COMPETITION AND PERFORMANCE OF MICROFINANCE INSTITUTIONS IN CAMEROON

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ABSTRACT

This study investigates the impact of competition and institutional characteristics on MFIs’s financial performance in Cameroon. The study used a multiple regression model to relate financial performance (ROA) to various explanatory variables such as operational expenses ratios, portfolio at risk, staff productivity, savings mobilization ratio, industry competition, and others. The data in this study includes twenty five (25) MFIs from the Cameroon Cooperative Credit Union League (CamCCUL) Network.

Contrary to most empirical works on competition in the microfinance industry which prone a negative effect of competition on the performance of MFIs, the findings from this study reveal a positive coefficient, implying therefore that competition rather have a positive effect on financial performance. That coefficient however, turns out to be statistically insignificant. There is also evidence that operational expense ratio, portfolio at risk, and staff productivity are major determinants of performance for microfinance institutions.

Key words: microfinance, competition, performance.

1. INTRODUCTION

Throughout the world, the poor are excluded from the formal financial system. One of the most irrefutable problems for poor countries has been the high price or outright unavailability of credit to rural communities. Primarily because of weak institutional infrastructure in rural areas, formal banks have seemingly faced insuperable information asymmetry and consequently, experienced persistent high costs and default rates. The argument has been that screening potential borrowers and monitoring their behavior as well as enforcing credit contracts are extraordinarily costly. That situation is backed by a business environment in which credit histories are inexistent, entities are very small, and the legal system very much under-developed, unreliable and inaccessible. As a result, formal lenders ration loans and leave a large portion of potential borrowers without access to credit. Although local moneylenders have sometimes been willing to fill the gap left by banks, interest rates practiced by these organizations are extremely high, at times due to their local monopoly. Consequently, the very poor are typically left either with no credit or with credit available at exorbitant rates. This situation is detrimental to economies in most developing countries for they encompass an important informal sector that needs funds to finance their growth. Due to the absent access to formal financial services or access to credit at exorbitant rates, the poor¹ have developed a wide variety and community-based financial arrangements amongst others to meet their financial needs². Microfinance is the term that has

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¹ The poor are defined here as those who require financial services but lack accessibility to conventional service provider such as commercial banks for reasons like the lack of collateral to secure loans, failure to meet minimum terms and conditions required for opening and operating different bank accounts, inappropriate service provision and tools for micro project operators

² A common type of informal financial arrangement found throughout the world is the Rotating Credit and Savings Association (ROSCA). A ROSCA commonly known as “Njangi or Tontine” consists of a group of community members who meet regularly and pool their savings. The savings are then lent out to one
come to refer to such financial arrangements offering financial services to the modest population. Microfinance promises both to combat poverty and to develop the institutional capacity of financial systems, through finding ways to cost-effectively lend money to poor households (Morduch, 2000). Three features distinguish microfinance from other formal financial products: the smallness of loans offered or savings collected, the absence of asset-based collateral and the simplicity of operations (Seyed I. et al., 2011). Interest rates are usually somewhat higher than those charged by banks, but are substantially lower than those charged by local moneylenders. The last three decades of microfinance have been characterized by an increased interest by academicians and policy makers in that activity (Morduch, 1999; Brau and Woller, 2004; Niels Hermes and R. Lensink, 2007). The industry has been growing in a significant rate and has become a sub-sector of the formal financial market in some countries (Niels Hermes et al, 2010). During the past few years the growth rate of microfinance has been unprecedented: between 1997 and 2005, the number of microfinance institutions (MFIs) increased from 618 to 3,133, the number of people served increased from 13.5 million to 113.3 million during the same period (Niels Hermes and R. Lensink, 2007). More so, between 2006 and 2008, the annual growth rate jumped from 70 to 100% (Niels Hermes et al., 2010) in some countries.

The Microfinance Campaign Summit (2006) estimates that there are over 3000 MFIs, serving more than 10 million poor people in developing countries. The total cash turnover of these institutions worldwide is estimated at about 2.5 billion U.S Dollar (USD) and the potential for new growth is outstanding. The United Nations General Assembly passed a resolution on December 2009 declaring year 2012 as the International year of Cooperatives (Onafowokan O., 2012). This was to showcase the contribution and impact of microfinance to the socio-economic well being of the society. Their growth is visible, not only in terms of number of active borrowers but also in gross loan portfolio and total assets.

Just like other African countries, the microfinance sector’s spring board in Cameroon was the banking system restructuring 3 engaged by the Ministry of Finance (MINFI) and the Banking Commission for Central Africa (COBAC). The expansion of MFI in Africa during the 1980s can highly be explained by the gap left by the restructuring of the banking sector in most developing countries, which was characterized by the restraining of credit opportunities.

In the ECCAS zone (Cameroon, Gabon, Central Africa Republic, Chad, Equatorial Guinea and Congo), out of the 1021 MFIs registered, Cameroon accounts for 64%, with 67% of savings and 86% of credit operations (George Kobou et al., 2009). The microfinance model in Cameroon is also characterized by the fact that the activity is concentrated in the hands of certain networks. In effect in 2005, 68% of MFIs belonged to CVECA (Caisses Villageoises d’Epargne et de Crédit Autogérées), CamCCUL (Cameroon Cooperative Credit Union League) and MC2 (Mutuelle Communautaire de Croissance). More so, the geographical repartition of the sector remains unequally distributed (B. Moulin and M. Nkeuwo, 2012; George Kobou et al.(2009); L. Fotabong, 2012), with less than 48% of these MFIs located in rural areas 4. In addition, the constant increase in savings within the sector is not accompanied by a corresponding increased in the volume of credit. Over the next few years, the microfinance market is expected to continue to register an annual growth rate of 15% in deposit, credit and number of outlets. Growth is expected to be driven by the growing number of members and customer acceptance of mobile money and micro-insurance activities, expansionary strategies and measures put in place to protect depositors. For some years now, the commercialization of microfinance has become a dominant activity due to the participation of profit oriented organizations 5 in the microfinance sector. With the tremendous expansion of the microfinance sector and given the increased competitiveness of the banking sector in Cameroon, which was an objective

3Put in place under the framework of the Structural Adjustment Program (SAP), instituted by the Bretton Woods institutions (W.B and IMF)
4The total population of Cameroon is estimated at 19.3 million inhabitants and 60% of that population live in rural areas.
5In the quest for new markets and due to their proximity, MFIs represent an undeniable partner for commercial banks
of the restructuring program (Wanda R., 2007; B. Moulin and M. Nkeuwo, 2012), certain banks saw the microfinance activity as a possibility to capture new markets. The structure of the microfinance industry revealed its attractiveness through its proximity vis-à-vis clients, simplicity of its operations and adaptative capacity.

Globally, the microfinance industry has realized an undeniable expansion and as the number of microfinance institutions continues to grow, the level of competition in the industry becomes a question of interest since the sustainability of these institutions is highly debated. According to McIntosh et al (2004), Petersen and Rajan (1998), Marquez (2002), Hoff and Stiglitz (1998), the benefits of microfinance may be eroded with growing competition in the sector\(^6\). The flip side of course, is that imperfect competition can result in serious drawbacks for sector growth. In the case of microfinance, some scholars and policymakers warn that increased competition could lead MFIs to “scale up” their services, or stop targeting the poorest of the poor (T.D. Olsen, 2010). This, some argue, is likely since the poorest borrowers generally borrow less and require more staff time than middle-income borrowers (Tucker and Miles 2004)\(^7\). However, if the literature on impact assessments of microfinance is a bit advanced (D. Richman and Aseidu K., 2010), that on competition and performance, more specifically financial performance is still lacking, whereas the sector keeps on expanding. This therefore calls for more attention given that many countries have started integrating microfinance in their poverty alleviation strategy.

The purpose of this study is to evaluate and determine the factors affecting the performance of microfinance institutions in Cameroon. More specifically, we try to analyze the impact of increased competition on performance in the sector. In addition, the study attempts to identify the specific factors in MFIs which are susceptible of explaining its financial performance. Based on the specific objectives of this research, the two main hypotheses that can be stated are as follows:

**Hypothesis 1:** competition has a negative effect on performance.

**Hypothesis 2:** performance can be explained by MFIs specific factors.

Though increasing competition has become an issue in the microfinance sector, studies analyzing its effect on performance remain limited in number (Neil Hermes, 2010). And most importantly, there is no definite answer as to whether competition affects MFIs financial performance positively or negatively. Therefore this study intends to provide additional evidence to the literature. Empirically, the conclusion of this study will serve as an outline for reflection to its stakeholders. The study tries to shed more light on the strengths and weaknesses of MFIs. It attempts to help estimate their risk and to establish valuable performance targets, hence ensuring the survival of these institutions. On the part of the public authorities, it will permit an apprehension of the local realities of the sector and can help in the orientation of new economic and social policies.

The paper is structured as follows: in the next section, we survey the theoretical and empirical literature on performance and competition in the microfinance industry. We then present the methodology and the data used in the study. Next, we analyze the results of the study. In the final section, we conclude and make a few recommendations for further research.

### 2. LITERATURE REVIEW

**2.1 Survey of the Theoretical Literature**

The fundamental objective of every organization is to improve its performance. However, the mastery of its evaluation and application to diverse structures presents certain complexity. This complexity resides in the fact that the “concept of performance” itself does not have a universal definition. The concept had for a long time been reduced to its financial dimension, but today with multiple organizational changes, performance has many facets. As microfinance institutions are viewed predominantly as instruments of social change, their performance has been often measured by non-financial parameters. The concept of social performance seemed to have overshadowed the state of financial health of these enterprises (Pankaj K. and S.K. Sinha, 2010). It seems this is due to the branding and common perception of MFIs as non-profit organization. However, the long term viability of any business

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\(^6\) cited by Dzene Richman and Aseidu K. (2010)

\(^7\) Cited by T.D. Olsen (2010).
model depends as much on the financial viability especially as competition has become more aggressive. These developments have induced MFIs to become more financially-focused and to broaden their services and activities.

2.1.1 Social Performance in Microfinance.

Contrary to financial performance, social performance measurement is fairly new (Hashemi, 2007). In the recent past, important but separate attempts to integrate assessment of social performance into MFI’s regular management systems have been developed (Hashemi, 2007). Foose and Greenberg (2008) affirm similarly that different organizations have independently developed methodologies and tools for evaluating social performance with their own frameworks and levels of detail. However, no widely adopted standards for social performance reporting exist at this time.

The social performance of an organization (whether a private-for-profit firm, cooperative or NGO) comprises the relations of the organization with its clients and with other stakeholders (Zeller et al., 2003). Social performance is not equal to social impact, i.e. the change in welfare and quality of life (in all of its dimensions) among clients and non-clients (and the wider local, national and global community) due to the activities of an organization. Following the Structure-Conduct-Performance (SCP) paradigm of industrial organization, the impact of an organization on socio-economic and environmental dimensions follows from its structure, conduct and performance and is influenced and/or conditioned by the external environment of the organization (Zeller et al., 2003).

Structure ➔ Conduct ➔ Performance ➔ Impact
(on clients/non-clients, communities etc.)

Thus, social (and economic) performance precedes social (and economic) impact. This simply implies that the measurement of social performance involves investigating the structure of an organization (i.e. mission, ownership, management principles, relation to and care for its staff) and its conduct in the market, local and wider community (services, products, market behavior, other relations with clients and other stakeholders, community and social/political organizations).

Recently, a common consensus around the definition of social performance (S.P) by an industry- wide task force was attained. Social performance is defined as the effective translation of a MFI’s social mission into practice, this in line with accepted social values. These values include increasing outreach, bettering economic and social conditions of clients and enhancing social responsibility of MFI towards clients, employees and the community (Hashemi and Anand, 2007).

This definition reflects the concept of a pathway containing several steps to work through in order to achieve social performance. Social performance includes impact as an end result and emphasizes the deliberate process of getting there. Figure 1 presents the path or process of translating an MFI’s mission into practice. This illustrates impact as being an element of social performance.

Figure 1: Social Performance Pathway

Source: Hashemi (2007)

The first step of the social performance pathway refers to the analysis of the social objective of the MFI. These institutions are to ensure that their objectives are clearly defined and confirmed to social mission. Secondly, internal system and activities are evaluated according to their appropriateness to accomplish the stated social objectives. Thirdly, the output step analyses the outreach of MFIs and examines the appropriateness of products to fulfill their needs. The fourth step evaluates the outcome and verifies that clients are indeed improving their social and economic situation. Finally, the fifth step examines the impact, which refers to the improvements that can be attributed to the participation in the microfinance program (Hashemi, 2007).

The concept of social performance applies to every MFI irrespective of the specific mission and organizational type. Thus, a microfinance offering credit and savings services at the national level as well as NGOs offering microloans in rural areas
along with educational trainings can implement this concept (Diana P., 2010).

The S.P pathway can be broken down to three main components: intent, process and result. The *intent* and the *process* aspects of S.P correspond to information at the institutional level, whereas the *result* makes reference to information at the client level which is more difficult to collect because it requires gathering data on living standards from clients or households (Hashemi and Anand, 2007). In 2005, leaders from different social performance initiatives in microfinance met to share their experiences and created the Social Performance Task Force (SPTF). The Task force is a collaborative group of over 250 microfinance professionals, rating agencies donors and social investors. The SPTF has as objective to promote stronger industry focus on social performance and towards a common reporting and rating framework (Diana P., 2010). The common reporting format which is a set of social indicators as shown in Figure 2, measures the degree to which microfinance institutions are effectively putting their social mission into practice.

In 2008, the SPTF agreed on a group of social indicators on which MFIs should begin reporting in early 2009 to the Mix market. The social performance indicator tools (SPI) measure the extent in which a MFI dedicates the means necessary to fulfill its social mission. Developed in 2004 in collaboration with a wide range of microfinance practitioners, the SPI collects data on 70 indicators that measure the objectives, system and processes of the 4 key dimensions of SP as defined by the SPTF (Bédécarrats et al., 2011). As shown below, figure 2 presents two general categories of social indicators: “Agree to do” and “Agree to Work on”. The first category covers social indicators that are mainly internal process indicators deemed relevant, easy to obtain and verified by the SPTF. On the other hand, the second category refers primarily to result indicators which apparently are more difficult to obtain but deemed highly important by the SPTF.

MFIs have the flexibility to choose the social objectives and the tools needed to assess their progress. However, the sector looks forward to harmonizing social reporting as it is already the case for financial reporting. Hence, developing a core set of common indicators is a good step to show that the industry is really committed to create global transparency on social performance.
Social performance in the microfinance literature is principally viewed in terms of Outreach. Outreach at glance refers to the number of clients served. Meyer (2002) noted that outreach is a multidimensional concept. According to the author, in order to measure outreach, we need to look into its different dimensions. Similarly, Navajas et al. (2000) indicated that there are six aspects of measuring outreach: depth, worth of users, cost to users, breadth, length and scope. But the most commonly used measurements are depth and breadth of outreach. Breadth refers to the number of clients served and the volume of services (i.e., total savings on deposit and total outstanding portfolio) whereas depth is relative to the socio-economic level of clients that MFIs reach (Lafourcade et al., 2005). As forwarded by existing literature on microfinance, the primary mission of microfinancing is to alleviate poverty, thus focus on the depth of outreach (i.e the type of clients served and their poverty level) rather than the number of clients that have been reached (Ben Soltane, 2012). The proxies for depth of outreach used in various studies (Cull et al., 2007; Olivares-Polanco, 2005) are percentage of female borrowers and the average loan size per borrower / GNI per capita. Indeed, according to Hamed (2004), microcredits programs have a positive impact not only on the micro-enterprise income but also on the female borrowers. Through microcredit, women can achieve multiple productive activities and diversify their sources of income more than men. Thus, a higher percentage of female borrowers also indicate more depth of outreach, because lending to women generally is related to lending to the poor (Niels Hermes and R. Lensink, 2007).

2.2.2. Financial Performance in Microfinance

A second important issue raised in the literature on microfinance deals with the financial performance of microfinance programs. Within the industry, financial performance is viewed from the perspective of microfinance sustainability. Providing microfinance is a costly business due to high transaction and information costs. At present, a large number of programs still depend on subsidies to meet high cost that is, they are not yet sustainable. The sustainability of the credit programs did not receive much attention accessing financial services so number of women served is often measured as another criterion. Although difficult to measure, depth of poverty is a concern because the poorest of the poor face the greatest access problem. Finally, the variety of financial services provided is the criterion because it has been shown that the poor demand and their welfare will be improved if efficient and secure savings, insurance, remittance transfer and other services are provided in addition to the loans that are the predominant concern of policy makers.

8 Four major dimensions of social performance are as follows: outreach, main interest in the microfinance literature; Adaptation of the services and products to the target clients. It is not enough to decide to reach a target population. The MFI must learn about the target population and work on the design of its financial services so that they can fit with the needs and the constraints of the clients. “Pro-poor” services are too often standardized. Social performance indicators can analyze the process leading to service definition and the extent to which the MFI knows about its clients’ needs.

Improving social and political capital of clients and communities: For the MFI, trust between the MFI and the clients can reduce the transaction costs and improve repayment rates. It thus can foster collective action and reduce free-riding, opportunistic behavior, and reduce risks. For the clients, strengthening their social and political capital can enhance their social organization (collective action, information sharing). Social performance indicators should measure the degree of transparency, the effort of the MFI towards giving voice to its clients within the organization and beyond (community, local government, national government, etc.).

Social responsibility of MFI: Social awareness is a necessary pre-requisite for socially responsible corporate behavior. Social responsibility requires an adaptation of the MFI corporate culture to their cultural and socio-economic context, an adequate human resource policy, credit guarantees adapted to the local conditions, and balanced relationships between staff and clients (in particular in MFIs where there are elected clients who participate in decision making).

9 Cited by B. Kereta (2007)

10 The first is simply the number of persons now served that were previously denied access to formal financial services. Usually these persons will be the poor because they cannot provide the collateral required for accessing formal loans, are perceived as being too risky to serve, and impose high transaction costs on financial institutions because of the small size of their financial activities and transactions. Women often face greater problems than men in
in the beginning of the movement. However, between the 1980s and 1990s when the industry began to grow, there was a significant change in line of thought as policymakers and donors started calling for profitability from these microfinance institutions (Cull et al, 2009). The importance of financial performance of MFIs gave rise to an important debate between the financial system approach and the poverty lending approach, what Morduch (2000) termed the “microfinance schism”. The debate has not been concluded yet, although the most recent microfinance paradigm seems to favour the financial system approach (Niels Hermes and R. Lensink, 2007).

An important factor was the increasing criticism for failed subsidized credit programs. As argued by the Rural Finance Program at the Ohio university, the building of lasting, permanent financial institution require that they become financially performant (Armendariz and Morduch, 2005; Zeller, 2006). An ideology defended by international organizations such as Accion International12, WB, USAID, who concluded that commercialization was the only way microfinance could ever serve a large number of people. The main argument to support this view is that large-scale outreach to the poor on a long term basis cannot be guaranteed if MFIs are incapable of standing on their feet. This has stimulated research on the financial performance of MFIs. However, a greater emphasis on financial performance and the trend towards commercialization of microfinance has raised concerns as to the effect on outreach (depth or breadth).

The literature on microfinance defines sustainability in several ways, which are in essence, measures on the institution’s ability to cover its cost. The change in focus of these measures reflects the maturing of the industry (Ledgerwood, 2001). Originally, the sustainability of a microfinance institution was considered as its ability to cover its operating costs with its income, regardless of its source. This meant that an institution was considered financially viable if it could attract enough donations to cover its expenses. Later, the idea of self-sufficiency was added to the concept of sustainability: a microfinance institution should be able to generate enough income from the services it offers to clients to cover its expenses. In other words, the MFI should be maintained by its clients, not by donors. According to Morduch (1999), Sharma and Nepal (1997), sustainability is rather understood as financial and operational sustainability and self sufficiency whether financial or operational as an indicator of sustainability. Operational sustainability refers to the ability of an institution to generate enough revenue to cover operating costs, but not necessarily the full cost of capital. Financial sustainability on the other hand is defined by whether or not an institution requires subsidized inputs in order to operate.

The microcredit summit campaign on its part refers to the sustainability of MFI as institutionally and financial self-sufficiency, that is if it is able to cover all actual operating expenses with income generated from its financial operations after adjusting for inflation and subsidies. Shah (1999) criticized the financial definition of sustainability saying that it is too narrow. He argued that the concept of sustainability must include, among other criteria: obtaining funds at market rates and mobilization of local resources. Thus, he proposes that sustainability measures should include: repayment rate, operating cost ratio, market interest rate, portfolio quality.

Rosenberg (2009) provided a guide for measuring indicators of MFI sustainability. He identified five broad indicators of MFI financial performance: the Return on Asset (ROA), Return on Equity (ROE), Adjusted Return on Asset (AROA), Operational Self-Sufficiency (OSS) and Subsidy Dependency Indicator (SDI). ROA and ROE are considered to be the standard profitability measures; however, ROE is somewhat impractical in the field of microfinance (Sascha, 2009).

The Return on Asset (ROA), which is related to the size of an institution, is a typical measure of profitability of microfinance. With ROA, it is possible to compare the profitability of microfinance as an investment with that of other possible investments. Return on Equity (ROE), which is typically used in the banking sector, is however not suitable for the microfinance industry (Christen,
However, given this surprising results, this is explained by the fact that in the event of a greater number of borrowers, the cross-subsidization of the poorest borrowers becomes more difficult. This could create an incentive for some microfinance institutions into the same pool of borrowers. First, competition between MFIs within the subset of profitable borrowers reduces the ability of socially oriented lenders to generate revenue that can support lending to the poorest and potentially least profitable borrowers; that is the cross-subsidization of the poorest borrowers. As a result, poorest borrowers in the client-maximizing portfolio are dropped as competition intensifies.

More so, with increased competition within the industry, information asymmetries between lenders are likely to rise. This is explained by the fact that with the presence of a greater number of microfinance institutions in the market, the exchange of information between lenders becomes more difficult. This could create an incentive for some borrowers to contract multiple loans and ultimately increase the overall debt level among borrowers, hence, decreasing the expected equilibrium repayment rate.

A similar result was obtained by Navajas et al (2003) in the study of the bolivian microfinance market. Navajas et al (2003) studied competition in the Bolivian microfinance market by focusing on two major players (Caja Los Andes and Bancosol), which collectively share around 40% market share. The study employed data on 239 borrowers from Bancosol and 128 from Los Andes, based on a research project conducted in Bolivia in the late 1995. In order to better understand the dynamics of
contract choice and competition in this market, they developed a theoretical model to explain the behavior of competing lenders faced with both moral hazard and adverse selection problems in a pool of heterogeneous borrowers.

Their empirical results show that profitable, wealthier clients of BancoSol switched to Caja Los Andes. They also indicated that this shift of profitable clients worsened the quality of the portfolio of incumbent socially-motivated MFIs. Thus, it can be inferred that competition causes productive clients to withdraw from socially-motivated MFIs, leading to a decline in their profitability and cross-subsidization. However, in their studies, the overall effect of competition is said to be ambiguous. On one hand, it leads to innovation thereby allowing MFIs to expand outreach. On the other hand, it reduces the ability of lenders to cross-subsidize less profitable smaller loans.

Roy Mersland and R. Øystein (2007) studied the effect of Board characteristics, ownership type, competition and regulation on MFI’s outreach and its financial performance between 2000 and 2006. Based on a dataset of 226 rated MFIs from 57 countries, they found that industry competition was a major driver of financial performance. Higher competition was an explicative factor of low portfolio yield, which means that competition among MFIs bring lower interest rates to clients, but also lowers return on assets (ROA) of MFIs.

Kai Hisako (2009) conducted an empirical analysis to assess the relationship between competition, Financial Self Sufficiency (FSS) and wide outreach of socially motivated MFIs. The data for the analysis, obtained from the Microfinance Information exchange (MIX), comprises unbalanced panel data for 450 socially-motivated MFIs from 71 countries between 2003 and 2006. The empirical results showed that MFIs cope with the negative effect of competition not by reducing FSS but by limiting wide outreach. Thus, it was concluded that MFIs do not increase external subsidy, but exclude the poorest borrowers as competition intensifies. However, the more MFIs have experience, the less wide outreach is reduced by competition.

Christen (2001) argues that commercialization, which is characterized by profitability, competition and regulation does not have any effect on loan size between regulated and non regulated MFIs. But based on the work of Olivares-Polanco (2005), which tested for some of the conclusions of Christen, competition was significant in explaining loan size irrespective of the type of institution (regulated or non-regulated).

On a dataset of 28 Latin American MFIs, from the period of 1999 to 2001, a multiple regression analysis was conducted to test Christen’s conclusion, as well as for facts based on the literature of microfinance. The regression analysis was conducted to determine which of the seven variables employed in the study were predictors of loan size. The sign of the coefficient for the level of competition indicates that the higher the concentration (or lower the competition), the lower the loan size. If this variable accurately predicts loan size, then more competition in a microfinance market will also result in larger loan size, suggesting that institutions will probably search for more profitable clients. The study concluded-contrary to Christen’s result-that competition has a significant effect on loan size: more competition may lead to larger loan sizes and less depth of outreach.

T.D. Olsen (2010) used a dataset of 299 microfinance institutions working in 18 Latin American and Caribbean countries to assess the role that increased competition, state and macro-political variables play in MFI’s ability to attract borrowers. In total, these organizations lend to over 9 million people and report assets of over 13 USD billion. The analysis illustrated that increased competition reduces the number of borrowers, which had a number of implications. According to the study, MFIs may become inefficient with increased competition. Alternatively, this finding could also be interpreted as a sign that markets are saturated.

Another study from McIntosh outlined the negative effects of competition on the performance. McIntosh et al (2004) studied 780 groups of the FINCA organization in Uganda, between 1998 and 2002 to

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13 Breath of outreach, competition, Gender, credit methodology, Sustainability, age of institution and type of institution

14With the institutionalist approach, reaching the poor means small loan size. The basic assumption is that the smaller the loan size, the deeper the outreach or the poorer the client, which is consistently use as a proxy for the level of poverty.
analyze the impact that rising competition had on lending institutions. The authors used three measures of competition: Presence, Number, and Proximity of the closest competitor. In their 5-year period study, they examined the geographical placement decisions of competitors. More precisely, how borrowers responded to competition between different lenders. They found that the entrance of competing lenders and the absence of formal information sharing mechanism on credit histories of clients induced deterioration in repayment performance. More so, a deterioration in repayment performance decreases savings deposits among borrowers. According to them, these phenomena are consistent with a model of competition whereby customers do not abandon a given lender but rather go in for multiple-loan contracting. Faced with such a situation, those lending institutions now see their level of savings reduced because clients are forced to share their scarce resources among the microfinance institutions from whom they borrowed.

However, not all empirical studies concerning the issue of competition appraises it from a negative perspective. Studies conducted by authors like R. Cull (2009), Dzene Richman and Aseidu K. (2010) illustrated find a positive effect of competition on performance. First, Dzene Richman and Aseidu K. (2010) investigated the impact of competition on the sustainability of MFIs in Ghana, using a short panel data of 72 microfinance institutions for a 5 year period. Data for the study was collected through an annual survey of these institutions between 2003 and 2007. The 79 MFIs were sampled randomly from a list of over 150 registered MFIs of the Ghanaian microfinance market as at 2007. Competition was measured by applying the Herfindahl-Hirschman Index (HHI), based on the top 4 MFIs in the industry. Using two (2) measures of sustainability: operational self sufficiency (OSS) which measures operational efficiency and subsidy dependency index (SDI) which measures financial efficiency, two regression models were specified to assess the implication of growth in competition and women share of total borrowers after controlling for management efficiency indicators, macroeconomic indicators and other firm and industry level variables. The study found that industry competition increases sustainability of MFIs and reduces the dependency rate on donor subsidy or assistance. Thus, growing competition in the sector enhances overall efficiency, encourages innovation and reduces average operational cost of firms in the microfinance industry and more so, lowers the repayment risk.

Cull et al. (2009) study turned to the “industrial organization” of the microfinance sector. Using two new datasets, the authors examine whether the presence of banks affects the profitability and outreach of microfinance institutions. The study combined data on bank penetration from 99 developed and developing countries based on a study conducted by Beck, Demirguc-Kunt, and Martínez Pería (2007), with data from 346 leading microfinance institutions from 67 developing countries. These institutions are large by the standards of the microfinance industry, with nearly 18 million active microfinance borrowers and a combined total of USD 25.3 billion in assets. The data on microfinance institutions were collected by the Microfinance Information Exchange (or the MIX). But due to missing data for some of the control variables, the sample was reduced to 342 observations from 238 microfinance institutions in 38 developing countries.

They found evidence that greater competition as indicated by bank penetration in the overall economy is associated with microbanks pushing toward poorer markets, as reflected in smaller average loan sizes and greater outreach to women. The evidence is particularly strong for microbanks relying on commercial funding and using traditional bilateral lending contracts (rather than the group lending methods favored by microfinance nongovernmental organizations.) However, in this sample, competition seems to have little effect on the profitability of microbanks.

Many studies on competition and its impact on performance within the microfinance industry also show inconclusive results. Hartarska and Roy Mersland (2008) conducted a regression analysis in order to evaluate the effectiveness of several governance mechanisms on microfinance institutions’ performance. According to these authors, intense competition may act as a substitute for strong internal governance. They defined performance as efficiency in reaching many poor clients. Following the literature on efficiency in banks, performance was

15Internal governance factors are those related to the MFI board and include its size, representations by various stakeholders and managerial capture. The external factors account for the weak market-disciplining mechanisms in microfinance, such as a lack of private shareholders, the limited role of competition, and differences in regulation.
measured using efficiency coefficients obtained from a stochastic cost frontier to capture the cost minimization objective of MFIs. Within the cost function, they measured output by the number of clients served in order to capture the outreach objective of serving as many poor clients as possible. The dataset employed in the study consisted of all available risk assessment reports conducted by five major rating agencies from 2000 to 2007 and included from 260 to 380 annual observations depending on the model specification, relating to 155 MFIs from 45 countries.

Their findings regarding the role of competition are mixed. When only external factors are included in the regression, MFIs are less efficient. On the contrary, the result does not hold when they controlled for internal governance factors. However, in the absence of effective internal mechanisms of control, competition by financial institutions and in MFIs may harm efficiency since lenders rely on long-term relationship to enforce contracts. When the value of that relationship is destroyed by a higher number of lenders, MFIs are less efficient.

Ulrike Vogelsegeng (2003) analyzed repayment determinants for loans from Caja Los Andes, a Bolivian microlender. The data used for the analysis consist of information about 76,000 clients and 28,000 rejected loan applications between May 1992 and June 2000. Data was provided by Caja Los Andes. The median loan amount disbursed within this period had increased from $US 367 to $US 565. According to the author, the Bolivian microfinance institutions have faced a strong increase in late payments during these years. Between the year 1996 and 2000, the percentage of overdue capital rose from 2.6% to 12.3% for BancoSol and from 4.0% to 7.7% for Caja Los Andes, the two largest Bolivian micro lenders.

The empirical analysis focused on the prediction of loan default and late payments and used two different units of observation. The analysis of loans was considered in the spirit of credit scoring models, predicting which loans are likely to be overdue frequently or by a long time. Its results were particularly helpful for future decisions about which loans to approve and which to reject. The result revealed that competition had a two-fold influence structure. On one hand, competition goes along with higher levels of indebtedness and, in particular, with many clients taking multiple loans from different sources at the same time. For example, 13% of Caja Los Andes new clients had prior loans from other sources in 1996. By 2000, this number had risen to 24%. On the other hand, increasing competition had positive effects on repayment behavior. The analysis of payments showed that a client with given characteristics is more likely to pay punctually. That is, clients with several loans, for example, are more likely to pay on time in a place where competition is higher. This dependency could have two possible sources: first, clients could be more aware of the importance of timely repayment in an environment where microloans are part of the day-to-day business; Secondly, being aware of possible negative effects of high supply, Caja Los Andes could have developed higher repayment incentives and more efficient screening to compensate for high competition and supply.

3. METHODOLOGY AND DATA

3.1 The Model

Microfinance industry is characterized by a different production function to that of conventional profit seeking retail banks or any other corporate entity. To empirically ascertain significant determinants of financial performance in microfinance institutions, a multivariate linear regression model has been used. While specifying certain tests to support the use of a linear function, it is evident that the linear functional form is widely used in the literature and produces good results; see for example Mersland and Strøm, (2009), Francisco-Polanco (2005), who used linear models to estimate the impact of various factors susceptible to affect the performance of MFIs. One of the most useful aspects of a multiple regression model is its ability to identify the independent effects of a set of variables on a dependent variable (William H., 2008). The model takes the following form:

\[ Y_{it} = \alpha + \beta_1 X_{it} + \beta_2 X_{it} + \beta_3 X_{it} + \beta_4 X_{it} + \beta_5 X_{it} + \alpha Z_{it} + \epsilon_{it} \]  

(1)

Where \( i \) refers to an institution; \( t \) refers to year; \( Y_{it} \) refers to sustainability and is the observation of financial institution \( i \) in a particular year \( t \); \( X \) represents determinants of a financial institution; \( Z \) is vectors of control variables representing macroeconomic indicators; \( \epsilon_{it} \) is a normally distributed disturbance term.
The linear regression model is based on the following assumptions:

1. Linearity: y is linearly related to the x’s through the β parameters.
2. Absence of collinearity: The x’s are not linearly dependent.
3. Expectation of ε: E (εi | xi) = 0 for all i.
4. Absence of homoscedasticity: For a given xi, the errors have a constant variance: Var(εi | xi) = σ^2 for all i.
5. Uncorrelated errors: For two observations i and j, the covariance between εi and εj is zero.

The theoretical model presented above in equation (1) can be re-written as follows:

\[ ROA_{it} = U + \beta_1 CR4_t + \beta_2 OER_{it} + \beta_3 PAR>30_{it} + \beta_4 STP_{it} + \beta_5 SMR_{it} + \alpha_1 INFL_t + \alpha_2 LNGDP_t + \epsilon_{it} \]  \hspace{1cm} (2)

Where:

- ROA_{it}: return on assets for MFI i in year t
- OER_{it}: ratio of operational expenses for MFI i in year t
- PAR>30_{it}: portfolio at risk due over 30 days for MFI i in year t
- STP_{it}: staff productivity for MFI i in year t
- SMR_{it}: savings mobilization ratio for MFI i in year t
- CR4_t: concentration index representing industry competition in year t
- INFL_t: annual inflation rate for year t
- LNGDP_t: natural log of GDP for year t

and where t = 2007 to 2011, U = constant, β and α are coefficient of variables.

The dependent variable used in this study to measure sustainability is the Return on Asset (ROA). This research uses ROA as an indicator of sustainability based on data available. ROA is also technically preferred to ROE since MFI equity in Africa is abnormally small (Lafourcade et al., 2005) and considered impractical to use.

The independent variables selected in the study are as follows:

- **Competition (CR4)**: a concentration index is used to measure competition in the microfinance industry. We used the Herfindhal-Hirschman index (HHI) as a measure of competition. A low concentration index is associated with high competition and vice versa. HHI is frequently used by researchers in studies pertaining to banking and microfinance industries (see Richman and Aseidu, 2010; Olivares-Polanco, 2005).

- **Portfolio Quality (PAR>30)**: provides information on the percentage of non-earning assets, which in turn decreases the revenue and liquidity position of MFIs. Rosenberg (1999) argued that client delinquency is considered to be an important correlate of MFI loan default. This variable is a very important performance indicator. A lender’s ability to collect loans is crucial for its success, given that loan granting is the principal source of revenue of these lending institutions. If delinquency is not kept to very low levels, it can quickly spin out of control. Furthermore, loan collection has proved to be a strong proxy for general management performance. There exist several indicators for portfolio quality: portfolio at risk, loan at risk, write-off, and current recovery rate. In this study, we use portfolio at risk, which is the standard measure of portfolio quality in the banking industry. Thus PAR>30 represents portfolio quality beyond 30 days.

- **Productivity (STP)** refers to the volume of business that is generated (output) for a given resource or asset (input). Common measures of productivity include the number of active borrowers per employee, and average portfolio outstanding per credit officer. In this case, it is staff productivity (STP) which is the ratio of borrowers per employee that is retained as a measure of productivity. It is a common ratio applied in the microfinance industry.
The Data

The data for this study was principally collected through a self developed questionnaire administered on the CamCCUL network which is made up of about 191 MFIs, regrouped in 9 chapters. The choice of CamCCUL is justified by the fact that the network is the most important in the country, the oldest and most organized both at the National and Sub-regional level. CamCCUL represents about 76% of deposits and 74% of credits or loans allocated by the sector. At the sub-regional level, these rates are at about 42% and 52% respectively. Data collected were reduced to the Bamenda Chapter of the North West Region of Cameroon which is made up of 42 MFIs from which 25 MFI were retained based on the five-year period (2007-2011) of study. The period of study is important because it characterizes a period of rapid growth in the activities of the network. By the time of constructing the dataset, there were 32 microfinance institutions of the network, giving a total of 160 observations, but due to missing values especially in the year 2009 and the fact that 4 MFIs never completed the questionnaire, several MFIs had to be dropped from the initial dataset. The final sample contains 125 observations relating to 25 MFIs of the network.

Econometric Issues

Some econometric issues may arise when linearly regressing a dependent variable on some independent variables. For the purpose of this study, we checked whether our empirical model is free from multicollinearity, heteroscedasticity and autocorrelation. If any one of those phenomenon turns out to be present, this would be a violation of a key assumption of OLS regression.

We test for collinearity by using the variance inflation factors (VIF) statistics. We use $R_i^2$ to represent the proportion of variance in the $i$th independent variable that is associated with the other independent variables of the model. Tolerance on its part represents the proportion of variance in the $i$th independent variable that is not related to the other independent variables. Literature has it that small intercorrelations among the independent variables imply that $VIF \approx 1$. But when the VIF >10, which is applied as the rule of thumb, then collinearity is a problem and the model needs be cleaned up.

$$VIF = 1/\text{tolerance}, \text{and tolerance} = 1-R_i^2$$

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### TABLE 1: LIST OF VARIABLES

<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>DEFINITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Asset</td>
<td>After tax profit/average assets</td>
</tr>
<tr>
<td>(ROA)</td>
<td></td>
</tr>
<tr>
<td>Competition (CR)</td>
<td>HHI for annual deposits of a MFI on total deposit of the market. The index ranges from 0 to 1, indicating a competitive to an uncompetitive market.</td>
</tr>
<tr>
<td>Portfolio at risk</td>
<td>(Portfolio past due&gt;30 +rescheduled portfolio)/gross loan portfolio</td>
</tr>
<tr>
<td>(PAR&gt;30)</td>
<td></td>
</tr>
<tr>
<td>Operational expenses</td>
<td>Personal and administrative expenses/average gross loan portfolio</td>
</tr>
<tr>
<td>ratio (OER)</td>
<td></td>
</tr>
<tr>
<td>Staff productivity</td>
<td>Number of active borrowers/Total number of employees</td>
</tr>
<tr>
<td>(STP)</td>
<td></td>
</tr>
<tr>
<td>Deposit mobilization</td>
<td>Total deposit/gross loan portfolio</td>
</tr>
<tr>
<td>ratio (SMR)</td>
<td></td>
</tr>
</tbody>
</table>

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$$VIF = 1/\text{tolerance}, \text{and tolerance} = 1-R_i^2$$
Where $R_i^2$ is the proportion of variance in the $i$th independent variable that is associated with the other independent variables of the model.

VIF analysis is the most widely used approach among other methods, such as correlation matrix, t-test of the parameter, and the condition index analysis because the Variance Inflation Factors make it possible to detect multicollinearity and to measure its effects on the accuracy of the regression estimate.

To check for the presence of heteroskedasticity, we used the Breusch-Pagan / Cook-Weisberg tests. This involves testing the null hypothesis that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables. In other words, the alternative hypothesis states that the error variance increases (or decreases) as the predicted values of Y increase. A large chi-square would indicate that heteroskedasticity is present, thus indicates that the error term is a multiplicative function of the predicted values.

We used the Durbin-Watson to test for the existence of autocorrelation of errors. Specifically, we tested whether adjacent residuals are correlated, which is a violation of the regression assumption that the residuals are independent. In short, this module is important for testing whether the assumption of independence of errors is tenable. The statistic used in the literature is $d$ or DW and defined as:

$$\frac{\sum_{t=2}^{n}(e_t-e_{t-1})^2}{\sum_{t=1}^{n}e_t^2}$$

The procedure therefore tests the null hypothesis ($H_0$) that the errors are uncorrelated against the alternative hypothesis ($H_1$) that errors are AR (1). Thus if $\rho_e$ is the error autocorrelations, then we have $H_0$: $\rho_e = (s>0)$, and $H_1$: $\rho_e = \rho$ for some nonzero $\rho$ with $|\rho| < 1$. To test $H_0$ against $H_1$, we get the least square square estimates for the parameters and their corresponding estimated errors $e_1, e_2, ..., e_n$.

The statistic can vary between 0 and 4 with a value of 2 meaning that the residuals are uncorrelated. A value greater than 2 indicates a negative correlation between adjacent residuals whereas a value below 2 indicates a positive correlation. The size of the Durbin-Watson statistic depends upon the number of predictors and the number of observations. As a very conservative rule of thumb, Field (2009)\textsuperscript{16} suggests that values less than 1 or greater than 3 are definitely cause for concern; however, values closer to 2 do not call for too much concern.

4. THE RESULTS

In this section, we first provide the descriptive statistics of the key variables used in the study. Next, we discuss the correlation results between variables of interest and the model diagnosis. Last, we present the results of the linear regression model.

4.1 Descriptive Statistics

The descriptive statistics explores and presents an overview of all variables used in the analysis. Table 2 shows the mean, standard deviation, maximum and minimum for the all variables.

ROA is an indicator of how profitable a company is relative to its total assets and it shows how efficient management is at using its assets to generate earnings. From Table 2, we see that the average ROA (mean) and its standard deviation, 0.03% and 16.93% respectively are within the expected range. But the minimum and maximum values suggest a wide dispersion of the variable. It is evident from the summary statistics that there is a clear difference among MFIs. However, an average ROA of 0.03% implies that MFIs are barely profitable. This weak financial performance may somehow be attributed to the corporate tax newly imposed on Cooperatives. Nevertheless, when we compare the value to that of the Central Africa region which stands at -0.6%, it is evident that MFIs in Cameroon are much more performant.

The Operational expense ratio (OER) averagely stands at 29.30% which is a reasonable value. But MFIs will need to work harder so as to ensure cost efficiency. Loan portfolio is the most important asset of MFIs. Portfolio quality reflects the risk of loan delinquency, determines future revenues and an institution’s ability to increase outreach and serve existing clients. As indicated by PAR>30 with an average rate of 25.51%, the portfolio quality is low. Its quality is even lower when compared to that of the regional level which stands at 4.1%. Hence, much attention should be given to loan delinquency by MFIs.

\textsuperscript{16} (Koffi Krakah, 2010)
Productivity is a combination of outreach and efficiency. Productive MFIs maximize services with minimal resource including staff and funds. From the table below, the mean borrowers /staff ratio is 46. A ratio which is very low when compared to the mean value in the Central Africa’s sub-region which stands at 85 (Lafourcade et al, 2005).

TABLE 2: DESCRIPTIVE STATISTICS

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Std Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.0003</td>
<td>0.1693</td>
<td>-0.7709</td>
<td>0.9000</td>
</tr>
<tr>
<td>CR4</td>
<td>0.0018</td>
<td>0.0102</td>
<td>0.0000</td>
<td>0.0908</td>
</tr>
<tr>
<td>OER</td>
<td>0.2930</td>
<td>0.2389</td>
<td>0.06</td>
<td>1.5933</td>
</tr>
<tr>
<td>PAR&gt;30</td>
<td>0.2551</td>
<td>0.1603</td>
<td>0.00</td>
<td>0.9362</td>
</tr>
<tr>
<td>STP</td>
<td>46.5447</td>
<td>29.3873</td>
<td>2.333</td>
<td>146.329</td>
</tr>
<tr>
<td>SMR</td>
<td>1.2184</td>
<td>0.5990</td>
<td>0.2046</td>
<td>4.4669</td>
</tr>
<tr>
<td>INFL</td>
<td>0.0011</td>
<td>0.0065</td>
<td>0.00</td>
<td>0.0587</td>
</tr>
<tr>
<td>LNGNP</td>
<td>0.9259</td>
<td>4.5547</td>
<td>0.00</td>
<td>23.7404</td>
</tr>
</tbody>
</table>

Source: The Authors

Deposit mobilization (SMR) measures the capacity of these institutions in mobilizing resource. A mean of 121.84% proves that most MFIs are efficient in terms of savings mobilization. However, as criticized by authors, savings mobilization is not accompanied by a corresponding increased in the volume of credit (George Kobou et al, L.Fotabong, 2012)

4.2 Model Diagnosis and Correlation Analysis

The Ordinary Least Squares (OLS) multivariate regression was used in this study to see whether there is a significant relationship between ROA and its determinants. Although the OLS regression assumes the independence of explanatory variables, there is a need to test for the presence of multicollinearity. A significant level of dependency will compromise the results and bias regression estimates. Multicollinearity exists when one or more of the explanatory variables are highly collinear with other variables in the regression model. Multicollinearity can be assessed by examining tolerance and Variance Inflation Factor (VIF). A small tolerance value indicates that the variable under consideration is almost a perfect linear combination of the independent variables already in the equation and that it should not be added to the regression equation. All variables involved in the linear relationship should not have a small tolerance. Some suggest that a tolerance value less than 0.1 should be investigated further. If a low tolerance value is accompanied by large standard errors and non significance, multicollinearity may be an issue (Saidov Elyor, 2009).

The correlation matrix in table 3 exhibits the extent to which the independent variables relate to each other. Indeed the independent variables (Industry competition measured by the market share of the top four (4) MFIs in the industry; Operational expense ratio; Portfolio at risk; Staff productivity; Savings mobilization; annual inflation and the Log of GDP a measure of the level of economic activities) are not supposed to be dependent on each other or statistically relate to each other. However, what can be observed from table 3 is that, with the exception of Log of GDP which is significantly correlated with CR4 (0.6725) and INFL (0.5006), all other pair wise correlations between regressors are less than 0.50, an indication that multicollinearity is significant only with one explanatory variable.

Based on results from table 3 below, it is suggested that multicollinearity is present and is significant for log of GDP. However in the analysis, all independent variables have tolerance value bigger than 0.1 (refer to table 4.3). More so, by the benchmark that has been set, the VIF is not greater than 10 for any of the explanatory variables irrespective of whether multicollinearity was present. Thus multicollinearity is considered not to be serious and is ignored.

TABLE 3: CORRELATION MATRIX

<table>
<thead>
<tr>
<th></th>
<th>CR4</th>
<th>OER</th>
<th>PAR&gt;30</th>
<th>STP</th>
<th>SMR</th>
<th>INFL</th>
<th>LNGNP</th>
<th>DP</th>
</tr>
</thead>
<tbody>
<tr>
<td>CR4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OER</td>
<td>-0.06</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PAR&gt;30</td>
<td>-0.02</td>
<td>0.08</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STP</td>
<td>0.003</td>
<td>0.34</td>
<td>0.0075</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SMR</td>
<td>-0.009</td>
<td>0.02</td>
<td>0.002</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>INFL</td>
<td>-0.15</td>
<td>0.00</td>
<td>0.015</td>
<td>-0.00</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LNGNP</td>
<td>-0.67</td>
<td>0.06</td>
<td>0.06</td>
<td>0.091</td>
<td>-0.500</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The Authors
TABLE 4: COLLINEARITY STATISTICS

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized coefficients</th>
<th>Stand coef.</th>
<th>Colinearity stats</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b</td>
<td>std dev</td>
<td>beta</td>
</tr>
<tr>
<td>Constant</td>
<td>0.118</td>
<td>0.055</td>
<td></td>
</tr>
<tr>
<td>CR4</td>
<td>0.170</td>
<td>3.195</td>
<td>0.010</td>
</tr>
<tr>
<td>OER</td>
<td>-0.145</td>
<td>0.067</td>
<td>-0.205</td>
</tr>
<tr>
<td>PAR&gt;30</td>
<td>-0.272</td>
<td>0.093</td>
<td>-0.258</td>
</tr>
<tr>
<td>STP</td>
<td>-0.001</td>
<td>0.001</td>
<td>-0.116</td>
</tr>
<tr>
<td>SMR</td>
<td>-0.011</td>
<td>0.026</td>
<td>0.039</td>
</tr>
<tr>
<td>INFL</td>
<td>0.161</td>
<td>4.292</td>
<td>-0.006</td>
</tr>
<tr>
<td>LNGDP</td>
<td>0.001</td>
<td>0.008</td>
<td>0.013</td>
</tr>
</tbody>
</table>

Dependent Variable: ROA

Source: The Authors

The result of Breusch-Pagan/Cook-Weisberg test shows that heteroskedasticity is present in the model though very small. Indeed we find a large value of chi-square chi2 (1) = 1.15 and a small P-value (Prob > chi2 = 0.2827) which indicates that heteroskedasticity is present in the model, thus the error terms of the model are a multiplicative function of the predicted values. We reject the null hypothesis in this situation and conclude that there are heteroscedastic errors in the model. According to Berry and Feldman (1985), and Tabachnick and Fidell (1996) slight heteroskedasticity has a light effect on the significance tests and can be ignored. This assumption can be checked by plotting standard residuals against standardized predicted values. Ideally, residuals are randomly scattered around zero (horizontal line) providing a relative distribution. Based on this assumption, it is verified that the problem of heteroskedasticity is not too serious as shown by Figure 3.

However, to be on the safe side, we conduct a robust regression procedure to correct for heteroscedasticity and obtain better results like in Davidson and Mackinnon (1993) and Angrist and Pischke (2009) studies.

The DW test also reveals that autocorrelation is not much of a problem in this study. Table 5 shows the DW found is between 1 and 2 which is an indication that autocorrelation is present but not serious as suggested by the rule of thumb of Field (2009)\(^\text{17}\). That rule suggests any value less than 1 or greater than 3 is definitely problematic. However, values closer to 2 are not that serious to violate the tenability of the model.

TABLE 5: DURBIN-WATSON STATISTIC FOR AUTOCORRELATION

<table>
<thead>
<tr>
<th>Category</th>
<th>DW Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>1.293</td>
</tr>
</tbody>
</table>

Source: The Authors

4.3 Regression Results

The R\(^2\) is a measure of the goodness of fit of the independent variables in explaining the variations in ROA of MFIs. In the case of this study, the coefficient of determination (R-square) is 23.01%. This shows that all of the independent variables collectively explain by 23.01% the variability in ROA (financial performance) of MFIs in Cameroon. The null hypothesis of F-statistic (the overall test of significance) that the R\(^2\) is equal to zero was rejected as the p-value was sufficiently low. The remaining 76.99% of changes will be identified by other factors not captured in the model.

Based on the regression results presented in table 4.7, the model of this study can be written as follows:

\[
\text{ROA} = 0.099 + 0.010 \times \text{CR4} - 0.205 \times \text{OER} - 0.258 \times \text{PAR} > 30 - 0.116 \times \text{STP} + 0.039 \times \text{SMR} - 0.006 \times \text{INFL} + 0.001 \times \text{LNGDP}
\]

The regression results in Table 8 report a positive coefficient of market competition (CR4), thus reflecting a positive impact of competition on sustainability. This result negates our first hypothesis in the study which stated that competition has a negative effect on performance. A result which is also at odd with most empirical evidence (see Niel Hermes et al., 2010; McIntosh, Janvry, and Sadoulet (2004), Marquez (2002), Vogelsegeng (2003), Marquez (2002) and Francisco-Polanco (2005). The result suggest that the more concentrated (less competitive) the microfinance market, the lower the

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\(^{17}\) Kofi Krakah (2010)
sustainability of MFIs. However, competition was not significant in explaining the variability of return on assets (ROA). This result confirms the financial deepening literature (see Greenwood and Jovanovich (1990), King and Levine (1993)) of improving efficiency with growing competition as inefficient firms are self selected leaving only the efficient firms in the market. More so, the positive coefficient of competition confirms the works of D. Richman and K. Aseidu (2012). Put differently, sustainability reduces as the MFI market becomes uncompetitive or monopolistic as the latter is noted for market inefficiency. Although competition may reduce repayment performance as espoused by McIntosh, Janvry, and Sadoulet (2004), it may however improve overall efficiency, encourage innovation and reduce average operational cost of firms in the MFI industry (D. Richman and K. Aseidu 2012).

The Impact of Management Efficiency

MFI literature identifies operational expense ratio and productivity as one of the main indicators of efficiency of management. The result suggest that rising operational expense ratio (a measure of cost efficiency) which is an indication of weaker or declining efficiency level of management, negatively impacts the financial performance of MFIs in Cameroon. Empirical evidence points to the fact that providing microfinance is a costly business due to high transaction and information costs (Hermes and Lensink, 2007). This perhaps also reflects problems in corporate governance as evidenced by Mersland and Strøm (2009) who conclude that better corporate governance is a key factor for enhancing the viability of the microfinance industry. This is consistent with Chhaochharia and Laeven (2009)\(^{18}\) who concluded that improvements in corporate governance impacts positively on firm value.

Productivity is also a significant determinant of performance. Productivity measured by Staff productivity (STP) was negatively related to the financial performance of MFIs. This negative sign simply reflects the quality of services rendered to customers. This result agrees with findings from D. Richman and K. Aseidu (2012) who indicated that efficient managerial and technical skills are critical for the sustained survival of these institutions. A point shared by L. Fotabong (2012) who criticized the sector in Cameroon. According to the author, the sector lacks qualified human resources and professionalism. Data collected from these institutions showed that about 60% of the employees were holders of the General Certificate of Education (GCE) Advanced Level (A/L). D. Richman and K. Aseidu (2012) also indicated that lack of essentially needed managerial skills is a serious threat to the continued survival and profitability of small businesses in developing economies as it facilitates low production levels and high transaction costs.

The Impact of Portfolio quality

Loan repayment which measures portfolio quality is an essential ingredient for sustainability of MFIs. A low repayment rate is expected to reduce the probability of MFI survival. Loan repayment indicators include Portfolio at risk (PAR). As predicted by Miller and Noulas (1997)\(^{19}\) and Cooper et al., (2003), credit risk measured by the sum of the level of loans past due 30 days or more (PAR>30) is negatively and significantly related to MFI sustainability. This study therefore finds evidence to support the conjecture that increased exposure to credit risk is associated with lower MFI sustainability, given that credit granting is the principal source of revenue for these institutions. This finding is consistent with Peter W. (2012), D. Richman and K. Aseidu (2012), Ben Soltane (2012) which identified credit risk as the biggest risk faced by the MFIs globally. This negative relationship attests that a higher portfolio at risk would block good financial results. Hence, MFIs should endeavor to improve the quality of their portfolio at risk in order to ensure their sustainability.

The Impact of Macroeconomic Indicators

A stable macroeconomic environment is necessary for the viability of MFIs. This study tests the influence of macroeconomic indicators (GDP growth and inflation) on the sustainability of MFIs. The result shows a negative impact of inflation and a positive impact of GDP growth on the sustainability of MFIs. The result confirms the work of Weele and Markowich (2001). However, the results were statistically not significant indicating that macroeconomic variables do not influence significantly the variability of ROA. Nevertheless, improving macroeconomic performance raises overall income level and business performance which ultimately improves clients repayment ability and hence sustainability of MFIs. Weele and Markowich

\(^{18}\) Cited by Peter W. (2012)

\(^{19}\) Cited by Peter W. (2012)
(2001) indicated that repayment levels are usually weak and low in the presence of higher inflation rates.

The main finding of our study is that competition as measured by the Herfindhal-Hirschman concentration index, portfolio quality which may affect the lender’s ability to collect loans, management efficiency measures such as staff productivity and operational expense ratio obtained from the ratio of personal and administrative expenses over the average gross loan portfolio, deposit mobilization ratio calculated by taking total deposits over gross loans portfolio. We regressed those independent variables on MFIs’s return on assets controlling for inflation and the state of the economy using the logarithm of gross domestic product as a regressor. In order to ascertain the quality of the linear regression coefficients in the model, we checked for multicollinearity, heteroskedasticity, and whether errors were autocorrelated. A significant presence of multicollinearity, heteroskedasticity and autocorrelation, would violate the three key assumptions of OLS regression. Fortunately, using the variance inflation factor analysis, the Breusch-Pagan and the Durbin-Watson tests, those potential econometric issues were not much of a problem.

The main objectives of this study were: (1) to determine the impact of competition on the performance of MFIs in Cameroon, (2) to identify the principal determinants of performance for MFIs. We examined the variables that can affect the financial performance of MFIs. The variables selected are:

5. CONCLUDING REMARKS AND RECOMMENDATIONS

The main objectives of this study were: (1) to determine the impact of competition on the performance of MFIs in Cameroon, (2) to identify the principal determinants of performance for MFIs. We examined the variables that can affect the financial performance of MFIs. The variables selected are:
customers especially in the case of the CamCCUL network, that method has its own limitations since the system is still manual making it difficult to track bad faith customers.

The challenge therefore lies in creating microcredit schemes that will respond to the needs and potentials of the targeted communities. In Cameroon, there exist practically little or no training centers specialized in increasing the capacity of microfinance practitioners. This represents a serious hindrance for a healthy expansion of the industry because as earlier mentioned, most of the practitioners and promoters don’t have the necessary know-how on managing microfinance activities, which has its peculiarities compared to standard banking techniques.

In the last couple of years, we’ve seen a dangerous trend in the industry with many MFIs shutting down for mismanagement. The creation of a division within the Ministry of Finance (MINFI) in charge of control and regulation of microfinance activities can supplement the control of COBAC (Central Africa Banking Commission) whose role is to control banking activities, and which unfortunately lacks the man power to effectively extend its role to microfinance institutions. The creation of a separate control institution will ensure MFIs respect the prudential norms fixed by COBAC and improve the quality of the portfolio detained by these institutions.

Figure 3: Plot of errors against fitted Values

REFERENCES


51. Rosenberg (2009), “Measuring Results of Microfinance Institutions: Minimum Indicators that Donors and Investors should Track”, (CGAP) Consultative Group to Assist the Poorest.


