Advances in Business Research
2011, Vol. 2, No. 1, 172-178

Factors Determining the Operational Self-Sufficiency Among Microfinance Institutions

Kai Schäfer, Midwestern State University
Yoshi Fukasawa, Midwestern State University

This paper is to determine factors best describing a microfinance institution's (MFI's) operational self-sufficiency (OSS). The OSS is defined as the ratio of an MFI's operating revenues to it operating expenses including the financial costs and impairment losses on loans. The outreach of an MFI, the write-off ratio and regional differences are found significant in determining the OSS of MFIs. Surprisingly, neither an MFI's depositors-to-borrowers ratio nor its deposits-to-loan portfolio ratio was found to be significant to explain an MFI's OSS. There was no significant difference in the OSS in 2006 - before the worldwide financial crisis - and in 2008.

One of the eight Millennium Development Goals of the United Nations is the "eradication of extreme poverty and hunger." The UN defines extreme poverty as living on U.S. $1.25 or less per day. In 2005 1.4 billion people worldwide were declared extremely poor. The UN's target is to halve the proportion of the extreme poor by 2015 using the year 1990 as a basis. Microfinance is considered to be one of the measures that will help reach that goal (United Nations, 2008). The year 2005 was declared as the "International Year of Microfinance" (United Nations, 2004).

Dr. Muhammad Yunus, the founder of the Bangladeshi Microfinance Institution (MFI) Grameen Bank, received together with his bank the Nobel Peace Prize in 2006 "for their efforts to create economic and social development from below" (Nobel Foundation, 2008). Grameen's pioneering work made microfinance more and more popular worldwide.

The Microcredit Summit Campaign brings together microcredit practitioners, advocates, educational institutions, donor agencies, international financial institutions and non-governmental organizations (Microcredit Summit Campaign a, 2009). Since 1999 it has published annually The State of the Microcredit Summit Report. In its reports the organization compiles outreach data from MFIs all around the world (Microcredit Summit Campaign b, 2009).

The 2009 report shows growth in the number of MFIs from 618 in 1997 to 3,552 in 2007. That is an increase of almost 500 percent over the ten-year period. The microfinance movement is not limited to developing countries; the report also mentions a total of 192 microfinance programs in developed countries in 2007 (Daley-Harris, 2009). In January 2008, for example, the Bangladeshi MFI Grameen Bank expanded its service from Bangladesh to a developed country by opening its first branch in the U.S. Surprisingly, Grameen America was established during the greatest financial crisis in modern history (Foroohar, 2010).

The main purpose of this paper is to examine the sustainability of MFIs worldwide by studying the factors that determine their operational self-sufficiency (OSS). The OSS rather than the financial self-sufficiency (FSS) can easily be related to the standard profitability definition of revenues minus associated expenses. Furthermore, the OSS helps determine whether an MFI is able to cover all its costs that incur by doing business. OSS also allows getting a subjective and global picture of the institution in terms of its financial performance (Barres, 2006). The examination of the FSS requires such additional information as the inflation rate and the adjusted cost of capital, which are often not readily available for the developing countries included in this study. The year 2006 and 2008 are chosen to test if the recent worldwide recession had any significant impact on the OSS of MFIs.

The microfinance sector differs mainly from other financial sectors in that microfinance addresses clients who are less financially rewarding or are not in conventional banks' interest. MFIs serve poor populations which cannot post any collateral or other financial securities with microfinance services, such as small-sized loans, often $100 or even less, so called micro credits (Reno-Weber, 2008). The success of

MFIs is based on their two main goals: the group-lending concept and teaching self-help to the poor, as pointed out by Robinson (2001)

The provision of financial services to the poor has gone through three distinct, but overlapping phases. In the first phase, the focus was on providing subsidies to the poor and was the dominating form in the 1960's. This form was mainly implemented by governmental agencies and the aim was to help farmers improve their productivity and achieve food security (CGAP, 2003). During the 1960s and 1970s the poor population was considered to be "unbankable" (Campion and White, 1999). Imboden (2005) describes the term "bankable" as individuals or enterprises being in a position to benefit from financial services. Generating income enables them to repay loans, to save or to build assets. Thus, "unbankable" refers to individuals or enterprises that are not in such a position.

In the early 1970s the first microfinance pioneers, such as the Bangladeshi Grameen Bank or ACCION International in Latin America, experimented with small loans given to poor women for small businesses. In the mid-1970s, NGOs took the role of giving credit to the poor and developed more innovative methods, such as group lending, to meet the requirements of the poor. This period is seen as the birth of microcredit. In the 1980s, an increasing number of MFIs improved their efficiency and were able to recover their costs and even attract deposits, commercial loans and investment capital (Helms, 2006). This was followed by the third phase in the mid-1990's, when NGOs were transformed into commercial banks or formal financial institutions (Getu and Kempton). Rather than just granting micro credits, the range of financial services was extended to more comprehensive services, including savings and insurance (Helms, 2006).

The SEEP Network (SEEP Network, 2005) defines an MFI's OSS as percentage ratio as follows:

OSS = (Operating Revenue) / (Operating Expenses + Financial Costs + Impairment Losses on Loans)

The operating expenses include administrative and personnel expenses that are incurred by providing financial services while financial revenues represent the product of an MFI's loan portfolio and the interest rates charged on loans. The OSS focuses on an MFI's core business revenues and expenses. Financial expenses and impairment losses on loans are included in this calculation because they are normal and significant costs of microfinance operation. The OSS indicates also if an MFI is able to continue business without further external subsidies or not. This is the case when the OSS is above 100%. A ratio of 100% in OSS is also a break-even point for an MFI's operation. A ratio below 100%, however, indicates that the MFI is incurring losses. The SEEP Network found that start-up MFIs tend to have a lower OSS than mature MFIs, implying start-ups are less profitable.

Model and Empirical Results

For the analysis of the model, the ordinary least squares regression method was used. The data sample used in this study was retrieved from the MIX and is based on the MIX Global Composite Ranking in 2006 and 2008. The ranking contains factors such as efficiency, outreach, and financial performance. The ranking from 2008 includes data from 500 MFIs worldwide and is based on data from the financial year 2008. The 2006 ranking is based on 500MFIs using the 2006 data. Overall the sample includes 1,000 MFIs composed of 113 serving in Eastern Europe/Central Asia (ECA), 117 in Latin America/Caribbean (LAC), 27 in Middle East/North Africa (MENA), 59 in Sub-Saharan Africa (Africa), and 684 serving in the region of Southern and Eastern Asia (Asia).

The model in this study is specified as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + \beta_8X_8 + \beta_9X_9 + \beta_{10}X_{10} + \beta_{11}X_{11} + \beta_{12}X_{12} + \beta_{13}X_{13} + \varepsilon$$

Where:

Y = Operational self-sufficiency (OSS) of an MFI;
X_1 = Number of borrowers in 1,000s served by an MFI;
X_2 = Write-off ratio (%);
X_3 = Depositors/borrowers ratio;
X_4 = Cost per borrower/GNI per capita ratio (%);
X_5 = Gross loan portfolio at risk > 30 days (%);
X_6 = Deposits/gross loan portfolio ratio;
X_7 = Market Penetration (%);
X_8 = Growth in borrowers (%);
X_9, X_{10}, X_{11}, X_{12} = Dummy variables for the region; and
X_{13} = Dummy variable for the year.

With respect to the variable X_1, it is expected that an MFI's OSS is positively related to the number of borrowers served by the financial institution. With a greater number of borrowers, an MFI can experience economies of scale, reducing its average cost of operation by spreading overhead costs over a large number of borrowers, and ultimately increase its profit. A bigger case of borrowers also means a greater potential for larger revenue from interest earning, thus the expected sign for the coefficient being positive.

The write-off ratio (X_2) represents the percentage of the gross loan written off. An increase in the write-off ratio means a greater loss of outstanding loans relative to an MFI's loan portfolio, forgoing the chance to realize the loans' revenues. The revenues from interests on the loans are not generated and therefore have a negative impact on an MFI's OSS. The expected sign for the coefficient estimate is thus negative.

The variable X_3 measures an MFI's depositors- to-borrowers ratio. A higher depositors-to-borrowers ratio has a significantly positive effect on an MFI's OSS. The higher the ratio, the greater the diversity in the funding sources for potential loans by the MFI, improving its OSS.

The variable X_4 represents the ratio of the cost per borrower as a percentage of the gross national income (GNI) per capita. The cost per borrower is defined as the operating expenses divided by an MFI's average number of borrowers. The lower cost per borrower relative to the country's per GNI implies that an MFI is more efficient to reduce the borrowing cost compared to the per-capita income of potential borrowers. A loser cost structure through the economies of scale, for example, gives the MFI a comparative advantage and can lead to a higher profit. Therefore, MFIs with a lower ratio have a higher OSS, leading to a negative sign for the coefficient.

The gross loan portfolio at risk > 30 days (X_5) is the value of all loans outstanding that have one or more installments of principal past due longer than 30 days. This includes the entire unpaid principal balance including both the past due and future installments but not accrued interest. It also includes loans that have been restructured, rescheduled, or renegotiated. The greater is the portfolio at risk, the greater is the potential for a loss in revenue, lowering the OSS of an MFI. The expected sign for the coefficient is negative.

The variable X_6 represents the ratio of deposits to gross loan portfolio of an MFI. It is hypothesized that a higher deposit to loan portfolio ratio leads to a lower OSS, because a higher amount of deposits to loan portfolio reduces the opportunity to make revenues through interest earnings on loans, giving the negative sign for the coefficient.

Market penetration, the variable X_7, measures the outreach of borrowers relative to the potential market and how many clients are actually served compared to an MFI's potential market. The potential market is the number of people living below the national poverty level in which the MFI is operating. The great is market penetration, the greater the revenue, and the higher the OSS. The expected sign for the coefficient is positive.

The variable X_8 measures growth in borrows in percentage. An MFI that has strong growth in the number of borrowers is able to serve more clients. A larger customer base triggers a positive economy-of-

scale effect, leading to lower operating costs. A reduction in costs per borrower helps raise the overall OSS of an MFI, thus the coefficient is expected to be positive.

The variables X_9, X_{10}, X_{11}, and X_{12} are dummy variable for the region of the examined MFIs, representing ECA (X_9), LAC (X_{10}), MENA (X_{11}), and Africa (X_{12}). The benchmark in this model is the region of Asia. It is hypothesized that there are regional differences in MFI's OSS. MFIs in Asia have the longest experience in microfinance and therefore have an advantage of economies of scale and economies of scope.

The variable X_{13} is the dummy variable for the year of retrieving data. The benchmark for this model is the year 2006. It is expected that MFIs in 2008 would have a lower operational self-sufficiency than in 2006, because of the worldwide recession beginning in December 2007 in the U.S. MFIs, as any other financial intermediaries, would have suffered during the financial and economic crisis that reached its peak in 2008. It is expected that MFIs were less profitable in 2008 than in 2006.

The results of the ordinary least squares regression is shown in Table 1. The overall fit of the model is relatively weak with the adjusted R^2 of 0.025. The F-statistic is highly significant at 0.0003, implying that the independent variables are important as factors determining the OSS. Among the independent variables, the number of borrowers (X_1), the write-off ratio (X_2), the depositors/borrowers ratio (X_3), the gross loan portfolio at risk > 30 days (X_5), and the deposits/gross loan portfolio ratio (X_6) show the expected signs and the first three variables are significant at 0.05 level.

Table 1: Regression Results

Regression Statistics

Multiple R	0.1937
R Square	0.0375
Adjusted R Square	0.0248
Standard Error	30.5958
Observations	1000

ANOVA

	Df	*SS*	*MS*	*F*	*Significance F*
Regression	13	35988.1738	2768.3211	2.9573	0.0003
Residual	986	923000.2012	936.1057		
Total	999	958988.3750			

	Coefficient	Standard Error	t-Stat	P-value
Intercept	124.5751	2.8756	43.3220	0.0000
Number of Borrowers	0.0077	0.0028	2.7465	0.0061
Write-Off Ratio (%)	-1.7560	0.5802	-3.0264	0.0025
Depositors/Borrowers Ratio	1.3711	1.1013	1.2450	0.2134
Cost per Borrower/DNP per capita (%)	0.0233	0.0264	0.8799	0.3791
Gross Loan Portfolio at Risk > 30 days (%)	-0.3432	0.2197	-1.5621	0.1186
Deposits/Gross Loan Portfolio Ratio	-4.1064	3.3006	-1.2441	0.2137
Market Penetration (%)	-0.0657	0.4898	-0.1341	0.8934
Growth in Borrowers (%)	-0.0020	0.0043	-0.4621	0.6441
ECA	10.4915	4.0147	2.6133	0.0091
LAC	3.6935	3.5605	1.0373	0.2998
MENA	17.0084	6.4757	2.6265	0.0088
Africa	5.2535	4.7935	1.0960	0.2734
Year of Retrieving Data	3.3442	2.9859	1.1200	0.2630

First, the outreach measured in the number of borrowers of an MFI was found to be important factor determining the sustainability of an MFI. As other research had already found in the past and was hypothesized in this model, an MFI that is able to expand its outreach and serve more customers with micro finance intermediation has a higher financial stability and OSS. It can make use of both economies of scale and economies of scope by serving a greater number of borrowers. The write-off ratio that represents uncollectable loans relative to an MFI's gross loan portfolio was also found significant in the model. As it reduces the gross loan portfolio, it reduces the ability to earn interest on the loan and reduces an MFI's revenue. In turn, less revenue, ceteris paribus, eventually reduces an MFI's OSS. Surprisingly, neither the balance between an MFI's deposit and lending mobilization (depositors/borrowers ratio) nor the same ratio in terms of assets (deposits/gross loan portfolio) was found to be significant to explain an MFI's OSS. As expected, there are regional differences in the OSS. The OSS of MFIs in the ECA and MENA regions were found to be significantly higher than in the benchmark Asian region.

The most surprising discovery was that there was no significant difference in the OSS from MFIs reporting in 2006, before the worldwide financial crisis, and those reporting in 2008.

It was expected that the microfinance sector was impacted by the crisis as was the rest of the global finances. The coefficient estimate for the year X_{13}, although insignificant, implies that the OSS for MFIs was higher in 2008 than in 2006, despite the fact that the industrialized economies entered recession beginning December 2007. In addition, the market penetration was not a significant factor. It is thus concluded that market power did not have a significant influence on a MFI's OSS in the model.

Conclusions

This paper examined the factors best describing an MFI's OSS. The examination of those factors is important to help understand the sustainability, and the survival, of MFIs that serve a vital role in economic development of many less-developed countries.

The number of borrowers, the write-off ratio, and the depositors/borrowers ratio were found to be important factors determining the sustainability of an MFI. The MFIs in the Eastern Europe/Central Asia exhibited the better operational self-sufficiency than those in the benchmark region, Asia. There was no evidence to support that significant deterioration in the sustainability of MFIs occurred due to the 2007-2009 recession.

In the future, the model can be modified to attain a more comprehensive picture of an MFI's overall performance. Additional variables such as the lending mechanism (group lending vs. individual lending) that is used by an MFI or the type of an MFI (NGO, bank etc.) could be included since the revenue and cost structure may differ. Since the model in this paper focuses on the determinants of the OSS, it does not reveal the causes of variables being (in) significant.

The following questions would be interesting to answer: Why are there regional difference in the OSS? Is it because of the cost structure, the average loan amount, the level of interest rates, or even the clients' characteristics? Why does neither the client (depositors/borrowers ratio) nor the asset (deposits/gross loan portfolio ratio) structure impact an MFI's OSS, even though an MFI generates its revenues from interest rates on loans and public deposits? Furthermore, why the recent worldwide financial crisis and economic downturn had no significant impact on the OSS in the model? Is it because crisis like this have a delayed effect on the microfinance sector and therefore not yet found significant? Or is it because the microfinance sector is more resilient to crisis? If it is found in the future that the crisis actually has affected MFIs' profitability, operational sustainability, or the ability to grant loans, how will they provide service to the poor?

As mentioned, OSS is a good measure of the financial sustainability of an MFI, but as any other measure of financial performance, it does not assess the social benefit to a single client, a community, or even a whole country in terms of increasing welfare or reducing poverty. Financial performance and sustainability in the microfinance sector has become increasingly important to attract socially responsible investors. But, at the same time MFIs must achieve their fundamental goal of reducing poverty by helping to build inclusive financial sector and by giving the poor access to financial intermediation. Both goals,

being financially sustainable and achieving the social objective, have to be considered. A promising future of the microfinance sector and its providers (MFIs) will only be possible if both goals are realized. Only then will it be possible to achieve the Millennium Development Goal of the United Nations to "eradicate extreme poverty and hunger" by the use of microfinance.

REFERENCES

Barres, I. 2006. Financial self-sufficiency (FSS). The MicroBanking Bulletin 2006, 13, Washington, D.C.: Microfinance Information eXchange Market, Inc., 21-22.

Campion, A., & White, V. 1999. Institutional metamorphosis: Transformation of microfinance NGOs into regulated financial institutions. The Microfinance network Occasional Paper, No. 4.

CGAP. 2003. Microfinance Overview. Retrieved on November 27, 2009, from http://www.cgap.org/about/microfinance.html.

Daley-Harris, S. 2009. State of the Microcredit Summit Campaign Report 2009. Retrieved on October 10, 2009 from http://www.microcreditsummit.org/uploads/socrs?SOCR2009_English.pdf

Foroohar, R. 2010. It's payback time - How a Bangladeshi bank is growing in the U.S. by making tiny loans to groups of poor women with entrepreneurial dreams. *Newsweek*, July 26: 44-45.

Getu, M., & Kempton, L. 2004. Enterprise development analysis and design: A framework for making the case for Tearfund's development in enterprise development. London: Tearfund.

Helms, B. 2006. Access for all: Building inclusive financial systems. Consultative Group to Assist the Poor (CGAP). Washington, D.C.: World Bank.

Imboden, K. 2005. Building inclusive financial sectors: The road to growth and poverty reduction. *Journal of International Affairs*, 58: 65-86.

Ledgerwood, J. 1999. Microfinance handbook. An institutional and financial perspective. Washington, D.C.: The World Bank.

Microcredit Summit Campaign. 2009. About the Microcredit Summit Campaign. Retrieved on October 7, 2009 from http://www.microcreditsummit.org/about_the_microcredit_summit_campaign/.

Microcredit Summit Campaign. 2009. State of the Campaign Report Archive. Retrieved on October 7, 2009 from http://www.microcreditsummit.org/socr_archive/.

MIX. 2009. The MicroBanking Bulletin, No. 19. Washington, D.C.: Microfinance Information eXchange Inc.

Norbel Foundation. The Nobel Peace Prize 2006. Retrieved on October 3, 2009 from http://www.nobelprize.org/nobel_prizes/peace/laureates/2006/index.html.

Reno-Weber, B. 2008. Microfinance goes mainstream. *Harvard Kennedy School Review*, 8: 123-128.

Robinson, M. 2001. The microfinance revolution: Sustainable finance for the poor. Washington, D.C.: World Bank Publications.

Rosengard, J. 2001. Kinks in the links: Financial intermediation for Africa's poor. African Economic Policy Discussion Paper.

Barres, I., Bruett, T., Curran, L., Escalona, A., Nelson, E., & Norell, P. 2005. Measuring performance of microfinance institutions - A framework for reporting, analysis, and monitoring. Washington, D.C.: The SEEP Network.

United Nations. (2008, September 25). GOAL 1: Eradicate extreme poverty and hunger. Retrieved on October 6, 2009 from http://www.un.org/millenniumgoals/2008highlevel/pdf/newsroom/Goal%201%20FINAL.pdf.

United Nations. (2004, November 18). Press Release DEV/2492 OBV/452. Retrieved on October 3, 2009 from http://www.un.org/News/Press/docs/2004/dev2492.doc.htm.

Kai Schäfer received his MBA from Midwestern State University in 2010 while simultaneously earned a Masters degree in environmental business administration from University of Applied Sciences Trier in Germany. He works for a business consulting firm in the field of energy and public services in Germany. He has published in Journal of Managerial Issues.

Yoshi Fukasawa is professor of economics at Midwestern State University in Wichita Falls, Texas. He received his Ph.D. in economics from Kansas State University. His research interest includes international economics and the Texas economy. He has published in Journal of Business and Leadership, Southwestern Journal of Economics, and Texas Business Review.