Centre Emile Bernheim
Research Institute in Management Sciences

Solvay Brussels School
Economics & Management

Can combining credit with insurance or savings enhance the sustainability of microfinance institutions?

Koen Rossel-Cambier

Worldwide, microcredit organizations are gradually transforming to multi-servicing organizations offering additional financial services. This paper examines whether combining microcredit with insurance and/or savings enhances their economic performance by increasing their efficiency, productivity, sustainability or portfolio quality indicators. Using cross-sectional data from 250 microfinance institutions (MFIs) from Latin America and the Caribbean, it compares MFIs offering credit only with those combining credit with respectively savings and insurance. By using multiple regression analysis, this research finds positive effects of both savings and insurance on the efficiency and productivity of MFIs. Still, this research didn't find significant results with relation to the sustainability and portfolio quality of MFIs. Overall, taking into account various risks, combined microfinance can enhance organisational efficiency and productivity because of the different economies of scope which can be achieved. This reveals especially for large and mature MFIs which already exhibit readiness in terms of human, financial, and organizational resources to deal with the complexity of delivering multiple financial services.

Keywords: performance, microfinance, combined microfinance, microinsurance, microcredit, microsavings, Latin America and the Caribbean

JEL Classifications: C3, G21, G22, L31, O54

CEB Working Paper N° 10/057
2010

Université Libre de Bruxelles - Solvay Brussels School of Economics and Management
Centre Emile Bernheim
ULB CP145/01 50, avenue F.D. Roosevelt 1050 Brussels BELGIUM
e-mail: ceb@admin.ulb.ac.be Tel. : +32 (0)2/650.48.64 Fax : +32 (0)2/650.41.88

ULB

Can combining credit with insurance or savings enhance the sustainability of microfinance institutions?

Koen Rossel-Cambier[1]

Abstract

Worldwide, microcredit organizations are gradually transforming to multi-servicing organizations offering additional financial services. This paper examines whether combining microcredit with insurance and/or savings enhances their economic performance by increasing their efficiency, productivity, sustainability or portfolio quality indicators. Using cross-sectional data from 250 microfinance institutions (MFIs) from Latin America and the Caribbean, it compares MFIs offering credit only with those combining credit with respectively savings and insurance. By using multiple regression analysis, this research finds positive effects of both savings and insurance on the efficiency and productivity of MFIs. Still, this research didn't find significant results with relation to the sustainability and portfolio quality of MFIs. Overall, taking into account various risks, combined microfinance can enhance organisational efficiency and productivity because of the different economies of scope which can be achieved. This reveals especially for large and mature MFIs which already exhibit readiness in terms of human, financial, and organizational resources to deal with the complexity of delivering multiple financial services.

Keywords: *performance, microfinance, combined microfinance, microinsurance, microcredit, microsavings, Latin America and the Caribbean*

JEL: *C3, G21, G22, L31, O54*

[1] The author thanks Marc Labie, Benoît Mahy, Ariane Szafarz, Emmanuel Dhyne and Marek Hudon for their valuable feedback.

1. Introduction

Over three decades after its starting days in many low and middle-income countries, microfinance is standing today at the forefront of numerous poverty alleviation plans and strategies and is being implemented worldwide as a decentralized tool to ensure enhanced access to various financial products such as microcredit, microsavings and microinsurance.

Microcredit can be defined as the extension of very small loans (microloans) to the unemployed, to poor entrepreneurs and to other unbankable populations (Helms, 2006). Microsavings services go hand in hand with the supply of deposit and payment products such as current accounts, small-scale investment funds, money transfer services including remittances (Sukadi, 2009) and various bill payment services. Microinsurance is the protection of low-income people against specific perils in exchange for regular monetary payments (premiums) proportionate to the likelihood and the cost of the risk involved (Wipf and Garand, 2008).

The majority of the microfinance institutions (MFIs) in Latin America and the Caribbean have evolved from delivering loans only to simultaneously delivering financial products of different nature. The combination in the supply of at least two of these product areas can be referred as combined microfinance (CMF). Both practitioners (Caplan, 2008), promoters (ILO STEP, 2007; Churchill, 2006; Helms, 2006) and academics (Labie, 2009; Morduch, 1999) describe this trend as a core part of the growing product diversification of MFIs.

Practice shows that, while new initiatives continue to mushroom, many of them –credit, insurance or savings oriented- are vulnerable in terms of organisational sustainability (Servet, 2005; Westley, 2005; Lashley, 2004; Baeza, 2002). Hence, adding services can lead to additional risks and complexity. Consequently, there is a need to study whether the combination of credit with savings or insurance either strengthens the sustainability – or economic performance at large- of MFIs or makes them even more vulnerable.

This paper takes the point of view of a microcredit organisation which may simultaneously offer savings or insurance products. It focuses on economic performance,

expressed by sustainability (financial performance), efficiency, productivity and portfolio quality indicators. This research builds on existing research and on information provided by over 300 websites describing the activities of MFIs and their promoters. It benefits from audited financial and general indicators available from the Mixmarket[2] covering the fiscal year 2006. The cross-sectional analysis refers to 7500 observations from 250 MFIs from Latin-America and the Caribbean.

The paper is organized as follows. The second section reviews the literature on economic performance of MFIs and combined microfinance. Section 3 presents the literature background and projects hypotheses which are tested in the empirical section. Section 4 explains the methodology and in the following section, the dataset is described. Section 6 summarizes the findings, while the final section seven draws conclusions on the results for future action and research.

2. Measuring the economic performance of combined microfinance

Various sources in literature (Cull *et al.*, 2007; Depret and Hamdouch, 2005; Neely, 2005) identify a set of performance measures to monitor MFIs' objectives. However, the provision of services, such as high or low-risk insurance, long- or short-term loans, or savings arrangements, involves different managerial and organizational responses in terms of risk management, client relationships, liquidity and solvency forecasting or cash-flow management.

Specific performance assessment tools for practitioners in the microcredit sector include: ACCION's "camel"[3], WOCCU's "pearls"[4], PlaNet Rating's "girafe"[5], and the methodologies of MicroRate[6] and M-CRIL[7] (CGAP, 2001). Since 2003, CGAP and the SEEP Network have mobilized a consensus amongst microfinance promoters on common indicators and definitions (SEEP Network, 2005). In the microinsurance sector, performance measurement indicators have been proposed by ILO STEP (2007), Wipf and Garand (2008), and Nabeth (2006). Specific instruments dealing with the evaluation of

[2] See: http://www.mixmarket.org
[3] See: http://helpendpoverty.com/camel.asp
[4] See: http://www.woccu.org/bestpractices/pearls
[5] See: http://www.planetrating.com/EN/rating-girafe.php
[6] See: http://microrate.com/
[7] See: http://www.m-cril.com/

the performance of microinsurance are the GTZ InfoSure software[8], ILO STEP's MAS Pilote[9] and the effectiveness benchmarking studies undertaken by the Insurance Industry Association for Benchmarking (IIAB)[10]. With regards to the performance of microsavings, one can distinguish three stages over time: putting in, keeping in, and taking out monies (Hirschland, 2005). Therefore, specific indicators are considered such as own deposits per month, participant accumulation per month, the dollar-months saved ratio and the savings rate and savings consistency (Schreiner, 2001).

The MFIs surveyed in this paper all do deliver loan products as main products. Therefore, economic performance is analyzed from the point of view of a microcredit organization. In this framework, the financial ratios are often considered by practitioners and literature (Bruett, 2006; The SEEP Network, 2005; CGAP, 2003) in four different categories: efficiency/productivity, financial performance, asset/liability management, and portfolio quality. These categories refer to various indicators and measures which derive from the financial ratio analysis implemented in conventional financial institutions (Gutiérrez-Nieto *et al.*, 2009). They enable comparability and access to compatible data but do not reflect the specificities of insurance and savings products. Acknowledging the limits in viewing performance as defined by rating agencies, this paper nevertheless refers to this performance framework in order to remain coherent with the most commonly agreed definitions in the sector.

[8] See: http://www.infosure.org
[9] See: http://www.ilo.org/public/english/protection/secsoc/step/activities/afrique_ouest/mas_pilote.htm
[10] See: http://www.iiab.org

3. Literature on the Economic Performance of Combined Microfinance: Hypotheses

Existing research has explored the factors that influence the economic performance of microcredit organizations which are reflected by variables such as governance (Mersland and Strøm, 2009; Qureshi, 2006), loan delivery (Cull *et al.*, 2007), outreach (Hermes *et al*., 2007), the age of the scheme (Stephens, 2005), financial regulation (Hatarska and Nadolnyak, 2007), the organizational structure (Tucker, 2001), the internal management skills (Hudon, 2007), the macro economic context (Ahlin, Lin and Maio, 2010) and product delivery mechanisms (McCord, Buczkowski and Saksena, 2006).

There are reasons to argue for or against combining microfinance services, whether relating to the linkages between credit and savings or, more recently, between credit and insurance. This research therefore documents and formulates following hypotheses, which will be tested empirically in this paper.

H1: the delivery of savings enhances the economic performance of microcredit organisations

Offering credit and savings simultaneously may also involve economic risks, linked to the different nature of loans and savings. Many organizations may feel the demand for savings without having the necessary resources to respond to it (Robinson, 2004). Guérin, Palier and Prevost (2009) report for example that in India voluntary savings and social funds –easier to organise than microinsurance- do not reach full development because of lack of organisational capacity to implement these. Often national legislation stipulates conditions for a MFI to deliver savings products (Hatarska and Nadolnyak, 2007). This reflects the highly sensitive dimension of microsavings as it should enable poor persons to make safe deposits (Hirschland, 2005). Also, reimbursement rates should be kept high enough to not threaten the credibility of the savings function (Armendáriz and Morduch, 2005). Savings and loans products entail different financial dynamics to achieve break-even and develop economics of scale and scope (Robinson, 2004). For credit-based institutions, reaching scale can mean making a profit without relying heavily on high spread and fee yields and hence achieving economies of scale on cost reductions. For

savings-based institutions, the dynamics may work in the opposite direction, with profitability often maintained by investing efforts in quality small-scale lending services (Peachey, 2007).

Still, in general, literature underscores the advantages of the credit-savings combination for a wide range of performance issues. In the recent and historical literature on informal savings, many authors have stressed the importance of savings for the organisational sustainability purposes (; Low, 1995; Von Pischke, 1981; Bouman, 1977). More recently, Ahlin and Jiang (2008) suggest that the lasting effects of microcredit may partially depend on its simultaneous facilitation of microsavings. While savings have a social mission to safeguard clients' monies, they also include various advantages for the MFI itself. As a complement to credit, savings can yield economies of scope, cost-effectiveness in loan delivery and reduced transaction costs (Hirschland, 2005). CMF can facilitate joint client registration, increased information on the client's financial status, and enhanced communication channels for marketing and product delivery purposes (Churchill, 2005). Liquidity and credit management for example are strongly interlinked as deposits are traditionally the primary source of funding for loans (Bald, 2007). For the sustainability of the MFI, savings allow to be less dependent of external loans (Armendáriz and Morduch, 2005). Therefore combining credit and savings are encouraged when referring to long term economic sustainability (Robinson, 2004). Wisniwsky (1999) claims that equity is the most expensive funding source and that non-interest bearing deposits constitute the cheapest source. Caudill *et al.* (2009) observe that larger MFIs offering deposits operate more cost effectively over time.

Dynamics of economies of scope can enable lower financial costs and eventually compensate for the increased operational costs and risks. Economies of scope should especially enable MFIs to achieve efficiency and productivity advantages when combining credit with savings. Therefore, this paper, as a first hypothesis, argues that the delivery of savings contributes to a higher economic performance of microcredit organizations.

H2: microinsurance has a stimulating effect on the economic performance of microcredit organizations

While combined insurance products can enable economies of scope including client fidelity and credit risk mitigation; new challenges can emerge such as increased complexity, additional subsidy dependency, lack of transparency and covariance risks.

CMF may lead to new challenges for MFIs which can include transparency, management and performance oversight (Rossel-Cambier, 2001). The availability of insurance can enhance behaviour towards risks of the insured. This is the case in Bolivia, where the introduction of deposit insurance has lead to riskier behaviour for loan delivery (Ioannidou and Penas, 2010). Both loan and insurance delivery depend on sound liquidity management, but both functions are not identical. Thus, one has to ensure that ailing liquidity management of one financial function doesn't harm the delivery of other products (Copestake, 2007). Moreover, risks affecting loan repayment can also result in insurance claims. When these risks strike borrowers at the same time, portfolio quality can plummet while claims will skyrocket (Churchill *et al.*, 2003). In this case, the combined effect could be devastating for a MFI. Also, one financial product can suffer because of client dissatisfaction linked to the other function. For example, a client dissatisfied because of failing insurance coverage could respond –in the name of fairness- with faltering loan-repayment (Labie *et al*., 2007). Finally, also transparency on subsidisation is needed, to ensure that the viability of the different schemes is clearly monitored.

Still, most literature references stress the various stimulating effects which insurance can have on loan delivery. Combined microfinance institutions (CMFIs) can for example benefit from reduced average overhead costs as economies of scope can be achieved. The supply of similar services to the same group of clients can lead to advantages such as integrated client administration, outreach and lower transaction costs (Morduch, 2004). Having an already existing base of clients enables the organization to reach easier potential customers with new products and can strengthen client fidelity (ILO STEP, 2007). To this extent, there are advantages related to marketing and transaction costs (Labie *et al*., 2007).

Loan repayments may be hampered by events linked to risks and vulnerabilities because of ill health, death, accident or business-related issues. When combining microcredit with insurance, many of these insurance products may contribute not only to the client's wellbeing, but also indirectly to the MFI's financial performance. CMF can for example protect the client against accident or health risks and hence enhance business continuity or middle-term productivity (Churchill *et al.*, 2003). Therefore, one can consider complementary insurance as a way to limit risks such as external shocks, moral hazard and adverse selection and ultimately enhance loan repayment (Bond and Rai, 2009).

Recognising the limited empirical evidence in literature on the subject, one can expect that in general stimulating effects can be found when combining credit with insurance (hypothesis 2). In particular economies of scope –similar to the credit-savings combination- should enable positive performance outcomes in the field of efficiency and productivity. This paper offers an opportunity to contribute to more empirical knowledge on the issue.

4. The Model

As reflected in hypotheses H1 and H2, this paper is looking for evidence on possible changes in economic performance when combining microcredit with microsavings and/or microinsurance. This question can be expressed by comparing the expected performances, expressed by $E[O_c|W]$ and $E[O_m|W]$, where $E[O_.|W]$ is the expected (average) economic performance of either a mono-product (O_m) or a combined (O_c) MFI measured by the same indicator - given (or conditional on) the information set W. If the combining of microfinance products improves, respectively weakens, its performance compared to mono-product microfinance, then the relation is:

$E[O_c|W] - E[O_m|W] > (\text{resp.} <) 0.$

To address the two hypotheses, the combined microfinance dimension (c) further refers to four possible situations[11]:

[11] Next to low intensity insurance (credit insurance only), this paper defines middle intensity insurance as the delivery of two insurance products and high intensity insurance as the delivery of three or more insurance products. The delivery of health insurance, because of its complex nature, is also considered as high intensity insurance.

(i) low intensity of insurance services ("ll" combination);

(ii) medium intensity of insurance services ("lm" combination);

(iii) high intensity of insurance services ("lh" combination);

(iv) savings services ("ls" combination).

Hence, four potential differences in performance between combined and monoproduct MFIs may be found:

$E[O_{ll}|W]- E[O_m|W]$, $E[O_{lm}|W] - E[O_m|W]$, $E[O_{lh}|W] - E[O_m|W]$, and $E[O_{ls}|W] - E[O_m|W]$.

In order to estimate these potential differences, one can specify the following relation for the MFI *i*:

(1) $$O_{\cdot i} = \beta_0 + \beta_1.DCI_i + \beta_2.DMI_i + \beta_3.DHI_i + \beta_4.S_i + w_{ik}.b_k + u_i,$$

In the relation (1), $O_{\cdot i}$ is the performance indicator of MFI i; DCI_i is a dummy variable for low intensity insurance, which takes the value 1 if the MFI i combines credit with low intensity insurance, 0 if not. In this way, the associated coefficient β_1 estimates the impact of $E[O_{ll}|W] - E[O_m|W]$. Similarly DMI_i, DHI_i and S_i are dummy variables for the presence of respectively medium intensity insurance, high intensity insurance and savings which are the explaining variables of interest. Their respective associated coefficients are presented as well. The equation also includes w_{ik} which is a vector of k independent control variables explaining MFI i performance, to be specified later on; b_k is the vector of the k associated coefficients measuring the effect of each control variable and u_i is the error term associated to MFI i performance.

5. The Dataset

5.1. Dependent Variables ($O_{.i}$)

In order to analyse economic performances, this paper refers to the CGAP/SEEP performance framework (The SEEP Network, 2005; CGAP, 2003)[12] and a selection of its key indicators. The ratios are calculated by the Mixmarket from income statements and balance sheet items. The figures are converted to USD using exchange rates at the end of the period. The commonly agreed definitions of these variables are available in The SEEP Network (2005).

In the literature review and the hypotheses, much focus is put on economies of scope and hence on the possible changes in efficiency and productivity. With relation to efficiency, three indicators are assessed: the operating expense ratio (*OER*), the operating expense by loan portfolio (*OEPL*) and the cost per borrower (*CPB*). The respectively borrowers (*BORSTAFF*) and savers per staff (*SAVESTAFF*) member ratios are considered as the productivity indicators.

Organisational performance can also be assessed through financial performance and portfolio quality indicators. Financial performance can be defined as the extent to which the full cost of providing services is directly paid for by service users (Copestake, 2007). This paper reviews three indicators which reflect the sustainability and to a large degree[13] "profitability" of MFIs: Return on Assets (*ROA*), Return on Equity (*ROE*) and Operational self-sufficiency (*OSS*). Two indicators reflect portfolio quality: the portfolio at risk at 30 days (*PAR30*) ratio and the risk coverage ratio (*RCR*).

[12] The issue of asset liability management (ALM) is not reviewed in this paper. ALM can be defined as the ongoing process of formulating, implementing, monitoring and revising strategies related to assets and liabilities to achieve an organization's financial objectives (Society of Actuaries, 2003). ALM is strongly linked to various dimensions of financial management such as interest rate management, asset management, leverage (here defined when a MFI seeks to borrow funds to increase assets), liquidity management and, if relevant, foreign currency management (The SEEP Network, 2005). While findings on the effects of CMF on ALM may be most interesting, the nature and actuarial complexity of asset liability management goes beyond the main objective and the focus of this paper.

[13] Some of the organizations, especially linked to NGO and cooperative structures, have a non-profit mandate.

5.2. Independent control variables (w_{ik})

This paper includes independent control variables which refer to the respective organizational structure of MFIs. A distinction can be made between non-bank financial institutions (*NONBANK*), banks (*BANK*), non governmental organisations (*NGO*), Cooperative credit unions (*COOP*) and other organisations (*OTHER*). The agreed definitions of these are available in the online Mixmarket glossary. The nature of the organizations is expressed by dummy variables which take the value 1 if the MFI i is the organization in question, 0 if not.

Other explaining control variables used are:

- C_i = Clients or MFI i size defined by the number of active borrowers[14];
- AGE_i = Maturity of the scheme expressed by the number of years that the MFI i existed in 2006.

5.3. Descriptive Statistics

56% of the MFIs from the database are combined in nature. Table 1 provides descriptive statistics, successively for the explanatory variables, the performance variables and the control variables. The first part of table 1 highlights that Out of the 250 schemes, 37.6% offer also savings, 21.6% low intensity insurance; 4.8% medium intensity insurance and 12.4% high intensity insurance. An important dispersion exists between the financial performances of the MFIs. For example, the variable *ROA* has a mean value of 2.45, a standard deviation of 9.60 and has a wide range in minimum and maximum values of respectively -55.41 and 24.53, suggesting an important heterogeneity in the sample. Similar patterns are observed for the other variables.

‹Insert table 1 here›

The third part of table 1 indicates that the majority of the MFIs are NGOs (53.6%), followed by non-bank financial institutions (20%) and cooperatives (16.8%). A minority

[14] The number of borrowers -as a proxy for the size of the MFI- is used in this context as all the MFIs of the database have a credit function and hence this enhances comparability. The variable "number of clients" can also be measured in function of the number of persons insured or the number of savings accounts.

are formal banking institutions (6.8%) and "other" organizations (2.8%). There are large differences in outreach as the number of borrowers range from 123 to 643,659 clients with a mean of 36,298 clients. The maturity of the MFIs also ranges widely, from one to 51 years of existence. Chart 2 reflects a relative symmetric distribution of the various values of *AGE*, though slightly skewed towards lower values (below side).

‹Insert chart 1 here›

One can observe in chart 2 that the distribution of *C* concentrated around smaller organisations, but that a limited number of organisations are outliers with a very high number of lenders. The chart 3 presents the frequency of the values of ln*C*, which has -in comparison with C- a much more symmetric distribution with the centre around the value 4.

‹Insert charts 2 and 3 here›

Table 2 exhibits the correlations between the performance variables and the explanatory variables relating to the combined nature of MFIs. One can observe positive correlations between the insurance and savings function, especially in case of higher intensity of insurance (DMI and DHI). This relation suggests a tendency that organizations offering savings functions also may be inclined to offer more insurance products. One can observe a negative correlation between *DCI* and *ROA*, suggesting that microcredit organizations offering low intensity insurance tend to have a lower *ROA* than the others from the database.

‹Insert table 2 here›

In the case of *DMI*, one can observe a small positive correlation towards the productivity variables *BORSTAFF* (value of 0.167) and *SAVESTAFF* (value of 2.055); suggesting that MFIs combining credit with medium intensity insurance services could be more productive than other microcredit organizations.

One can observe a negative correlation between the independent variables and respectively *OER* and *OEPL* (values of respectively -0.382 and -0.336). Similarly for

insurance, one can observe –though smaller- negative correlations between *DHI* and *OER* and *OEPL*. These findings suggest that MFIs combining credit with high intensity insurance or savings services tend to be more efficient.

Overall, the data indicates that there may exist a higher level of efficiency (*OER* and *OEPL*) in case of *DHI* and *S*. CMFIs offering medium level insurance have a positive correlation with productivity (*BORSTAFF* and *SAVESTAFF*). The financial performance variables, expressed by *ROA*, *ROE* or *OSS*, suggest little difference between mono or combined microinsurance schemes, with the exception of MFIs combining low intensity insurance services together with credit which have a lower average *ROA* than others. There is no significant change in portfolio quality between mono and combined MFIs.

6. Estimation Results

Building on the model (1) and including the vector of control variables described in section 3, the model to be estimated can be presented as following:

(2) $$O._i = \beta_0 + \beta_1.DCI_i + \beta_2.DMI_i + \beta_3.DHI_i + \beta_4.S_i + \beta_5.NGO_i + \beta_6.COOP_i + \beta_7.BANK_i + \beta_8.NONBANK_i + \beta_9.C_i + \beta_{10}.AGE_i + u_i$$

As an alternative and whereas possible, variables are specified in logarithms. The following model is also estimated:

(3) $$\ln O._i = \gamma_0 + \gamma_1.DCI_i + \gamma_2.DMI_i + \gamma_3.DHI_i + \gamma_4.S_i + \gamma_5.NGO_i + \gamma_6.COOP_i + \gamma_7.BANK_i + \gamma_8.NONBANK_i + \gamma_9.\ln C_i + \gamma_{10}.\ln AGE_i + v_i$$

Both models (2) and (3) are estimated by means of Ordinary Least Squares (OLS) regression[15] to explore whether adding insurance or savings products to microcredit organizations enhances or challenges economic performance.

[15] Robust standard errors are estimated in case of 5% significant heteroscedasticity following the Breusch-Pagan / Cook-Weisberg specification test. (This test allows one to appreciate whether the estimated variance of the residuals from the regression depends on the values of the independent variables.)

Tables 3 to 5 present the OLS regression results with relation to respectively efficiency and productivity (table 3), financial performance (table 4), and portfolio quality (table 5). Table 6 reflects the regression of the logged values of the relevant dependent and independent variables.

As a methodology to appreciate the estimation results, this research applies the Hendry/LSE approach to build from larger models simplified models by including the most significant variables. In this paper, we first select the models with the highest (Adjusted) R-squared value (comparison between results from regression from nominal values and logged values). Following, we apply the Fisher test to explore if the test statistic has an F-distribution under the null hypothesis with a probability of less than 5%. In case of significant results for the F-test, we simplify the equation by discarding those variables which have t-stats of less than 1. In the simplified econometric model, we only keep those variables having a P>|t| which is lower than 10%. The results of the simplified equations are represented in table 7.

‹Insert table 7 here›

The following two sections will present the equations of those dependent variables with the most significant results (based in order of importance on the relevance of the results towards the research question and the highest R-squared value).

6.1. Efficiency and Productivity

Tables 3 and 6 reflect the significant results of the regression of the efficiency variables *OER*, *OEPL*, *CPB* and their logged values towards the independent variables.

‹Insert table 3 here›

Applying the methodology mentioned above, the re-estimated regression of ln*OER* gives the following simplified equation:

(4)	ln*OER* =	1.558*** -	0.096 *DHI*** -	0.219 *S*** -	0.208 ln*AGE****
	(0.054)	(0.048)	(0.033)	(0.049)	

In this regression model N=248; F(3,244) =29.17; prob›F=0.000 and R-squared =0.255, as presented in table 7. The results are similar as in the general model.

One can observe that the presence of high intensity insurance and savings contributes to a decrease in value of both dependent variables and hence an improvement of efficiency. This is in line with both hypotheses H1 and H2 which suggest that savings and insurance contribute to higher organisational performance (here: efficiency). These findings can be explained by the relation between efficiency and the various dimensions of economies of scope which were documented in the literature such as: cost-effectiveness in loan delivery and reduced transaction costs (Hirschland, 2005); enhanced communication channels for marketing and product delivery purposes (Churchill, 2005) and cost effectiveness (Caudill *et al.*, 2009).

The equation also highlights that the age of the scheme can contribute to more efficiency. Similar results can be found when regressing the OEPL variable and its logged value.

‹Insert table 6 here›

With relation to productivity, one can find the most significant results for ln*SAVESTAFF*[16], as per table 6. Simplifying the model, one can find the following equation, which is also presented in table 7:

$$\text{(5)} \qquad \ln SAVESTAFF = \underset{(0.336)}{1.012^{***}} + \underset{(0.074)}{0.132}\, DCI^{*} + \underset{(0.098)}{0.572}\, COOP^{***} + \underset{(0.067)}{0.205}\, \ln C^{***}$$

The simplified equation (5) suggests a significant effect at 10% of *DCI* on ln*SAVESTAFF*. Here F is significant with a value of 12.73, the Prob > F = 0.000 and the R^2 = 0.377 suggesting that credit insurance has a positive effect on the productivity of MFIs when offering savings services. A similar favourable effect may also be generated by cooperative organisations and larger MFIs. The differences in findings for ln*SAVESTAFF* in tables 6 and 7 are a result of the elimination of the less significant explanatory variables. The simplified estimation –contrary to the general estimation- allows one to find evidence on the significance of *DCI* to the research question. This is most relevant as the latter is one of the main variables of interest.

[16] While the variable the regression of the variable *SAVESTAFF* gives a higher Rsquared value, the results of the regression of ln*SAVESTAFF* are more relevant for the research question.

Section 5.3. relating to the descriptive statistics of the database observed the presence of some high values of *C* (see graph 1), which could bias these results. Therefore, to test the robustness of the results against these outliers, the regression has been re-estimated by eliminating the outliers of C higher than 500.000. As the results of this re-estimation remain similar to those including all observations, one can can suggest that these outliers do not influence the overall estimation results.

The equation (5) results are in line with the second hypothesis (H2) which suggests that microinsurance has a stimulating effect on the organisational performance (here: productivity) of microcredit organisations. Similar to the efficiency dimension, also productivity, elements of economies of scope may explain these stimulating effects of CMF on organisational performance as highlighted in section 4.

The estimations do not offer evidence of the effect of savings on productivity (also H2) but suggest that insurance makes a difference in the case when credit is already combined with savings (which is the nature of the dependent variable *SAVESTAFF*).

6.2. Other organisational performance variables: financial performance and portfolio quality

‹Insert table 4 here›

Our findings suggest that the presence of savings or insurance does not have a significant effect on the financial performance of microcredit organisations, expressed by *ROA*, *ROE*, *OSS* (see table 4) and ln*OSS* (see table 6). When applying the F-test, one can find values of respectively 0.099; 0.279; 0.370 and 0.208. As none of these variables qualify at a probability of less than 5%, one can can describe them of little significance and suggest that there is no significant difference in financial performance between combined and mono-product MFIs from the database.

‹Insert table 5 here›

With reference to portfolio quality, one can find the most significant results for the logged value of *PAR30*. After applying the methodology described above, one can find following simplified equation for ln*PAR30*:

(6) $$\ln PAR30 = \underset{(0.248)}{0.886^{***}} + \underset{(0.148)}{0.461}\, DMI^{***} - \underset{(0.114)}{0.175}\, DHI^{17} + \underset{(0.077)}{0.184}\, NONBANK^{**}$$

$$+ \underset{(0.090)}{0.197}\, COOP^{**} + \underset{(0.123)}{0.282}\, BANK^{**} - \underset{(0.069)}{0.233}\, \ln C^{***} + \underset{(0.125)}{0.444}\, \ln AGE^{***}$$

The equation (6), also presented in table 7, has a value of F-stat of 6.06; Prob > F = 0.000 and R^2 = 0.169. Unfortunately this relation doesn't give any significant results for the savings function (*S*). Also for the insurance function, it suggests contradicting results with *DMI* and *DHI* having opposite effects on ln*PAR30*. Moreover, when applying the t-test, one can find low levels of significance (between 9 and 13%). For these reasons one can suggest that these findings are little significant to the research question. Unfortunately also the other variables does not allow one to find empirical evidence that savings or insurance have a significant effect on the portfolio quality of microcredit organisations[18].

In summary, the regression estimations of this empirical study do not allow one to provide evidence of any significant effects -for neither financial performance nor portfolio quality- created by the presence of savings (H1) or insurance (H2), on microcredit organisations. This may be related to the potential challenges and advantages of combined microfinance which ultimately mutually outbalancing effect.

7. Conclusion

Most reputable MFIs strive for high levels of economic performance, regardless of their non-profit or for-profit status. This paper has examined the extent to which sustainability – or economic performance from a broader perspective- can change when combining microcredit with savings or insurance products.

[17] Significant at 12.7%

[18] Similar to equation (5), the robustness of the results against the outliers of *C* are tested and we find that they do not influence the overall estimation results.

Assessing the differences in performance between mono and combined microfinance organizations, a unique dataset representing 7500 data observations reflecting variables of 250 MFIs of Latin America and the Caribbean was analyzed and compared with existing literature on combined microfinance.

In line with available research, this study suggests that both savings and insurance can contribute to higher economic performance, in particular increased efficiency and productivity, of microcredit organizations. This is most likely due to the economies of scope which can be achieved in various fields when combining credit with savings or insurance. An interesting observation is the high productivity of MFIs when combining both credit insurance and savings. This observation, linked as well to the size of the schemes, indicates that there are conditions which allow MFIs to perform and offer a wide range of financial services and fully benefit from the effects of credit risk mitigation and economies of scope.

Still, surprisingly, no significant empirical evidence was found relating to sustainability or portfolio-quality indicators. Hence, one could wonder why the increased efficiency and productivity do not allow the MFIs to achieve greater overall financial results or manage its risks (portfolio quality). This paper has brought forward selected associations that can help illuminate and frame further debates, while bearing in mind that many other variables may explain the economic performance of MFIs. The various observations of this research suggest for example that the size –and to a limited extent the maturity- of the MFIs are significant vectors for economic performance. As larger MFIs offering deposits operate more cost effectively over time (Caudill *et al.*, 2009), CMF may be more appropriate in a context of larger and more mature organizations which have already a certain level of organizational readiness and can rely on the necessary human, financial and organizational resources to deal with the complexity of delivering multiple financial services. The findings also support research (Robinson, 2004; Wisnisky, 1999) suggesting that while savings-driven institutions such as cooperatives and village banks are able to manage simple savings and loan products, commercial banks may be better qualified for handling a large array of different financial services and their respective risks.

Combined microfinance may not always be a winning option. Disaggregation between different intensities of insurance allows one to observe possible adverse effects of combined insurance. Contrary to the risk mitigation argument, one can observe a lower average financial performance (*ROA*) for MFIs offering credit insurance (still – the significance of this finding is not confirmed with regression analysis). Also limited results were found following different levels of intensity in the case of portfolio quality. These findings highlight the importance of recognising the diversity of insurance products which exist. Providing insurance also involves various risks ranging from management complexity, increased subsidy dependency and lack of transparency to the effects of covariance risks on economic performance. Similar thoughts can be developed for the combined savings function.

The findings of the descriptive statistics, correlation analysis and regression estimates presented in this paper allow one to observe various elements of evidence responding to the research question. Applying the Hendry/LSE approach, this research finds significant results for each of the poverty outreach dimensions relating to at least one of the variables of interest. One potential weakness of the used econometric estimation approach is the possible endogenous relation among the regressors, which may bias the OLS estimates. While the MFIs' efficiency and productivity may improve when providing insurance and savings activities, it can also be that once a microcredit organization has achieved a certain level of efficiency and productivity, it starts offering combined microfinance products. This is possible, as there may be a cyclical effect of both elements mutually strengthening (or weakening) each other.

This paper has analysed empirical evidence from Latin America and the Caribbean. While this could be considered as a limit to generalise the results on a larger scale, one should recognise the role and value of the control variables, which capture possible elements which may compensate largely region-specific differences. Still, as indicated in section 3 and also strongly referred to in the ILO Microinsurance Compendium (Churchill, 2006), many other explaining variables may influence the economic performance of the CMFIs. Future research could focus on complementary and -if available- more advanced parameters to describe the nature of CMF and hence highlight other dimensions contributing to the research question.

This research paper has explored the effect of CMF on the economic performance of MFIs. Still, too much focus on this type of performance can lead to adverse effects on the overall performance of a MFI. Examples are “mission drift” (Armendáriz and Szafarz, 2009) or the setting of high interest rates for profit making (Ashta and Hudon, 2009). In order to have a more comprehensive performance assessment, future research should also analyse the possible effect of CMF on the well-being of its clients. At the end of the day, with the explicit social mission of MFIs, economic performance doesn't make much sense without simultaneously ensuring bold social outcomes.

Table 1: Descriptive statistics[19]

	Variable		Acronym	Obs	Mean	Std. Dev.	Min	Max
Independent explanatory variables	Low intensity insurance		*DCI*	250	0.216	0.412	0	1
	Medium intensity insurance		*DMI*	250	0.048	0.214	0	1
	High intensity insurance		*DHI*	250	0.124	0.330	0	1
	No insurance		*NI*	250	.612	0.488	0	1
	Savings		*S*	250	0.376	0 .485	0	1

Dependent variables	Efficiency	Operational Expenses Ratio	*OER*	248	21.443	15.194	2.32	92.79
		Operational Expenses per Loan Portfolio	*OEPL*	249	28.899	23.196	3.73	134.04
		Cost per Borrower	*CPB*	247	183.857	167.219	16.4	1862
	Productivity	Number of Borrowers per Staff member	*BORSTAFF*	244	133.307	68.033	12	402
		Number of Savers per Staff member	*SAVESTAFF*	247	74.215	138.328	0	867
	Financial performance	Return on Assets	*ROA*	249	2.445	9.599	-55.41	24.53
		Return on Equity	*ROE*	249	13.549	53.047	-268.12	666.09
		Operational Self Sufficiency	*OSS*	250	117.501	26.005	34.07	277.3
	Portfolio Quality	Portfolio at risk 30 days	*PAR30*	250	5.719	6.743	0	43.33
		Risk Coverage ratio	*RCR*	246	257.503	1158.01	0	16426.25

Independent control variables	Non-bank financial institution		*NONBANK*	250	0.2	0.401	0	1
	Cooperative		*COOP*	250	0.168	0.375	0	1
	Bank		*BANK*	250	0.068	0.252	0	1
	Non governmental organisation		*NGO*	250	0.536	0 .499	0	1
	Other organisations		*OTHER*	250	0.028	0.165	0	1
	Number of clients in 1000 persons		C	245	36.298	91.408	0.123	643.659
	Maturity of scheme		*AGE*	249	14.992	9.802	1	51

[19] Section 3 gives an overview of the meaning of the various acronyms for the selected variables.

Table 2: Correlation between performance variables: Return on Assets (*ROA*), Return on Equity (*ROE*), Operational Self Sufficiency (*OSS*), Operational Expenses Ratio (*OER*), Operational Expenses per Loan Portfolio (*OEPL*), Cost per Borrower (*CPB*), Borrowers per Staff (*BORSTAFF*), Savers per Staff (*SAVESTAFF*), Portfolio at Risk 30 days (*PAR30*), Risk Coverage Ratio (*RCR*) and the variables of interest: Low, Middle and High Intensity Insurance (respectively *DCI*, *DMI*, *DHI*) and Savings (*S*). (N=235)

	ROA	***ROE***	***OSS***	***OER***	***OEPL***	***CPB***	***BORSTAFF***	***SAVESTAFF***	***PAR30***	***RCR***	***DCI***	***DMI***	***DHI***	***S***
ROA	1.000													
ROE	-0.020	1.000												
OSS	0.807	0.140	1.000											
OER	-0.532	0.074	-0.541	1.000										
OEPL	-0.597	0.034	-0.586	0.963	1.000									
CPB	-0.112	-0.052	-0.052	-0.087	-0.023	1.000								
BORSTAFF	0.132	0.099	0.175	-0.103	-0.149	-0.469	1.000							
SAVESTAFF	-0.036	0.008	-0.013	-0.335	-0.308	0.031	0.121	1.000						
PAR30	-0.048	-0.105	-0.156	0.056	0.083	0.116	-0.217	-0.025	1.000					
RCR	0.025	0.045	0.080	0.015	-0.005	-0.081	0.014	-0.065	-0.132	1.000				
DCI	-0.154	0.086	-0.112	-0.029	-0.009	0.017	0.034	0.074	0.027	-0.045	1.000			
DMI	0.027	0.027	0.033	-0.091	-0.089	-0.013	0.167	0.206	0.064	-0.031	-0.120	1.000		
DHI	0.031	-0.011	-0.008	-0.189	-0.169	0.021	0.016	0.148	-0.104	-0.015	-0.199	-0.082	1.000	
S	-0.040	0.001	0.009	-0.389	-0.342	0.013	-0.093	0.688	-0.093	-0.090	0.099	0.157	0.197	1.000

Table 3. Regression results of the efficiency and productivity dependent variables[20]

Independent variable	Dependent variables – Productivity		Dependent variables – efficiency		
	Borrowers per Staff member *BORSTAFF*	**Savers per Staff member *SAVESTAFF*[21]**	**Operational Expenses Ratio *OER*[22]**	**Operational Expenses Per Loan Portfolio *OEPL*[23]**	**Cost per Borrower *CPB***
Low intensity insurance - *DCI*	16.526	4.065	-1.317	-0.896	-7.633
	(11.149)	(16.052)	(2.495)	(3.816)	(27.583)
Medium intensity insurance - *DMI*	71.193***	33.9678	-2.372	-1.272	-58.907
	(22.191)	(36.829)	(2.871)	(5.528)	(53.092)
High intensity insurance -*DHI*	23.796*	-14.877	-4.335**	-5.823*	-11.200
	(14.360)	(19.606)	(2.032)	(3.248)	(35.374)
Savings - *S*	-3.832	134.778***	-13.259**	-18.052**	-26.337
	(16.938)	(22.106)	(5.371)	(8.584)	(41.004)
Non-bank financial institution - *NONBANK*	-21.999	-10.990	-7.269	-14.030	60.791
	(36.309)	(20.320)	(17.843)	(26.144)	(81.388)
Cooperative -*COOP*	-24.398	145.094***	-11.453	-19.835	31.038
	(37.954)	(41.296)	(17.675)	(26.133)	(85.760)
Bank - *BANK*	-5.432	-6.472	-9.131	-18.989	57.648
	(40.062)	(27.842)	(17.811)	(26.188)	(91.237)
Non governmental organisation - *NGO*	2.415	-1.0795	-13.537	-23.066	-46.618
	(35.049)	(18.395)	(18.130)	(26.429)	(77.588)
Number of clients - *C* in 1000 persons	-0.025	-0.010	0.008	0.013	0.084
	(0.050)	(0.052)	(0.010)	(0.014)	(0.123)
Maturity of scheme - *AGE*	0.190	1.625	-0.220**	-0.309*	0.335
	(0.477)	(0.152)	(0.111)	(0.167)	(1.176)
Adjusted R^2	0.031	0.638	0.214	0.183	0.017
F-stat	1.75*	27.79***	8.22***	6.63***	1.42
Number of observations (N)	240	241	243	243	241

***, **, * Significant at respectively the 1%, 5% and 10% level

[20] Robust standard errors are between parentheses
[21] Corrected for heteroscedasticity after Breusch-Pagan / Cook-Weisberg test gave a Prob > chi2 = 0.0000
[22] Corrected for heteroscedasticity after Breusch-Pagan / Cook-Weisberg test gave a Prob > chi2 = 0.0000
[23] Idem with Prob > chi2 = 0.0013

Table 4. Regression of the financial performance dependent variables Return on Assets (*ROA*), Return on Equity (*ROE*) and Operational Self Sufficiency (*OSS*)

Independent variable	**Dependent variables – financial performance**[24]		
	ROA[25]	***ROE***[26]	***OSS***
Low intensity insurance - *DCI*	-2.580	8.329	-5.906
	(1.666)	(12.484)	(4.254)
Medium intensity insurance - *DMI*	-2.230	-2.289	-0.444
	(3.313)	(15.654)	(8.268)
High intensity insurance - *DHI*	0.852	7.763	.936
	(1.140)	(6.378)	(5.503)
Savings - *S*	0.525	6.741	8.287
	(4.346)	(28.879)	(6.397)
Non-bank financial institution - *NONBANK*	14.491	-77.330	13.330
	(12.751)	(179.094)	(12.694)
Cooperative -*COOP*	12.652	-91.249	1.440
	(12.756)	(180.162)	(13.367)
Bank - *BANK*	16.287	-73.450	8.628
	(12.805)	(180.013)	(14.232)
Non governmental organisation - *NGO*	15.708	-78.017	17.963
	(12.985)	(174.562)	(12.091)
Number of clients – *C* in 1000 persons	-0.0003	-0.011	0.009
	(0.005)	(0.026)	(0.019)
Maturity of scheme - *AGE*	0.025	-0.0766	0.042
	(0.102)	(0.294)	(0.182)
Adjusted R^2	0.091	0.062	0.004
F-stat	1.63*	1.22	1.09
Number of observations (N)	243	243	244

[24] Robust standard errors in parentheses
[25] Corrected for heteroscedasticity after Breusch-Pagan / Cook-Weisberg test gave a Prob > chi2 = 0.0105
[26] Idem with Prob > chi2 = 0.0000

Table 5. Regression results of the portfolio quality dependent variables at Risk 30 days (*PAR30)* and Risk Coverage Ratio (*RCR)*

Independent variable	**Dependent variables**[27]	
	Portfolio Quality	
	PAR30[28]	***RCR***
Low intensity insurance - *DCI*	0.411	-114.864
	(1.175)	(196.86)
Medium intensity insurance - *DMI*	4.660	-114.020
	(3.208)	(380.581)
High intensity insurance -*DHI*	-2.314***	-17.094
	(.821)	(260.123)
Savings - *S*	-2.247	0.541
	(1.808)	(294.422)
Non-bank financial institution - *NONBANK*	3.478**	-301.549
	(1.759)	(641.914)
Cooperative -*COOP*	6.737***	-297.384
	(2.533)	(668.026)
Bank - *BANK*	3.335*	-276.431
	(1.938)	(711.363)
Non governmental organisation - *NGO*	4.185***	-89.951
	(1.526)	(619.936)
Number of clients – *C* in 1000 persons	0.002	-0.218
	(0.003)	(0.887)
Maturity of scheme - *AGE*	0.045	-4.105
	(0.038)	(8.409)
Adjusted R^2	0.084	-0.029
F-stat	2.86***	0.32
Number of observations (N)	243	239

***, **, * Significant at respectively the 1%, 5% and 10% level

[27] Robust standard errors are between parentheses
[28] Idem with Prob > chi2 = 0.0021

Table 6. Regression results of the different logged values of the dependent variables Operational Self Sufficiency (*OSS*), Operational Expenses Ratio (*OER*), Operational Expenses per Loan Portfolio (*OEPL*), Cost per Borrower (*CPB*), Borrowers per Staff (*BORSTAFF*), Savers per Staff (*SAVESTAFF*), Portfolio at Risk 30 days (*PAR30*), Risk Coverage Ratio (*RCR*) towards the variables under interest and the control variables

	ln*OSS*[29]	ln*OER*[30]	ln*OEPL*[31]	ln*CPB*	ln*BORSTAFF*[32]	ln*SAVESTAFF*[33]	ln*PAR30*[34]	ln*RCR*
Low intensity insurance - *DCI*	.021	-.039	-0.035	-.016	.038	.155	-.019	.006
	(.019)	(.041)	(.045)	(.040)	(.032)	(.099)	(.075)	(.079)
Medium intensity insurance - *DMI*	-.014	-.058	-.051	.003	.062	.078	.441***	-.185
	(.029)	(.063)	(.071)	(.081)	(.061)	(.099)	(.147)	(.161)
High intensity insurance -*DHI*	.006	-.108**	-.109*	-.014	-.024	.070	-.185[35]	.0556
	(.014)	(.049)	(.054)	(.053)	(.042)	(.081)	(.119)	(.106)
Savings - *S*	.018	-.222***	-.229***	.038	-.042	(dropped)	-.036	.045
	(.042)	(.079)	(.092)	(.061)	(.057)	(dropped)	(.122)	(.121)
Non-bank financial institutions - *NONBANK*	.094	-.0188	-.0467	.108	-.066	-.055	.440*	-.280
	(.143)	(.265)	(.275)	(.120)	(.121)	(1.065)	(.257)	(.261)
Cooperatives - *COOP*	.061	-.117	-.163	-.077	.116	.426	.468*	-.337
	(.148)	(.269)	(.279)	(.127)	(.128)	(.066)	(.279)	(.274)
Banks - *BANK*	.072	.024	-.0234	.165	-.120	-.093	.546**	-.436
	(.143)	(.268)	(.284)	(.136)	(.130)	(1.066)	(.271)	(.288)
Non governmental organisations - *NGO*	.100	-.068	-.120	-.196*	.105	-.650	.241	-.220
	(.142)	(.264)	(.270)	(.115)	(.106)	(1.219)	(.248)	(.254)
Logarithm Number of clients - ln*C*	.014	.011	-.003	-.160***	.242***	.161**	-.228***	.196***
	(.016)	(.035)	(.038)	(.029)	(.028)	(.064)	(.071)	(.058)
Logarithm Maturity of scheme – ln*AGE*	.032	-.200***	-.209***	033	-.077	-.011	.432***	-.054
	(.031)	(.066)	(.070)	(.051)	(.048)	(.117)	(.125)	(.102)
Adj. R^2	0.067	0.285	0.269	0.224	0.347	0.452	0.174	0.031
F-stat	1.34	8.33***	8.23***	7.97***	10.61***	5.78***	4.51***	1.77***
Number of observations (N)	244	243	243	241	241	91	243	239

***, **, * Significant at respectively the 1%, 5% and 10% level
Robust standard errors are between parentheses

Note: The logarithms of *ROA* and *ROE* are not reflected as the database includes negative values

[29] Corrected for heteroscedasticity after Breusch-Pagan / Cook-Weisberg test gave a Prob > chi2 = 0.0050
[30] Idem with Prob > chi2 = 0.0071
[31] Idem with Prob > chi2 = 0.0161
[32] Idem with Prob > chi2 = 0.0016
[33] Idem with Prob > chi2 = 0.0091
[34] Idem with Prob > chi2 = 0.0232
[35] Significant at 12.3%

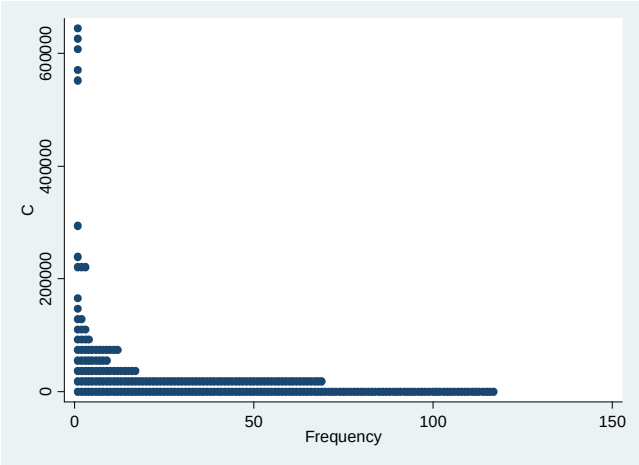
Table 7. Regression findings of the simplified models, applying the Hendry/LSE methodology

Logarithm of Dependent variable	**Logarithm of Operational Expenses Ratio**	**Logarithm of Savers per Staff**	**Logarithm of Portfolio at Risk 30 days**
	ln*OER*[36]	**ln*SAVESTAFF*[37]**	**ln*PAR30*[38]**
Low intensity insurance - *DCI*		0.132*	
		(0.074)	
Medium intensity insurance - *DMI*			. 0.461 ***
			(0.148)
High intensity insurance -*DHI*	-0.096**		- 0.175[39]
	(0.048)		(0.114)
Savings - *S*	-0.219***		
	(0.033)		
Non-bank financial institutions - *NONBANK*			. 0.184
			(0.077)
Cooperatives -*COOP*		0.572***	0.197 **
		(0.098)	(0.090)
Banks - *BANK*			0.282 **
			(0.123)
Non governmental organisations - *NGO*			
Logarithm Number of clients - ln*C*		0.205 ***	-0.233 ***
		(0.067)	(0.069)
Logarithm Maturity of scheme – ln*AGE*	-.208***		0.444 ***
	(.049)		(0.125)
Adj. R^2	0.255	0.377	0.169
F-stat	29.17***	12.73***	6.06***
Number of observations (N)	248	91	243

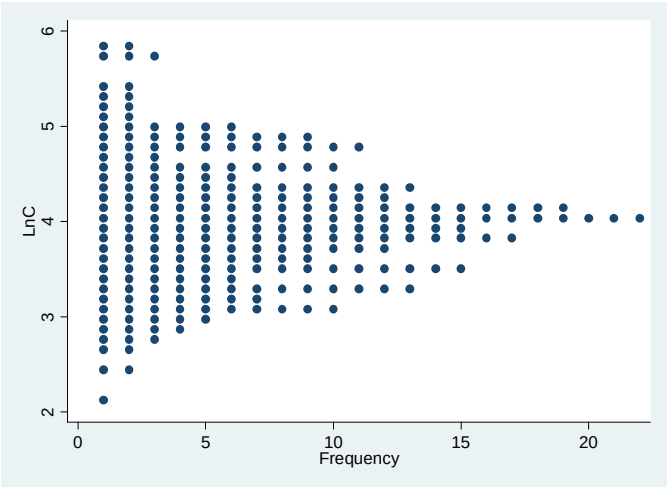
***, **, * Significant at respectively the 1%, 5% and 10% level
Robust standard errors are between parentheses

[36] Idem with Prob > chi2 = 0.014
[37] Idem with Prob > chi2 = 0.0091
[38] Idem with Prob > chi2 = 0.0232
[39] Significant at 12.7%

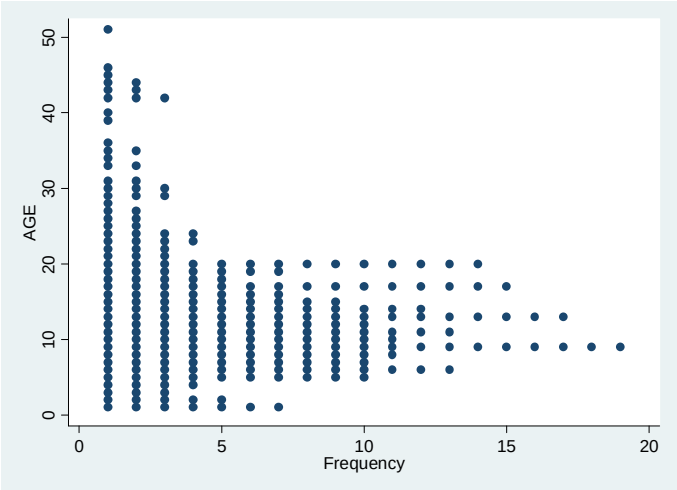
Graph 1. Distribution of the number of clients *C*



Graph 2. Distribution of the logged values of the number of clients, ln*C*



Graph 3. Distribution of the maturity of the schemes, *AGE*



References

AHLIN C., LIN J., and MAIO M., (2010), Where Does Microfinance Flourish? Microfinance Institution Performance in Macroeconomic Context, *Journal of Development Economics*, 51 pages.

AHLIN C. and JIANG N., (2008), Can MicroCredit Bring Development? *Journal of Development Economics*, Volume 86, Issue 1, Pages 1-21.

ARMENDÁRIZ B. and SZAFARZ A., (2009), On Mission Drift in Microfinance Institutions, *CEB Working Paper*, No 09/015, 29 pages.

ARMENDÁRIZ B. AND MORDUCH, J., (2005), The economics of Microfinance, MIT Press, 346 pages.

ASHTA A. and HUDON M., (2009), To whom should we be fair? Ethical issues in Balancing Stakeholder Interests from Banco Compartamos Case Study, *CEB Working Paper, 09*-036.RS, Université Libre de Bruxelles, Solvay Brussels School of Economics and Management, Centre Emile Bernheim (CEB), 33 pages.

BAEZA C., (2002), Extending social protection in health through community-based health organizations, ILO STEP-Universitas, 80 pages.

BALD J., (2007), Treasury Management for SACCOs: Procedure Guidelines and Training Manual, USAID/Chemonics, 58 pages

BOND P. and RAI A.S., (2009), Borrower runs, *Journal of Development Economics*, Volume 88, Issue 2, Pages 185-191.

BOUMAN F. J. A. (1977). Indigenous savings and credit societies in the third world: A message, *Savings and Development, 1*(4), pages 181–218.

BRUETT T.A., (2006), Measuring Performance of Microfinance Institutions: A Framework for Reporting, Analysis, and Monitoring, SEEP Network and Alternative Credit Technologies, LLC, 105 pages.

CAPLAN J., (2008), Microfinance Still Hums, Despite Global Financial Crisis, Time Magazine online http://www.time.com/time/business/article/0,8599,1863443,00.html, 2 pages.

CGAP, (2003), Microfinance Consensus Guidelines. Definitions of Selected Financial Terms, Ratios, and Adjustments for Microfinance, CGAP and The World Bank Group, 18 pages.

CGAP, (2001), Resource guide to microfinance assessments, Focus Note 22, November 2001, 12 pages.

CHURCHILL C.F., (2006), Protecting the Poor. A Microinsurance Compendium, ILO,

CGAP and Munich Re Foundation, 654 pages.

CHURCHILL C.F., (2005), Les institutions de microfinance doivent-elles proposer des services d'assurance? Techniques Financières et Développement, *Epargne sans frontières*, No 78, pages 99-115.

CHURCHILL C.F., LIBER D., MCCORD M.J., ROTH J. (2003), Making Insurance Work for Microfinance Institutions. A technical Guide to Developing and Delivering Microinsurance, ILO, 246 pages.

COPESTAKE J. (2007), Mainstreaming Microfinance: Social Performance Management or Mission Drift?, Elsevier, *World Development* Vol. 35, No 10, pages 1721-1738.

CAUDILL S.B., GROPPER D.M. and HARTARSKA V. (2009), Which Microfinance Institutions Are Becoming More Cost-effective with Time: Evidence from a Mixture Model, *Journal of Money, Credit and Banking*, 41, pages 651-672.

CRIJNS G. *et al.*, (2006), A Billion to Gain? A Study on Global Financial Institutions and Microfinance, EIBE, Institute of Business Ethics, Nyenrode Business Universiteit Netherlands, 70 pages.

CULL R, DEMIRGÜÇ-KUNT A. and MORDUCH J, (2007), Financial Performance and Outreach: A Global Analysis of Leading Microbanks, *Economic Journal*, 117, pages 107-133.

DEPRET M.-H. and HAMDOUCH A., (2005), Gouvernement d'entreprise et performance, Chapitre 2 dans Gouvernement d'entreprise, De Boeck, pages 39-80.

FORESTIER P., (2005), Les nouveaux enjeux de la microfinance, Techniques Financières et Développement, *Epargne sans frontières*, No 78, pages 143-151.

GUÉRIN I., PALIER J. et PREVOST B., (2009), Femmes et Microfinance. Espoirs et désillusions de l'expérience indienne, Editions des archives contemporaines et l'Agence de la francophonie (AUF), 102 pages.

GUTIÉRREZ-NIETO B., SERRANO-CINCA C. and MAR MOLINERO C., (2009), Social Efficiency in Microfinance Institutions, *Journal of the Operational Research Society*, Number 60, pages 104-119.

HATARSKA V. and NADOLNYAK, (2007), Do regulated MFIs achieve better sustainability and outreach? Coss-country evidence, *Applied Economics*, No 39, pages 1207-1222.

HELMS B. (2006), Access for all: building inclusive financial systems, CGAP, The World Bank, 170 pages.

HERMES N., LENSINK R. and MEESTERS A., (2009), Outreach and Efficiency of Microfinance Institutions, *Working paper CIBIF*, University of Groningen, 29 pages.

HIRSCHLAND, M., (2005). Savings Services for the Poor, Kumarian Press, Bloomfield,

378 pages.

HUDON M., (2007), Ethics and public policy in microfinance, Doctoral Study ULB, Solvay Business School, 247 pages.

ILO STEP, (2007), Health Microinsurance Schemes: Monitoring and Evaluation Guide. Volume 1 and 2, 228 pages.

IOANNIDOU V.P. and PENAS M.F, (2010), Deposit insurance and bank risk-taking: Evidence from internal loan ratings, *Journal of Financial Intermediation*, Volume 19, Issue 1, January 2010, Pages 95-115.

LABIE M., (2009), Microfinance: évolutions du secteur, diversification des produits et gouvernance; *Reflets et Perspectives de la vie économique*; Tome XLVII no 3, pages 5-6.

LABIE M., NYSSENS M., WELE P., (2007), Microfinance et micro-assurance santé: réflections sur des articulations possibles à partir de quelques expériences au Bénin et au Burkina Faso, *Mondes en Développement*, Vol,35-2007/3-n°139, pages 57-71.

LASHLEY J., (2004), Microfinance and Poverty Alleviation in the Caribbean. A Strategic Overview, *Journal of Microfinance*, pages 83-94.

LOW A., (1995), A Bibliographical Survey of Rotating Savings and Credit Associations, CCCRW, 76 pages.

MCCORD J.M., BUCZKOWSKI G. and SAKSENA P., (2006), Premium collection: Minimizing transaction costs and maximizing customer service, Protecting the Poor. A Microinsurance Compendium, ILO, CGAP and Munich Re Foundation, pages 197-215.

MERSLAND R. AND STRØM R., (2009), Performance and corporate governance in microfinance institutions, *Journal of Banking & Finance*, pages 662-669.

MORDUCH J. (2004), Microinsurance: the next revolution?, Oxford University Press, New York, 19 pages.

MORDUCH J., (1999), The Microfinance Promise, *Journal of Economic Literature*, Vol. XXXVII, pages 1569-1614.

NABETH M., (2006), Micro-assurance: Défis, mise en place et commercialisation, Editions l'Argus de l'Assurance, collection les fondamentaux de l'assurance, Paris, 367 pages.

NEELY A.D., (2005), The Evolution of Performance Measurement Research: Developments in the Last Decade and A Research Agenda for the Next, *International Journal of Operations and Production Management*, 25, pages 1264-1277.

PEACHEY S., (2007), Microfinance Institutions and Financial Access: The Double Bottom Line, Building Inclusive Financial Systems. A Framework for Financial Access, Brookings Institution Press, pages 57-88.

QURESHI Z., Governance, Protecting the Poor. A Microinsurance Compendium, ILO, CGAP and Munich Re Foundation, pages 288-306.

ROBINSON M., (2004), Mobilizing Savings from the Public: Basic Principles and Practices, SPEED-USAID, Women's World Banking, 51 pages.

ROSSEL-CAMBIER, K., (2001), Guide en gestion administrative et financière des mutuelles de santé en Afrique, ILO STEP Afrique, Dakar, 231 pages.

SCHREINER M., (2001), Measuring Savings, Prepared for the Research Design Project Children and Youth Savings Account Policy Demonstration, Washington University in St. Louis, 28 pages.

SERVET J.M., (2005). Le besoin d'objectifs principaux nouveaux pour la microfinance : lutter contre les inégalités et faire face aux risques, *Techniques Financières & Développement*, Epargne Sans Frontières, pages 12-20.

SOCIETY OF ACTUARIES, (2003), Professional Actuarial Specialty Guide. Asset-Liability Management, Society of Actuaries, 129 pages.

STEPHENS B, (2005), Sustainability in sight: An analysis of MFIs that become sustainable, *Microbanking bulletin*, pages 23-29.

SUKADI M. R., (2009), Implication des IMF sur le marché des remittances. Etat des lieux et déterminants, *Reflets et Perspectives de la vie économique*. La micro finance sous la direction de Marc Labie, Tome XLVII no 3, pages 99-109.

TUCKER M., (2001), Financial Performance of Selected Microfinance Institutions: Benchmarking Progress and Sustainability, *Journal of Microfinance*, Vol 3 No 2, Fall, pages 107-124.

THE SEEP NETWORK, (2005), Measuring Performance of Microfinance Institutions: A Framework for Reporting, Analysis and Monitoring, 105 pages.

VON PISCHKE J.D., (1981), The political economy of specialized farm credit institutions in low income countries. World Bank Staff Working Paper No. 446, Washington, D.C., 21 pages.

WESTLEY G.D., (2005). Microfinance in the Caribbean: how to go further, IADB, Washington, D.C., 37 pages.

WIPF J. and GARAND D., (2008), Performance Indicators for Microinsurance, ADA with the support of the Luxembourg Development Cooperation and BRS, 157 pages.

WIPF J. and GARAND D., (2006), Performance indicators and benchmarking. In Protecting the poor. A microinsurance compendium, ILO, CGAP Working Group on MicroInsurance, Munich Re Foundation, pages 321-330.

WISNIWSKI S., (1999), Microsavings Compared to Other Sources of Funds, CGAP and GTZ, CGAP Working Group on Savings Mobilization, 21 pages.