds.

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[3] West African Economic and Monetary Union

[4] This department of the Economy and Finance Ministry is now called '*Direction de la Réglementation et de la Supervision des Systèmes Financiers Décentralisés*' (DRS/SFD). (In English: Directorate of Regulation and Supervision of the Decentralized Financial Systems)

[5] The Savings collected by MFIs are often short-term savings, which explains why the funding of medium-term and long-term loans is mostly covered by external resources.

Table 1:

Descriptive Statistics (in billions CFA francs). This table reports the descriptive statistics on key variables of the study. *BkFuund* = the amount of financing resources obtained by the MFI with the banking sector; *Stockholders' Equity* = the amount of the MFI's equity capital; *CMLT*= the amount of the medium and long-term loans given by the institution*; Customer Deposits* = the volume of the savings collected by the institution; Loans = the amount of loans given by the MFI to its members; Total Assets = total balance sheet; *MFIs's Deposits in Bank*= the volume of the funds deposited in banks.

	BKFUND	Stockholders' Equity	CMLT*	Customer Deposits	Loans	Total Assets	MFIs's Deposits in Bank
Average	0.109	0.299	0.420	0.604	0.735	1.110	0.039
Std. Dev.	0.714	1.810	2.820	4.060	4.170	6.480	0.199
Min	0	-0.961	0	0	0	0	-0.022
Max	10.3	20.5	40.7	62.2	63.500	97.600	2.980
Observations	783	783	783	783	783	783	783
	Sampling Period 2001-2008						

In this paper, we analyze the link between the access to funds provided by banks and several variables measuring the maturity and the performance of an MFI. We hypothesize that the some microfinance characteristic such as maturity and performance are related to the access to funding from banks. The maturity here is measured by the size of the MFI. The main proxy variable is the logarithm of the "total assets". The performance is approximated by two variables: the return on assets (ROA) and the quality of the portfolio (portfolio risk). Based on the Fisher and Breusch Pagan and tests, we consider the following fixed-effects model:

$$BKFUND_{it} = \alpha_i + \beta X_{it} + \varepsilon_{it}$$

$$BKFUND_{it} = \alpha_i + \beta_1 Size_{it} + \beta_2 ROA_{it} + \beta_3 GAR1_{it} + \beta_4 GAR2_{it} + \beta_5 RISk_{it} + \beta_6 FP_{it}$$
$$+ \beta_7 Sub_{it} + \beta_8 Dmbres_{it} + \beta_9 Plcbank_{it} + \beta_{10} Pmbres_{it} + \beta_{11} Cmlt_{it} + \varepsilon_{it}$$

α_i refers to the specific effect on the individual, and ε_{it} the residual; the variable to be explained is represented by *Bkfund*, which gives the amount of financing resources obtained by the MFI from the banking sector[6]. X_{it} is the vector of the explanatory variables; *Size*, the size of the institution, measured by the logarithm of its total balance sheet; *Roa*, the economic profitability measured by the ratio *Net Result/Total Assets*. *Gar (1, 2)* refers to the guarantee given by the MFI, or the guarantee signal given by the MFI through the value of its assets. The guarantee in this case is covered by two variables: the value of the lands (*Gar 1*) and those of the other fixed assets (*Gar 2*)[7]. *Risk* means the MFI portfolio risk understood through the amount of outstanding loans. *FP* is the amount of the MFI's equity capital, and *Sub*, the

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[6] Here, we consider medium to long-term loans for financing variable.
[7] Separating the value of land from other physical assets is justified by trying to understand the *property* e*ffect* in relation to the banking sector. Currently, the real-estate market is booming and many microfinance organizations, especially large networks, have invested in real-estate in recent years. Therefore, highlighting this variable in the model seemed pertinent.

volume of the grants received by the MFI. The MFI's activity is evaluated through the loans given and the savings collected. *Dmbres* is the volume of the savings collected by the institution. *Plcbank* is the volume of the funds deposited in banks,[8] *Pmbres*, the amount of loans given by the MFI to its members, and *CMLT* is the amount of the medium-term and long-term loans given by the institution.

The Fisher and Breusch Pagan tests indicate that the fixed-effects model offers a better modeling of the determinants of bank financing by MFIs. The Fisher test validates the hypothesis of the presence of fixed effects, while the Breusch Pagan test rejects the hypothesis of the presence of random effects[9]. The fixed-effects model indicates that the specific effects are correlated to the explanatory variables, where as the random effects model assumes that these fixed effects are orthogonal to the explanatory variable of the model.

The fixed-effects model underscores the heterogeneity of the data in their individual dimensions. Thus, the presence of heteroscedasticity and/or autocorrelation in the errors of the model is probable. The error term of the basic model is broken down as follows: $\varepsilon_{it} = u_i + v_{it}$
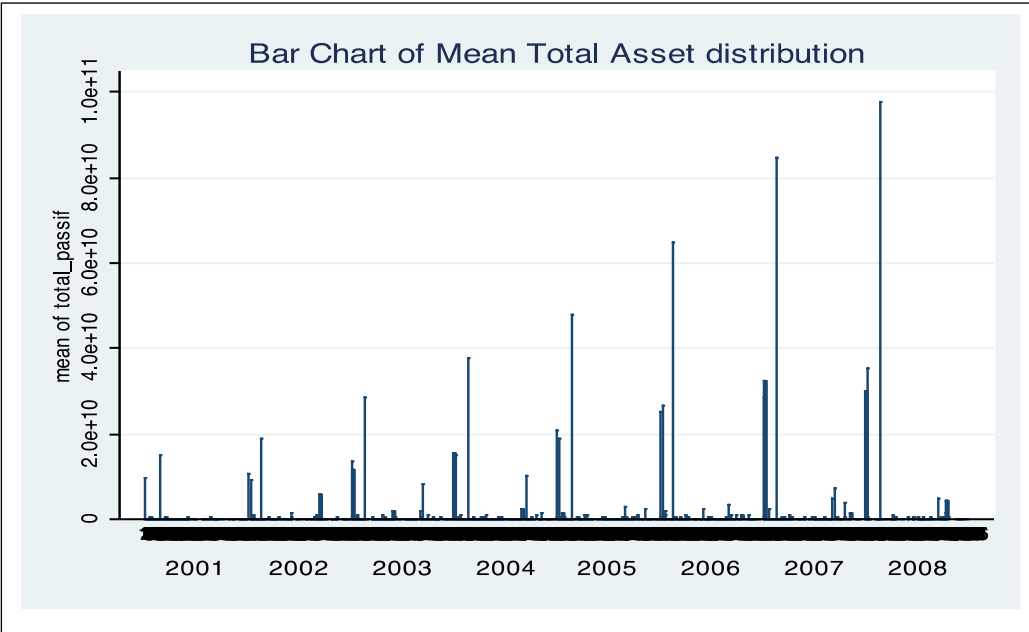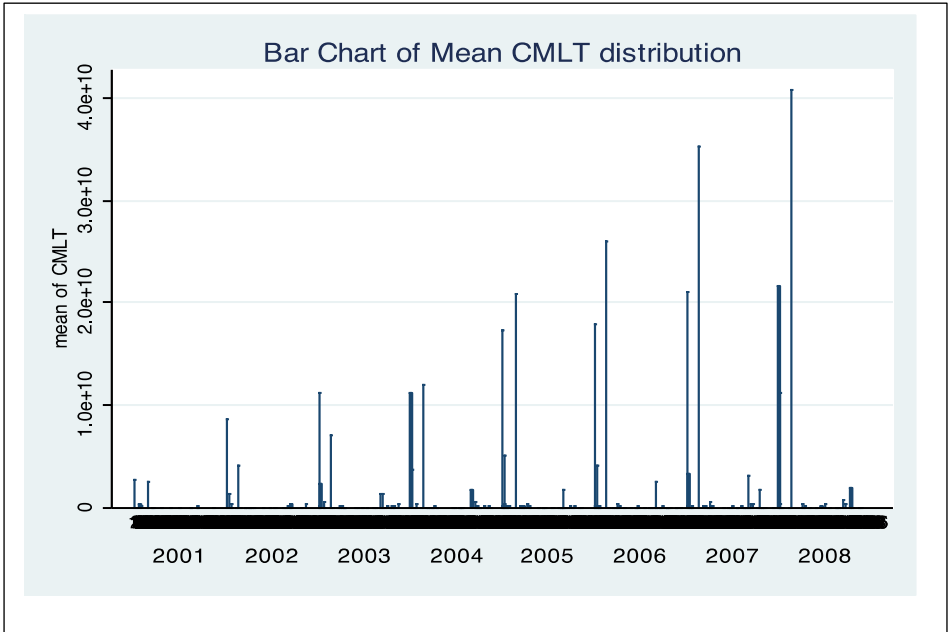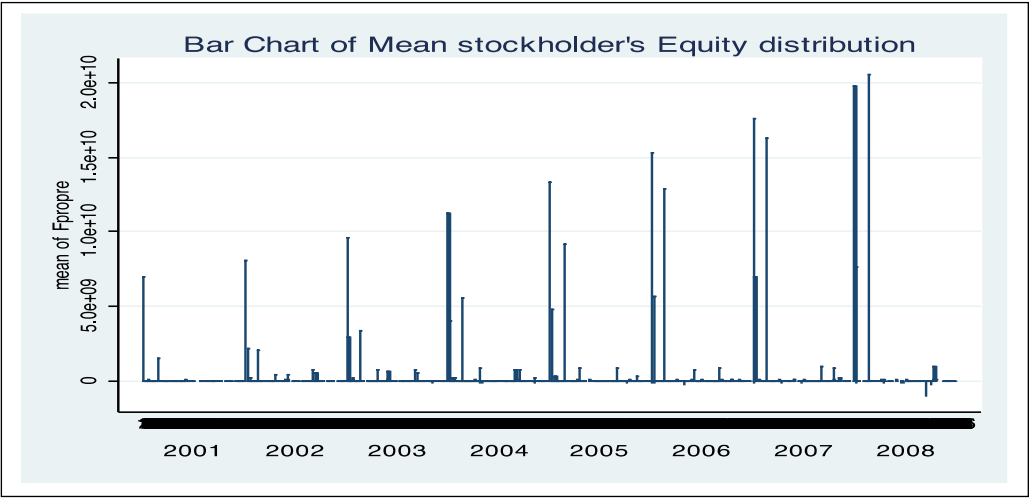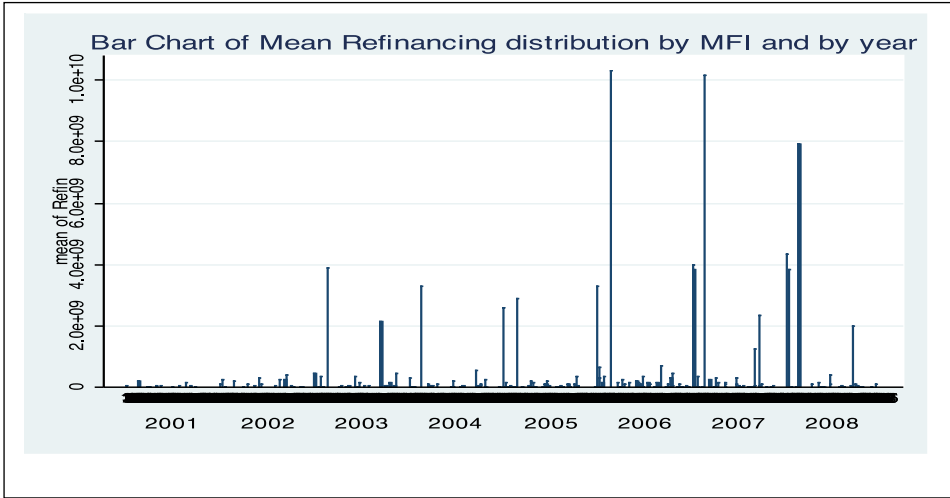
The term u_i indicates the individual unobservable effect and v_{it} indicates a random disruption. Several reasons support the conclusion that heteroscedasticity is present. One source of heteroscedasticity may be the heterogeneity of the data[10]. The sample is made up of MFIs that have very different legal statuses (119 MEC, 23 GEC, 8 Reseau, 6 SSCC), as well as location, size, the dominant nature of their activity, and so forth. A second source of heteroscedasticity may be the asymmetry in the distribution of certain explanatory variables, such as size, the amount of credit, and the amount of savings. For example, between GECs and the networks, there are wide disparities in the distribution of the Bkfund variable, which is the primary variable in the model. Charts below show that indeed, there is a dissymmetry in the distribution of this variable between GECs, MECs, SSCCs and the networks. The microfinance networks explain over 50% of the Bkfund variable. In this context, tests needed to be conducted in order to detect the presence in the word error of problems of heteroscedasticity and/or autocorrelation. The fact that the sample is disparate may also be a source of heteroscedasticity.

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[8] It is also important to isolate the effect of MFIs' deposits in banks, which is why this variable is isolated.

[9] In these conditions, the Hausman test, which is used to discriminate between fixed effects and variables, is of no use as the hierarchy between the two models cannot be examined. These two tests allow us to take into account the heterogeneity of the data, while the hypotheses on the nature of the specific effects differ from one model to the other.

[10] For a better understanding of the sources of heteroscedasticity and autocorrelation, see Valerie Mignon (2008), "Econometrics: Theories and Applications".

Bar Chart of Mean Refinancing distribution by MFI and by year

Bar Chart of Mean stockholder's Equity distribution

Bar Chart of Mean CMLT distribution

Bar Chart of Mean Total Asset distribution

The Breusch Pagan and White tests confirmed that heteroscedasticity was present. The heteroscedasticity of errors led to calculating the fixed-effects model with the White correction, with the results given in Table 2 below (model 2). By correcting for heteroscedasticity, the only changes concerned the significance levels of the explanatory variables. The White correction reduced the significance level of all the explanatory variables except for the *Roa* and *Gar 1* variables. The *Size* variable, which had a significance threshold of 5%, now became significant at 10% after correcting for heteroscedasticity. The constant, which was significant at the threshold of 10%, was now significant at 5%. The *Gar 2* variable, which was significant at the threshold of 1%, was no longer significant at the threshold of 10%. Ten per cent was accepted as the maximum significance threshold; therefore, the *Gar 2* variable was no longer significant. The *Risk* and *Sub* variables, which before correction were significant at 1%, were now significant at 5%. The *FP* and *PlcBank* variables jumped from a significance threshold of 1% to 10%. The *Gar1*, *Dmbres*, *Pmbres* and *CMLT* variables remained significant at the threshold of 1%.

Table 2.

Estimations of the determinants of MFIs' ability to raise funds from the banking system. This table summarizes the results of tree models. Model (1) is the estimation of Fixed-effects Model; Model (2) is the estimation of Fixed-effects Model with corrected heteroscedasticity; Model (3) is the estimation of OLS. The dependent variable is the financing, the amount of financing resources obtained by the MFI in the banking sector. (*), (**), (***) represent the 10 percent, 5 percent, and 1 percent confidence levels. The variable to be explained is represented by *Bkfund*, which gives the amount of financing resources obtained by the MFI with the banking sector (here medium to long-term loans). *Size* = the logarithm of its total balance sheet (the size of the MFI). *Roa*= the economic profitability measured by the ratio Net Result/Total Assets. Gar1 = the value of the lands. *Gar 2*= the value of the other fixed assets[11]. *Risk*= the MFI portfolio risk understood through the amount of outstanding loans. *FP* = the amount of the MFI's equity capital. *Sub* = the volume of the grants received by the MFI. *Dmbres* = the volume of the savings collected by the institution. *Plcbank* = the volume of the funds deposited in banks. *Pmbres* = the amount of loans given by the MFI to its members. *CMLT* = the amount of the medium-term and long-term loans given by the institution.

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[11] *Gar* 1 and 2 refer to the guarantee given by the MFI, or the guarantee signal given by the MFI through the value of its assets.

Variables	Model (1)		Model (2)		Model (3)	
	Coefficients	Standard errors	Coefficients	Standard errors	Coefficients	Standard errors
Size	1.51**	0.76	1.51*	0.78	1.56***	0.49
Roa	-0.94	5.43	-0.94	0.72	-2.31	5.07
Gar 1	3.64***	0.23	3.64***	0.81	3.96***	0.23
Gar 2	0.61***	0.09	0.61	0.46	0.62***	0.08
(Risk)	-0 .59***	0.04	-0.596**	0.257	-0.38***	0.04
FP	0.31***	0.04	0.316*	0.187	-0.10***	0.03
Sub	- 3.04***	0.44	-3.041**	1.369	-2.43***	0.38
Dmbres	0.43***	0.03	0.433***	0.154	0.06***	0.01
Plcbank	0.73***	0.09	0.734*	0.394	1.12***	0.09
Pmbres	-0.57***	0.04	-0.574***	0.206	-0.09***	0.03
CMLT	0.34***	0.02	0.339***	0.112	0.22***	0.02
Cons	-2.61*	1.35	-2.61**	1.99	-2.57**	0.8
Observations	776		776		776	
R-sq: within =	0. 8835		0.8835		0.8519	

4. Results and discussion

The MFI's size (*Size*) was a significant determinant for raising funds from the banking sector (1% before White correction and 10% after). The positive and significant impact of an MFI's size on its capacity to raise funds was clear, confirming other results in the empirical literature (Rajan & Zingales, 1995; Booth *et al.*, 2001; Beck et al. 2008). Profitability (*Roa*), in all models, was not significant and seems negatively correlated to financing. The negative signal obtained for ROA variable is consistent with Titman and Wessels (1988), Rajan and Zingales (1995), confirming the theory of the pecking order theory, contrary to the Tradeoff Theory. Moreover, we know that MFIs that raise funds from the banks are not necessarily the most profitable. Securing funds from banks may require the existence of a guarantee fund. In such a case, banks would agree to lend money as long as they are sure they can recover their loan should a problem occur. Thus, despite MFIs' unprofitability, the existence of security funds may justify bank refinancing. The guarantee, in particular the *Gar1* variable, was highly significant (1%) in both models and positively influenced MFI's capacity to raise funds from banks. This result is consistent with those found in Rajan and Zingales (1995). Bankers often insist on the benefit of taking into account the value of the intangible assets held by MFIs, as these assets offer more guarantees to the creditors. In case of liquidation, they lose less value and are less subject to the risk of asymmetric information. Risk (*Risk*) and Subsidiaries (*Sub*) are highly significant variables in the model and, as expected, negatively affect funds raising from banks (1% before and 5% after correcting for heteroscedasticity). Grants have an adverse effect on raising fund, since the MFIs that receive more grants are not only the less successful, but also the youngest ones. These organizations are still in the first *stage of development, which may explain banks' lack of interest to lend to those MFIs*. Dmbres variable remains constant in terms of significance in all models. This variable is highly significant (1%) and positively affects funds raising from banks. The MFIs that manage to collect the most deposits are those which are involved in large MFI networks. Although the deposits they make are short-term deposits, the loans they ask for are generally medium-term and long-term loans. This result was confirmed by the positive influence of medium-term and long-term loans (CMLT) on the amount of financing. This demonstrates that the financing obtained from banks is mainly used to provide medium-term and long-term loans. Equity capitals (*FP*) have a positive and significant impact on financing (1% before Withe correction and 10% after), showing that the level of equity capital facilitates the securing of credit from banks. Also the deposits made by MFIs with banks (*Plcbank*) play a positive role in securing credit. These deposits act as a guarantee. In the "migration product" described by Fall (2011), when a problem occurs, the bank directly seizes the deposit account of the MFI partner. There was a negative correlation between the loans granted to members (*Pmbres*) and financing. This paradox may be explained by the fact that MFIs which receive funds from banks then grant them to other customers rather than to their own members. This is a common practice in the microfinance sector. Also the MFIs that exclusively finance their members are those more oriented towards short-term loans, which explains why they need less long-term funding.

To test the robustness of our estimations different models were compared to see whether the results changed. Overall, there was a high level of consistency of estimations across these three models. Except for the significance levels, which changed for a few variables, the three models had almost the same results. Finally, the robustness of the results was tested by conducting a regression without the profitability (*Roa*) variable, the only non-significant variable; the results obtained were approximately the same.

5. Conclusion

The econometric results observed show that the use of external bank refinancing generally is the fact of MFIs in good-standing, those with enough tangible assets, and that are less risky. In fact, Senegalese banks deal primarily with large MFI networks that have more resources to guarantee their loans and are less exposed to risk, in terms of bank criteria for credit. On the contrary, small microfinance organizations have very little access to bank financing. This result provides important information, in light of our goal. First, it shows that MFIs, as a customer of a bank, must satisfy the traditional criteria to access bank funds. Therefore, there are no exceptions within the Bank /MFI financing relationship, despite the fact that MFIs often have a social purpose. Second, it shows that MFIs can face a paradox in their financial intermediation: on the one hand, they try not to ask for specific material guarantees from their customers, and on the other hand, they must comply with bank collateral requirements. This result is interesting because the microfinance sector has been in a process of networking and concentration since 2008. In fact, increasing an institution's size is tantamount to giving them more resources and more opportunities to have access to bank funding since their requests are pooled. Networking should facilitate the access of small organizations to bank resources. Businesses that cannot access bank financing on their own as a single entity, can now access indirectly through their network. The affiliate network can facilitate the access of MFIs to bank resources. In addition, this study has also shown that profitability is not a crucial determinant of financing, as it was non-significant in all regressions. However, this result may be explained by the fact that banks consider the criterion of profitability as secondary when a guarantee funds exist. Fall and Servet (2010) have shown that the Senegalese microfinance sector has been relatively well supported by external donors, compared to other areas such as Cameroon. Moreover, the data examined in this study shows that the MFIs' deposits in the banks act as financing guarantees, further evidence that the banks which refinance microfinance organizations take no risks. Yet it also demonstrates that MFIs can use their deposits as a means of influence in negotiations for bank financing. This article is the first to empirically investigate financial relationship between banks and microfinance institutions and should be extended to other sub-Saharan countries. These results encourage us to do research with other countries in order to compare and to highlight the similarities and differences between different sub-Saharan countries. For example, the microfinance industry in Cameroon is a service industry like banks. Therefore, it is interesting to see whether the determinants of financing are similarly or not in these areas

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