

# STATISTICAL ANALYSIS OF THE PERFORMANCE OF MICROFINANCE INSTITUTIONS: THE ETHIOPIAN CASE

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## Abstract

Nowadays governments and many development agents pay great attention to the development of Microfinance Institutions (MFIs) with the belief that they are able to alleviate poverty in a very short time. This paper tried to give statistical insight in measuring the performance of MFIs in Ethiopia and the determinants of their performance. A cross-sectional data from 2006 fiscal calendar balance sheet of 26 MFIs in the country is used to carry out the study.

Factor analysis (FA) of performance indicators revealed that the deposit mobilized from clients, the number of active borrowers, and the gross loan portfolio load high on one component, establishing the outreach performance dimension of the MFIs in the country. On the other hand, profit margin, OSS, return on asset and gross loan portfolio-to-total asset ratio load high on the other component, establishing the financial sustainability dimension. In order to identify the determinants of the performance of the MFIs, a seemingly unrelated regression (SUR) model was fitted on the outreach and sustainability dimension scores synthesized by FA. The number/types of financial services rendered, the number of staff per branch and their capital are found to determine the outreach performance of the MFIs in the country. It was also noted that capital has an adverse impact on the outreach efforts of the MFIs. Moreover, the financial viability of the MFIs is found to be highly determined by the average amount of loans disbursed to individuals, the financial revenue ratio and the cost per borrower ratio.

**JEL classification:** C51, C52, G21, L25, O25.

**Keywords:** Microfinance Institutions (MFIs), outreach, sustainability, factor analysis (FA), seemingly unrelated regression (SUR) model.

## 1. INTRODUCTION

Ethiopia is among the least developed and highly populated countries in Africa. The problem of this country is multifaceted and non-spatial. In

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2004/05, the proportion of poor people (poverty head count index) in the country was estimated to be 38.7%, while the proportion of the population below the poverty line stood at 39.3% and 35.1% in rural and in urban areas, respectively. However, over time the gap in poverty between rural and urban areas is narrowing (MoFED, 2006).

To alleviate the prevailing problem in the country, a number of development programs directed at poverty reduction are under progress. Among the many development activities, "resource allocation favoring vulnerable groups/regions" is put in focus (AFRODAD, 2005). The effort to deliver financial services to poor households attracts the attention of the concerned bodies. Since formal banks have been unable to support the financial needs of the poor, the development of Microfinance Institutions (MFIs) is considered as a major tool to fill the gap and put an impact on the overall development of the society. Consequently, the country is striving to develop these MFIs, which have an impact on the poverty status of the people.

The first MFI legally registered at the National Bank of Ethiopia (NBE) was the Amhara Credit and Saving Institution (ACSI). In fact, it had already begun its operation in 1995 before the issuance of the NBE's legislation. Currently, the number of MFIs registered under the NBE has reached 27. Some qualitative and descriptive studies indicated that MFIs in Ethiopia are among the fast growing MFIs in the region. A survey by the Association of Ethiopian Microfinance Institutions (AEMFI) conducted in 2005 revealed that as per end-of-year 2005, the then 26 operational MFIs served 1,277,939 borrowing clients with an aggregated portfolio of Birr 1,622 billion<sup>1</sup>. In terms of outreach, these figures represent a nearly 300 percent increase from the end of year 2001.

This paper attempts to give statistical insight by measuring the performance of the MFIs in Ethiopia and thereby identifying the determinants of their performances as input to the over all development of the sector. An attempt is made to identify the underlining/latent factors that construct the performance dimensions of the MFIs and to assess if there are any trade-offs among them.

The rest of the paper is organized as follows. Section 2 briefly reviews the few related studies and section 3 gives an overview of the research methodology. Section 4 presents descriptive and factor (statistical) analyses and develops the econometric model. Section 5 completes the study by providing conclusions and policy implications.

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<sup>1</sup> Unless specified otherwise, all currencies expressed in this research paper are Ethiopian Birr. At the time when the research was conducted, i.e. in 2006, one US Dollar was equivalent to 8.7135 Ethiopian Birr on the average.

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## 2. LITERATURE REVIEW ON THE PERFORMANCE MEASUREMENT OF MICROFINANCE INSTITUTIONS

In this ever-changing world, one has to measure an organization's performance in order to regulate and make the necessary reforms so as to meet organizational objectives and speed up the expedition. The issue of performance evaluation is more crucial in financial firms like banks as they are mobilizing the resource of the society. MFIs also share similar properties with banks as they are regulated or supervised by a regulatory body due to the fact that they collect deposit<sup>2</sup>. Nonetheless, with regard to measuring their performance, the situation is more complicated. MFIs face a double challenge: not only do they have to provide financial services to the poor, but they also have to cover their costs in order to avoid bankruptcy. Both dimensions must therefore be taken into account in order to assess their performance (Ferro Luzzi and Weber, 2006).

Youssoufou et al (2002) remarked that "The performance criteria and indicators used vary significantly from one organization to another, since they depend on the methodological approach, which in turn depends on the determination to give priority to the supply side or demand side of the financial intermediation." In this regard, there are two contrasting schools of thought: welfarist and institutionalist. The 'welfarists' measure the performance of MFIs on the basis of 'welfare studies'. They are interested in MFIs' impact on the living conditions of the beneficiaries. Welfare studies are strongly criticized by the 'institutionalists' because of their subjectivity, their cost and the methodological difficulties they introduce. They would rather deal with 'institutional studies'. They are interested in market variables such as the repayment rate, transaction cost, the degree of financial self-reliance, etc.

One way or the other, the issue of measuring the performance of MFIs spins at evaluating their performance with respect to outreach, sustainability and their social impact.

### *(i) Outreach*

The term outreach covers a wider range of concepts beside the number of clients served by an MFI. To Lafourcad et al (2005), outreach is the efforts

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<sup>2</sup> Note: Two factors make a MFI's loan portfolios different from a bank's; first, because it is generally semi- or uncollateralized, and second, because repayment time is generally short, ranging from 3 to 12 months. Thus an MFI risks steep deterioration of its portfolio in a matter of weeks (R. Mersland and R. Ø. Strøm, 2007).

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of MFIs to extend microfinance services to the people who are underserved by financial institutions. They believe that outreach can be measured in terms of breadth (number of clients served), volume of services (total savings on deposit and total outstanding portfolio), and depth (the socio-economic level of clients that MFIs reach). Likewise, Meyer (2002) emphasized four types of outreach measures: the number of persons served, the number of women, the depth of outreach and the number of financial services provided.

### *(ii) Sustainability/ Profitability*

The sustainability of MFIs is the other crucial measure which puts the MFIs under scrutiny. Practically, many MFIs heavily rely on donations and debts in order to finance their business. However, MFIs have to be able to finance themselves so as to stay in the economy and put a long lasting positive impact on the living standards of the society. Meyer (2002), supporting this idea, said that the poor need to have access to financial service on a long-term basis rather than receiving just a one time financial support. He disintegrated financial sustainability into two levels: lower and higher level financial sustainability. The lower level of achievement is an achievement in which the MFI reaches operational self-sustainability, meaning that operating income is sufficient enough to cover operating costs, including salaries and wages, supplies, loan loss, and other administrative costs. On the other hand, he noted that a higher standard is achieved if financial self-sustainability is attained. This is a higher standard because it means that the MFI can also cover the costs of funds and other forms of subsidies received when they are valued at market rates.

Other practitioners and researchers used a number of additional indicators to assess the sustainability of the MFIs such as Gross Financial Return, Adjusted Return on Assets (ROA), and Adjusted Return on Equity (ROE). In the meantime, it would be wiser to keep in mind that sometimes there could be a trade-off between sustainability and outreach. Ferro Luzzi and Weber (2006) noted that the MFIs that try to be the most socially performing, often encounter some difficulty in being financially effective. They believe that there are times when trade-offs are inevitable.

### *(iii) Social impact*

In order to measure the impact of the MFIs, it is mandatory to focus on "poverty". Heather Montgomery and John Weiss (2005) defined poverty as a

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lack of access by poor households to the assets necessary for a higher standard of income or welfare, whether assets are thought of as human (access to education), natural (access to land), physical (access to infrastructure), social (access to networks of obligations) or financial (access to credit).

The problem is that it is not a simple task to measure the impact of MFIs on their clients in reducing poverty. This basically originates from reaching a consensus on what is expected from MFIs to improve the living standards of their clients. Many scholars have forwarded different ways of evaluating the social impact of the MFIs in reducing poverty. For example, according to Meyer (2002), "Social impact is defined as attributing specific effects, impacts, or benefits of specific interventions, in this case, improved access to financial services."

### 3. DATA AND RESEARCH METHODOLOGY

The data employed in this study are secondary and cross-sectional. The observed performance of the 26 MFIs at the end of year 2006 is utilized in the major data analysis part<sup>3</sup>. Besides, a time series data of some variables are used in order to give a general overview of the industry in the country. All of the data are self-reported by the MFIs to the AMFIE and/or NBE. The variables included in the study are described on Table 1 below.

**Table 1: Description of variables**

Type of variables	Variable designation	Definition
Performance indicators of MFIs	Y1 (glptota)	Gross loan portfolio to total asset ratio
	Y2 (oss)	Operational self-sufficiency
	Y3 (pm)	Profit margin
	Y4 (deposit)	Total amount of deposit mobilized
	Y5 (glp)	Gross loan portfolio
	Y6 (nab)	Number of active borrowers
	Y7 (roa)	Return on asset

<sup>3</sup> The 27<sup>th</sup> MFI is not included in this study because it had not operated for at least a year when the study was conducted.

Independent variables	Z1 (FRtoTA)	Financial revenue to total asset
	X2 (avgloan)	Average amount of loan per capita
	X3 (stafperbranch)	Average number of staff per branch
	Z4 (BPSS)	Average number of borrowers per staff size
	X5 (capital)	Capital
	X6 (nservices)	Number/Types of financial services
	X7 (branch)	Number of branches
	Z8 (CPB)	Cost per borrower

The methodology employed in this study to measure the performance of the MFIs is Factor Analysis (FA). FA is a modeling technique that attempts to “explain” correlations among a set of observed (manifest) variables through a linear combination of a few unknown number of latent (unobserved) random factors.

Assume that the observable random vector  $Y$  (in this particular case the performance indicators of MFIs) with  $p$  components has mean  $m$  and covariance  $\Sigma$ . The factor model postulates that  $Y$  is linearly dependent upon a few unobservable random variables  $f_1, f_2, \dots, f_k$  called common factors and  $p$  additional sources of variation  $e_1, e_2, \dots, e_p$  called errors or specific factors (Timm, 2002). The factor model is given by:

$$Y_i - \mu_i = \sum_{j=1}^k \lambda_{ij} f_j + e_i = c_i + e_i, \quad i = 1, 2, \dots, p \quad (3.1)$$

where,  $c_i = \sum_{j=1}^k \lambda_{ij} f_j$ ,  $\mu_i = E(Y_i)$  and  $\lambda_{ij}$  = loading of the  $i^{\text{th}}$  variable on the  $j^{\text{th}}$  factor. In matrix form, equation (3.1) is given by:

$$Y - \mu = \Lambda F + \varepsilon \quad (3.2)$$

$\begin{matrix} p \times 1 & p \times 1 & p \times k & k \times 1 & p \times 1 \end{matrix}$

where  $\Lambda$  is a matrix of unknown constants called factor loadings. In this study, the common factors are allowed to be non-orthogonal:  $\text{cov}(F) = \Phi \neq I$ . This is because the different dimensions of performance (that is, outreach and sustainability) are expected to be linked. As a result an oblique model has been entertained.

After measuring the different dimensions of the performance of MFIs, a seemingly unrelated regression (SUR) model is fitted in order to identify the determinants of performance since it allows for the correlation of the error terms across equations. The SUR model is given by:

$$S_i = X_i\beta_i + u_i, \quad i = 1, 2, \dots, M \tag{3.3}$$

where,  $S_i$  is an  $n \times 1$  vector of the performance or score (that the MFIs obtained through the factor analysis) on the  $i^{\text{th}}$  response variable;  $X_i$  is an  $n \times k_i$  matrix of observations of the explanatory variables (characteristics that explain the  $i^{\text{th}}$  performance dimension of MFIs);  $\beta_i$  is a  $k_i \times 1$  vector of regression coefficients; and  $u_i$  is an  $n \times 1$  vector of disturbances. Here, the  $S$  variables are a set of performance scores of MFIs in the different performance dimensions synthesized using factor analysis.

We assume that  $u_i$  is normally distributed with mean  $E(u_{ij}) = 0, j = 1, 2, \dots, n$ , for each  $i = 1, 2, \dots$  and variance-covariance matrix  $E(u_i u_i') = \sigma_{ii} I_n, i = 1, 2, \dots M$ . We assume further that the disturbances in different equations are mutually correlated, that is,  $E(u_i u_r') = \sigma_{ir} I_n, i, r = 1, 2, \dots, M$  and  $i \neq r$ .

The SUR model (3.3) can be written as:

$$S = X\beta + U \tag{3.4}$$

where  $S = (S_1 \ S_2 \ \dots \ S_m)'$ ,  $\beta = (\beta_1 \ \beta_2 \ \dots \ \beta_m)'$ ,  $(u_1 \ u_2 \ \dots \ u_M)'$  and

$$X = \begin{bmatrix} X_1 & 0 & \dots & 0 \\ 0 & X_2 & \dots & 0 \\ \vdots & \vdots & & \vdots \\ 0 & 0 & \dots & X_M \end{bmatrix}$$

The Generalized Least Square (GLS) estimator of  $\beta$  is given by:

$$b_{GLS} = (X' \Sigma^{-1} X)^{-1} X' \Sigma^{-1} S \tag{3.5}$$

where:

$$\Sigma = \begin{bmatrix} \sigma_{11}I_n & \sigma_{12}I_n & \dots & \sigma_{1M}I_n \\ \sigma_{21}I_n & \sigma_{22}I_n & \dots & \sigma_{2M}I_n \\ \vdots & \vdots & & \vdots \\ \sigma_{M1}I_n & \sigma_{M2}I_n & \dots & \sigma_{MM}I_n \end{bmatrix}$$

Obtaining the GLS estimator of  $\beta$  requires knowledge of  $\Sigma$ . Since  $\Sigma$  is often unknown, we can replace it by a consistent estimator. For this purpose, Zellner's (Zellner, 1962) estimation method, called the Feasible Generalized Least Square (FGLS), is employed. A consistent estimator of  $\hat{\Sigma}$  is given by:

$$\hat{\Sigma} = \begin{bmatrix} v_{11}I_n & v_{12}I_n & \dots & v_{1M}I_n \\ v_{21}I_n & v_{22}I_n & \dots & v_{2M}I_n \\ \vdots & \vdots & & \vdots \\ v_{M1}I_n & v_{M2}I_n & \dots & v_{MM}I_n \end{bmatrix},$$

where  $v_{ir} = \frac{1}{n - k_i} \sum_{t=1}^n e_{it}e_{rt}$ ,  $k_i \geq k_r$  and  $e_{it}$  are OLS residuals ( $i = 1, 2, \dots, M$ ).

The FGLS estimator of  $\beta$  is then given by:

$$\hat{b}_{GLS} = (X' \hat{\Sigma}^{-1} X)^{-1} X' \hat{\Sigma}^{-1} S \quad (3.6)$$

## 4. DATA ANALYSIS AND INTERPRETATION

### 4.1 Descriptive Analysis

Although the micro-financing activity is very young compared to other developing countries in Africa, Ethiopia has shown a remarkable growth in the past decade. According to the data obtained from the AEMFI, the number of MFIs has increased by 30 percent from 2001 to 2006. A significant improvement in the number of MFIs was registered in the year 2000 when nine new MFIs joined the economy.

When we consider the number of clients, this figure increased by 233% from 2001 to 2006, and the annual average growth rate in these years was 36%. The outstanding loan provided by MFIs has registered a 40% increase from 2001 to 2006. The country average loan per GDP per borrower was found to be about Birr 85 by the year 2006. On the other hand, the deposit mobilized by the MFIs has also recorded a steady growth. The MFIs have managed to mobilize a total deposit of over 823 million Birr (voluntary and compulsory savings) as of December 2006 (NBE, 2007). Generally, the saving tradition of the poor is improving, and is confirmed by the 31% average annual growth rate of deposits.



As per the loan quality of the MFIs, the non-performing loans (NPL) ratio at least 90 days past due stood at 3.4% (which is about 91.3 million Birr) in 2006. According to Tsegaye (2007) the portfolio at risk at least 90 days past due was 3.1% in 2005. These low risk rates of the portfolios demonstrate that the loan recovery rates of the MFIs are very encouraging.

The total assets and capital of the MFIs have grown by 296 and 225 percent from 2001 to 2006, respectively. The average annual growth rate of total assets and capital is also found to be 42 and 35 percent, respectively. The most promising situation in the micro-financing industry is that much of the assets of the MFIs are funded by liabilities. A close look at the capital to asset ratios reveals this fact. For example, the average capital to asset ratio of the microfinance industry in the country was recorded to be 35 percent on average from 2001 to 2006. That is, more than 65 percent of the assets of the MFIs were supplied by liabilities. However, this ratio has decreased by 18 percent in these five years. It was also noted that about 54% of the MFIs have positive returns on both assets and equity. Besides, more than 53.8% of the MFIs in the country are found to be operationally self-sufficient.

Table 2 presents the country-averages of the performance indicators of MFIs together with their respective standard deviations for the fiscal year 2006. It can be seen that most of the standard deviations are larger than their corresponding means, and hence, they are considerably high coefficients of variation. This indicates a noticeable disparity among the performances of the MFIs in the country. The difference derives mainly from the difference in their operational lifetime, besides their coverage area.

**Table 2: Summary statistics of the performance indicators of MFIs**

	Mean	Std. Deviation
Number of Active Borrowers (nab)	59,716.04	127,820.03
Gross Loan Portfolio to Total Asset Ratio (glptota)	73.95	11.77
Return on Asset (roa)	.335	5.164
Profit Margin (Net Operating Income/Financial Revenue) (pm)	-26.71	129.42
OSS (Total Revenue/Total Expense)	108.75	60.63
GLP	81,977,361.50	193,944,284.42
Total deposit	30,851,282.15	80,141,934.93

#### **4.2. Factor Analysis**

Factor analysis begins with scrutinizing the correlation matrix of the performance indicators of the MFIs in order to find out the underlining com-

mon pattern that governs the performance of the MFIs in the country. Table 3 presents the correlation matrix of the performance indicators of MFIs.

**Table 3: Correlation Matrix of the performance indicators of MFIs**

	nab	glptota	roa	pm	OSS	GLP	deposit
nab	1.000						
glptota	.173 (.20)	1.000					
roa	.397** (.02)	.336** (.05)	1.000				
pm	.256 (.10)	.203 (.16)	.720* (.00)	1.000			
OSS	.601* (.00)	.292 (.07)	.891* (.00)	.647* (.00)	1.000		
GLP	.975* (.00)	.131 (.26)	.364** (.03)	.239 (.12)	.574* (.00)	1.000	
deposit	.986* (.00)	.157 (.22)	.361** (.04)	.224 (.14)	.561* (.00)	.942* (.00)	1.000

\* Significant at 1% level, \*\* Significant at 5% level

Table 3 reveals that the off-diagonal elements of the correlation matrix are noticeably different from zero. This is an immediate confirmation for the appropriateness of employing factor analysis to obtain the common traits that govern the performance of the MFIs in the country. The strong positive correlations of OSS with performance indicators like the number of active borrowers, gross loan portfolio and total deposit could be an indication of the absence of trade-offs between insuring financial sustainability and addressing social objectives.

In order to measure the sampling adequacy of the data, the well known Kaiser's measure of sampling adequacy, Kaiser-Meyer-Olkin (KMO), is employed. The KMO measure of the data was found to be 0.693, which is more than tolerable according to Kaiser and Riceit's "middling" (Sharma, 1996). The composite reliability of the seven measures of performance indicators of MFIs was also found to be 0.4666.

The factor analysis with the principal component method of extraction was then applied to these seven performance indicators. The number of factors with eigenvalues greater than one was found to be two. The cumulative

variance explained by these two factors was more than 80%. Apart from this, the Scree plot also approves the retention of two factors as the rate of decline tends to be fast for the first two factors but then levels off.

Following the identification of the relevant constructs, factor rotation is employed in order to ease the interpretation of the factors and to identify meaningful factor names or descriptions. To this end, oblique rotation (called *Promax* rotation) is employed as it allows the factors to be correlated. The results are given in Table 4.

The first three performance indicators loaded positively on Factor 1. This factor, hence, can be labeled as “Outreach Performance” since the constructing indicators are outreach indicators. On the other hand, the remaining performance indicators loaded high on Factor 2. Accordingly, this factor can be labeled as “Sustainability Performance” as the constructing indicators are financial performance indicators. The correlation between the two factors was found to be 0.438 with 0.025 two tailed level of significance. Hence, we proceeded with our first assumption i.e. that the factors are correlated in the analysis of the determinants of the performance of MFIs.

**Table 4: Rotated Pattern Matrix of the performance indicators of MFIs**

Performance indicators	Component	
	1	2
Total deposit	1.00	-0.050
Number of Active Borrowers	1.00	-0.009
GLP	1.00	-0.042
Return on Asset	0.008	.946
Profit Margin (Net Operating Income/Financial Revenue)	-.15	.91
OSS (Total Revenue/Total Expense)	.29	.78
Gross Loan Portfolio to Total Asset Ratio	-0.074	.51

Extraction Method: Principal Component. Rotation Method: Promax with Kaiser Normalization.

#### 4.3 Assessing the determinants of the performance of MFIs

This part is devoted to the investigation of what determines the performance of the MFIs in every dimension: outreach and sustainability performance. The dependent variables here are the scores ascribed to the MFIs through factor analysis. Denoting the performance or score of the  $j^{\text{th}}$  MFI on dimension  $i = 1, 2$  by  $S_{ij}$ , we have the following regression model:

$$S_{1j} = X_{1j} \beta_1 + Z_j \lambda_1 + u_{1j}$$

$$S_{2j} = X_{2j} \beta_2 + Z_j \lambda_2 + u_{2j}$$

Here  $S_{1j}$  is outreach performance and  $S_{2j}$  is sustainability performance of the  $j^{\text{th}}$  MFI;  $X_{ji}$  is a row vector of  $j^{\text{th}}$  MFI's characteristics that explain both its outreach and sustainability performance, while  $Z_{ji}$  contains variables that are presumed to affect either its outreach or sustainability performance. In accordance with the assumption set above that the factors are inter-related by a possible trade-off, we impose here a restriction that:  $E(u_{1j}, u_{2j}) = \sigma_{12} \neq 0$ , implying that the equations could be estimated with the seemingly unrelated regression (SUR) model.

Accordingly, a SUR model was constructed to identify the determinants of the performance of MFI's with respect to outreach and sustainability. The correlation coefficient between the residuals of two equations was found to be 0.0353, and hence, we cannot reject the hypothesis that the errors are not correlated across equations. This could be an indication that there is no trade-off between outreach and sustainability in the Ethiopian micro-financing industry. This might be due to the fact that the industry is not yet mature in the country. That is, at least at this stage of the industry, MFIs can perform well in addressing the larger poor society (outreach) as the demand for loan and other financial services is high, and earn profit (sustainability) at the same time, owing to the high quality of the portfolio.

Table 5 presents the results of the estimated SUR model. The determinants of outreach performance are the number/types of financial services rendered by the MFIs, the staff per branch distribution and capital. A close look at the signs of the coefficients shows that all determinants have the expected signs, except capital. Normally, capital is expected to affect the outreach performance of MFIs positively. Instead, according to our result, the growth of capital has a significantly negative impact on the outreach of the MFIs. In order to figure out the possible causes, further scrutiny of capital on the performance of the MFIs has been made via the performance indicators. The partial correlation of capital with these performance indicators proved that capital has a strong but negative correlation with deposit. We must consider that deposit is among the major performance indicators, which formed the outreach dimension of the MFIs' performance. Hence, one can speculate that as the MFIs exert more energy only in capital collection, they fail to mobilize deposit which in turn deteriorates their outreach. In other words, the MFIs in the country tend to focus on their capital for their loan-able funds rather than on deposit mobilization.

**Table 5: Coefficients and standard errors of the estimated SUR model**

Variable	Outreach (Factor 1)	Sustainability (Factor 2)
nservice	.461* (.14)	.127 (.13)
avgloan	.000 (.00)	.000* (.00)
branch	.022 (.02)	.005 (.02)
stafperbranch	.011* (.00)	.002 (.00)
BPSS	.002 *** (.00)	
capital	-0.000* (0.00)	-0.000 (.00)
FRtoTA		.134* (.02)
CPB		-.006* (.00)
Constant	-2.252* (.49)	-2.104* (.47)
Chi <sup>2</sup>	44.84	69.02
P-value	0.0000	0.0000

\* Significant at 0.01 level \*\* Significant at 0.05 level \*\*\* Significant at 0.10 level.

The average loan, financial revenue to total asset, and cost per borrower have the expected impact on the sustainability dimension of the performance of the MFIs. The positive coefficient of 'avgloan' on sustainability agrees with the expectation set before. Since disbursing a small amount of money to many customers has a high risk plus transaction costs, MFIs will face the challenge of sustaining their profitability. The revenue indicator, FR-toTA ratio, is also found to have a positive impact on the sustainability of the MFIs as expected. As the degree to which all the assets of an MFI are managed in generating income increases, the profitability of the MFI will be secured in return. Moreover, the efficiency indicator, CPB, is also found to affect the sustainability of the MFIs adversely in line with the expectation set before. That is, as the cost of maintaining an active borrower by an MFI increases, the MFI becomes inefficient, leading it to bankruptcy.

## 5. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

This study tried to give some statistical insights by employing statistical data reduction techniques (factor analysis) to decrease the large number of

performance indicators, without any loss of information, and finally identified the determinants of the different performances of the micro-financing business in the country.

Consequently, the part of the study dealing with the factor analysis identified that the deposit mobilized by the MFIs, the Number of Active Borrowers, and the Gross Loan Portfolio load high on one component, establishing the outreach performance measure of the MFIs. On the other hand, Profit Margin, OSS, Return on Asset and Gross Loan Portfolio to Total Asset Ratio load strongly on another component forming the financial performance of the MFIs.

According to the results of our SUR model, the number/types of financial services rendered by MFIs, the number of staff per branch and capital are found to determine the outreach performance of the MFIs in the country. It should also be noted that capital has an adverse impact on the outreach efforts of the MFIs. On the other hand, the financial viabilities of the MFIs are found to be highly determined by the average amount of loans disbursed to individuals, the financial revenue ratio and the cost per borrower ratio. The other unexpected result obtained is that the number of branches of an MFI has no impact on its performance. This calls for an in-depth qualitative analysis of the situation.

## ***5.2 Policy implications***

Governments and policy makers should develop strong monitoring and regulating mechanisms of the performance of the MFIs. Particularly, there should be a clear directive for the loans to deposits ratio of the MFIs as the MFIs are totally dependent on their paid-up capital to finance their business. Besides, MFIs should be encouraged to fairly increase the average amount of loans they disburse to their clients.

As no trade-off is observed between outreach and sustainability in the case of Ethiopian MFIs., they should exert more effort to achieve their social obligations since it doesn't jeopardize their sustainability. In order for the outreach efforts of the MFIs to reach the desired goal, they should attract marginalized societies by diversifying their financial interventions, for example, by providing local transfer, remittance, insurance and other services in abundance. Moreover, MFIs should try to allocate the optimum staff size on their branches. They have to improve their efficiency by reducing their total cost per borrower. On the other hand, MFIs need to design an efficient mechanism to mobilize deposit from the public.

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### Résumé

Aujourd'hui les gouvernements et nombreux agents de développement prêtent une grande attention au développement des Institutions de Microfinance (MFIs) avec la conviction qu'elles sont en mesure d'alléger la pauvreté à court terme. Cet article essaie de donner un aperçu statistique pour mesurer la performance des MFIs en Éthiopie et les déterminants de la performance. Les données transversales tirées du bilan de l'année 2006 des 26 MFIs du pays sont utilisées pour mener l'étude.

L'analyse statistique des indicateurs de la performance a montré que les dépôts mobilisés par les clients, les emprunteurs actifs, et le portefeuille des prêts bruts se focalisent sur une composante, la performance par rapport à l'outreach des MFIs dans un pays. De l'autre côté, la marge bénéficiaire, l'OSS, le rendement des biens et le rapport entre le portefeuille brut des prêts et l'actif total se focalisent sur l'autre composante, la dimension financière de durabilité. Afin d'identifier les déterminants de la performance des MFIs, un modèle de régression apparemment indépendant était adapté aux indicateurs de l'«outreach» et de la durabilité, synthétisés par l'analyse statistique. Le nombre / la typologie de services financiers rendus, le nombre d'employés par branche et leur capital sont établis pour déterminer l'«outreach» des MFIs dans le pays. Ce qui a été remarqué est que les capitaux ont un impact négatif sur les efforts pour étendre l'«outreach» des MFIs. En outre, la viabilité financière des MFIs se trouve à être fortement déterminée par le montant moyen des prêts accordés à des individus, par le ratio de profitabilité financière et par le coût moyen par emprunteur.