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Programmed Initiative, Reaching the Extreme Poor and MFI Sustainability: Mission Drift or Diseconomy?

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Abstract

This study was conducted to examine the impact of programmed initiative on MFI sustainability and to analyze the tradeoff between the depth of outreach and sustainability. Based on panel data of 223 MFI branches in Bangladesh over a period of five years, this study documents that extreme poverty is not a deterrent to MFI sustainability. That means, MFIs reaching the extreme poor can remain sustainable and in essence, they do not have to make a tradeoff with the depth of outreach. This has crucial implications for MFI operations and financing. This study also documents that MFIs undertaking programmed initiative to alleviate poverty can become sustainable if they attain the critical factors. Further to this, this study provides evidence that direct subsidy creates disincentive for MFIs to become sustainable.

Key Words: MFI Sustainability, Depth of Outreach, Mission Drift, Extreme Poverty

Programmed Initiative, Reaching the Extreme Poor and MFI Sustainability: Mission Drift or Diseconomy?

M. Sadiqul Islam*

1. Introduction

The outreach and sustainability of microfinance institutions (MFIs) have been widely researched in many countries. Expanding the outreach of MFIs is vital to create an impact on poverty reduction. On the other hand, reaching the extreme poor is believed to be costly due to higher transaction cost and information asymmetry. In recent years, quite a large number of studies document that there is a tradeoff between the MFI sustainability and the depth of outreach. As a result, MFIs striving for financial sustainability often compromise their mission to reach the extreme poor. This causes a mission drift. The implication of this behavior is crucial. When MFIs make a mission drift, eradication of poverty through *financial systems* approach becomes extremely difficult. That means, the extreme poor will remain largely excluded when MFIs strive to remain sustainable. Under this circumstance, only *poverty lending* approach can be a feasible answer to reach the extreme poor. In this study we document that the scale of poverty of borrowers is not a deterrent to sustainability. In other words, MFIs providing loans to the extreme poor can attain sustainability and do not have to make a mission drift. We also document that programmed initiatives by MFIs to reach the extreme poor can be financially sustainable as they attain the economies of scale. In addition, we provide evidence to support the hypothesis that direct subsidy creates disincentives for MFIs to become sustainable.

Sustainability of MFIs has been emphasized for many reasons. First, policymakers and researchers apprehend that MFIs financed by subsidized funds may not run effectively and efficiently once the subsidized financing is withdrawn. Second, lending to the poor with subsidy will require a large amount of money. Many believe that continuous subsidy to MFIs throughout the world for poverty reduction is not affordable (Robinson 2001). Third, MFIs may become vulnerable to economic cycle and exogenous shocks and may move towards financial distress. But is sustainability more important than lending to the poorest of poor? Do MFIs really make a tradeoff between sustainability and depth of outreach? Can the MFIs remain sustainable without compromising the depth of outreach? This study attempts to analyze the sustainability of MFIs who reach the extreme poor and relate this to the key success factors of MFI sustainability.

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2. Outreach and MFI Sustainability

While microfinance is considered to be an effective mechanism to reduce poverty, it created huge debates among the policymakers and researchers. Many consider that providing access to finance to the poor is a social endeavor. Providing credit to the poor people is often costly due to involvement of high transaction cost and information asymmetry. But this large mass of poor cannot afford high interest rate. As a result, this social endeavor of microfinance deserves subsidy. On the other hand, there are arguments that providing access to finance to the poor is a long term endeavor. Huge subsidy for a long period of time is not affordable. This debate led to the development of two approaches – the poverty lending approach and the financial systems approach (Robinson 2001). The poverty lending approach argued that providing credit to poor borrowers is a social cause and microfinance institutions deserve subsidy. In contrast, the followers of financial systems approach argue that providing access to credit to the poor requires long term effort and microfinance institutions should be financially sustainable.

But reaching the poor while maintaining financial sustainability may become challenging. Khandker (1996) examined the sustainability of Grameen bank of Bangladesh. He emphasized the need for outreach expansion and diversification of loan portfolio to become cost effective and sustainable. Khalily, Imam and Ahmed (2000) analyzed the efficiency and sustainability of Grameen Bank and ASA –two leading MFIs in Bangladesh. They argued that MFIs can be cost efficient and sustainable by increasing loan size and changing portfolio mix.

Morduch (2000) indicated his skepticism over the belief that microfinance programs can alleviate poverty and simultaneously can remain sustainable. Conning (1999) argues that reaching the extreme poor is costly and MFIs have to charge higher interest rate to remain sustainable. He indicates a tradeoff between outreach and sustainability of MFIs. VonPischke (1996) argues that there is a conflict between outreach and sustainability of MFIs. He emphasized the need for mitigation of the risks of MFIs to remain sustainable in the long run. Paxton (2003) develops a poverty outreach index. She finds that larger financial institutions including banks and credit unions have greater poverty outreach than smaller subsidized MFIs targeting the poor. Christen (2000) documents that commercialization of MFIs makes a compromise between their mission to serve the poorer clients and sustainability. But he argues that this can happen for many reasons and this should not necessarily be interpreted as mission drift. Hermes and Lensink (2011), Von Pischke (1998), Schreiner (2002) argue that higher depth of outreach involves higher transaction costs that make MFIs less sustainable.

Bogan (2009) documents that increased use of grants and share capital decreases the operational self sufficiency of MFIs. He also finds a positive relationship between the size of MFI and its operational self sufficiency. Woller and Schreiner (2000) examine the financial self sufficiency of MFIs and document that interest rate, administrative efficiency, loan officer productivity and salary expense are significant determinants of financial self sufficiency. Qayyum and Ahmad (2006) examine the efficiency of 85 MFIs from Bangladesh, Pakistan and India. They document that size has positive impact on the efficiency of MFI. They argue that the efficiency of MFIs can be improved by introducing better technology and increasing managerial skills.

Cull, Demirguc-Kunt and Morduch (2007) examine the sustainability of microfinance institutions and relate this to the outreach of these institutions. Based on data from 124 MFIs from 49 countries, they provide evidences of tradeoff between MFI sustainability and outreach. They find that MFIs providing individual loans perform better than those providing group loans. They also provide evidence that MFIs increasingly focus on wealthier clients to remain sustainable. This causes a departure from their mission. They view this as a mission drift. Quayes (2012) examines the depth of outreach and financial sustainability of 702 MFIs in 83 countries. He documents a tradeoff between financial sustainability and depth of outreach. Conning (1999) documents that reaching the extreme poor is more costly than reaching other clients.

Hermes, Lensink andd Meesters (2011) provide evidence to support the hypothesis that there is a tradeoff between sustainability of MFIs and the depth of outreach. They used the average loan size as a measure of the depth of outreach. Based on data from 435 MFIs between 1997 and 2007, they provide strong evidence that the depth of outreach and efficiency of MFIs are negatively related. Cull, Demirguc-Kunt and Morduch (2009) examined the impact of regulatory supervision on the profitability and outreach. Based on data from 245 large MFIs in different countries, they find that supervision has a negative impact on profitability.

3. The Role Subsidy in Microfinance

The amazing success of microfinance movement led by Dr. Muhammad Yunus in the late 1970s caught the attention of policymakers and researchers throughout the world. The basic technology of lending to the poor without collateral soon appeared to be the most effective tool for alleviating poverty. There was an onrush of grants, donations and cheaper funds in this noble venture. The growth of a huge microfinance industry in the following decades was supported by subsidized fund. Subsidies to MFIs are provided in different forms. Apart from cash subsidies to MFIs, soft loans are very common. Sometimes donor agencies make payment-in-kind for MFI or bear the expenditures of MFIs. Considering these, the volume of subsidy can be estimated as:

$$S = \sum_{t=0}^{N} \frac{C_t}{(1+k)^t} + \sum_{t=0}^{N} \frac{D_t}{(1+k)^t} + \sum_{t=0}^{N} \frac{L_t (I'_{Lt} - I_{Lt})}{(1+k)^t} + \sum_{t=0}^{N} \frac{J_t}{(1+k)^t}$$

Where,

S = Present Value of Subsidies to a microfinance institution

C = Seed Money or Capital Provided to MFI

D = Annual Donation or Non-refundable towards MFI revenue expenses

L = Loans Provided to MFI at Subsidized Interest Rate

J = Expenses of MFI borne by Donor Agencies

IL = Effective Interest Rate Charged by Government or Donor Agencies to MFI

I‘L = Interest Rate at Market

K = Discount Rate or Opportunity Cost of such fund.

t = Time 1, 2, 3,…..N

The first two components of the equation are direct subsidies. The third component is the interest subsidy and the fourth component is the subsidy in kind.

Can this subsidy to microfinance institutions be justified? There are two ways to analyze this. First, do the microfinance institutions effectively utilize the subsidized funds? Second, how does the subsidy help attain the economic and social goals? Answers to these questions will require analysis of economic and social benefits of funds provided by different agencies. The possible economic benefits include incremental income generated by the poor people, the incremental aggregate demand created by their expenditure and multiplier effect thereof, and the incremental financial deepening due to financial inclusion of poor and excluded people. The social benefits include alleviation of poverty, generation of employment, better education, better health and better quality of life and contribution to environment protection. There is hardly any precise estimate of how many people came out of poverty using microcredit and how much economic and social benefits were derived from the use of microfinance. Estimation of these benefits is beyond the scope of this study. But this study provides an analysis whether MFIs become dependent on subsidies or gradually move towards sustainability. It also examines whether MFIs make a tradeoff between depth of outreach and sustainability.

4. PRIME Intervention

Programmed Initiative for Monga Eradication (PRIME) was introduced in 2006 to provide financial services to the extreme poor households in five districts of the north western part of Bangladesh. This part of the country accommodates a large mass of poverty stricken people. The project is implemented by Palli Karma Sahayak Foundation (PKSF) through its 16 MFI partner organizations. The objectives of this project are (i) assisting people to cope with the seasonal loss of livelihood causing Monga and (ii) creating diversified income sources within the households in a way that will eradicate Monga. Monga refers to seasonal hunger prevailing in this part of the country decades after decades. Poor people in this part experience seasonal hunger during pre-harvest months of October and November. Although this part of Bangladesh is a food surplus area, a skewed landholding pattern makes a sharp difference between the rich and the poor. MFIs offering credits to the extreme poor under PRIME project charge lower interest to their clients. Presently the program is carried out by 227 branches of 16 MFIs.

5. Data and Empirical Approach

The premise on which researchers contend that MFIs providing credits to extreme poor are less sustainable is that small loans are given only to the extreme poor. Almost in all studies the loan size was taken as a measure of poverty of borrower. This assumption denies the possibility of medium or relatively larger loans to the extreme poor. There is dearth of study on this issue. In this study we used an alternative measure of poverty of clients of MFI branches. This can make a crucial difference in the analysis of MFI sustainability.

Since this study uses panel data, a random effect generalized least square regression model was chosen to analyze the sustainability of MFI branches. The dependent variable is the sustainability ratio of MFI branches. Three separate regressions were conducted on financial self sufficiency ratio, operational self sufficiency ratio and return on asset. The operational self sufficiency ratio was estimated as the ratio of total operating revenue (excluding direct and cash subsidy) to total expenses (including loan loss ratio). The financial self sufficiency ratio was estimated as the ratio of total operating revenue to adjusted total expenses. Usually MFIs get subsidized loans from donors and government. Also they pay relatively lower interest on the savings of their clients. These interest expenses were marked to the market while estimating the FSS ratio. Interest on savings was estimated as net savings multiplied by the average savings interest rate offered by commercial banks. Cost of remaining fund (both borrowed fund and capital fund) was estimated as the average lending interest rate of commercial banks multiplied by the amount of such fund.

Six explanatory variables have been included in the regression model – loan productivity of employees, average loan size per borrower, breadth of outreach, depth of outreach, deposit-advance ratio and dependence on direct subsidy. Loan productivity of employees increases cost efficiency. As such it is expected to have a positive impact on the sustainability of MFIs. Higher loan size reduces transaction cost. Many studies document that MFIs having higher average loan size are more sustainable (Cull et. al. 2007). Therefore it is expected that average loan size will have a positive impact on sustainability. Breadth of outreach helps attain economies of scale for an MFI. However, too high outreach may cause diseconomy. The relationship between outreach and cost of loan production is expected to be U-shaped and as such the relationship between breadth of outreach and sustainability ratios should be reversed U-shaped. Breadth of outreach has been represented by the natural logarithm of the number of borrowers. A dummy variable, branches in the highest quartile of outreach, has been introduced in the model to capture the non-linearity of relationship.[1] MFI branches in the highest quartile of outreach were assigned 1 and zero otherwise. The dummy variable is expected to have negative impact on sustainability ratios.

As mentioned earlier, in many empirical research studies, the depth of outreach was represented by the average loan size. In this study we use an alternate measure. The depth of outreach has been represented by the daily wage rate of unskilled labor in the branch area. Daily wage of unskilled labor varies widely depending on the poverty level in the branch area. The wage is as low as Taka 80 (about 1 US$) where unemployment is very high, whereas the rate is as high as Taka 600 (about US$ 7.5) in relatively well off areas. It is likely that MFI branches operating in the most poverty stricken area will be lending to the extreme poor.

Deposits are cheaper sources of fund for any financial institution. Many studies document that commercial banks enjoy the advantage of cheaper fund by mobilizing deposits (Vogel 1984; Von Pischke et al. 1986; Khalily 1991). In fact commercial banks have competitive advantage over development banks and specialized financial institutions for their ability to mobilize deposits. In

[1] Log of the number of borrowers squared was dropped from the model due to collinearity problem.

recent years many microfinance institutions emphasize on deposit mobilization to reduce their cost of capital. As a result, MFI branches mobilizing higher deposits are expected to be more sustainable. In this study the deposit-advance ratio has been taken as an explanatory variable.

Dependence on direct subsidy has meaningful implications for the motivation to attain sustainability. A subsidy dependent MFI has less incentive to attain sustainability. Once it attains sustainability, the subsidy will be withdrawn. This problem intensifies particularly in case of direct subsidy. In this study, the fraction of direct subsidy to total revenue (including subsidy) has been incorporated in the model as an explanatory variable. It is expected that branches using higher subsidy will have lower sustainability.

In addition to the explanatory variables, ten control variables were introduced in the regression model. Three of them relate to the MFI branch and seven of them relate to the characteristics of branch area. The control variables relating to the branch are the age of the branch, the number of training imparted by the branch manager and the proportion of female field officers to total number of field officers. Age of the branch is an indicator of learning by the MFI to cope with the environment in the branch area. Usually it is expected that MFI branches having higher age will be more sustainable and there will be a positive relationship between age of branch and sustainability ratios. Branch manager's skill significantly affects the performance of MFI branches. In this model branch manager's skill is represented by the number of microfinance training imparted by the manager. Female field officers can be more effective to deal with the borrowers of MFIs. This is because most of the borrowers of MFIs are female. This can contribute to better performance of MFIs. The ratio of female field officer to total field officer of MFI branch is taken as a control variable.

The control variables relating to MFI's branch area are competition among MFIs in the branch area, fraction of literate people in the branch area, distance from the Upazila (lowest level of administrative unit in the country) and distance from the nearest bituminized road. In addition, three dummy variables were introduced to the unobserved characteristics of local area. These are dummy variable for Lalamonirhat district, dummy variable for Nilphamari district and dummy variable for Kurigram district.

Competition among the MFIs has been measured by the number of other MFI branches within the branch area. Competition among MFIs creates few problems including multiple memberships (overlapping). Also the potential for high savings mobilization reduces as many branches operate in the same area. In general it is expected to have negative impact on sustainability ratios. Fraction of literate people in the area has an impact on the nature of economic activities in the area and may have an influence on the credit behavior of clients. Distance from Upazila center and distance from the nearest bituminized road have been introduced in the model to represent the remoteness of the branch area. In remote areas, people are usually disadvantaged due to lack of access to information, dominance of money lenders, absence of formal financial institutions, and dependence on traditional livelihood activities. These may influence the performance of MFIs.

This study is based on panel data from 223 branches of 16 MFIs over a period of 5 years (from 2008 to 2012). The branches are located in five north western districts of Bangladesh – Rangpur, Kurigram, Lalmonirhat, Nilphamari and Gaibandha. This region of the country accommodates a large mass of poor people who encounter seasonal hunger during pre-harvest period of their main crop. Table 1 shows the descriptive statistics of key variables.

Table 1
Mean Values of Key Variables

Variable	2008	2009	2010	2011	2012
MFI Branch Characteristics					
Age of Branch Manager (Year)					34.87
Schooling Year of Branch Manager (Year)					15.52
Branch Manager's Experience in MFI (Year)					8.51
Literacy Rate in Branch Area					0.64
Number of Training by Branch Manager					3.84
Number of Other MFIs in Branch Area	7.17	7.17	7.17	7.17	7.17
Distance From the Upazila (Km)	8.24	8.24	8.24	8.24	8.24
Age of Branch (Years)	2.9132	3.9132	4.9132	5.9132	6.9132
Number of Employees	8.66	9.93	10.00	10.23	10.94
Total Asset of Branch (Million Taka)	5.73	6.81	8.06	10.30	12.30
Performance Indicators					
Number of Members-PRIME	849.60	995.46	1142.48	1164.30	1213.46
Number of Members-Total	1373.86	1484.10	1647.68	1648.11	1690.57
Number of Savers	1338.59	1420.41	1549.12	1578.21	1606.34
Volume of Savings (Million Taka)	1.52	1.77	2.21	3.01	3.76
No. of Borrowers-PRIME	485.58	738.55	921.82	973.17	1077.40
No. of Borrowers-Total	1349.37	1336.32	1497.18	1542.54	1576.79
Loan Outstanding-PRIME (Million Taka)	2.22	2.85	3.70	4.79	5.26
Loan Outstanding-Total (Million Taka)	4.94	5.66	6.70	8.61	10.20
PRIME Loan to Total Loan	0.6221	0.7088	0.6622	0.6820	0.5989
Loan Per Employee ('000 Taka)	550.87	587.34	669.48	835.35	929.52
Average Loan Size per Borrower (Taka)	5485	7647	5765	6711	8025
PRIME Borrowers to Total Borrowers	0.6734	0.7009	0.7512	0.7011	0.7027
Ratio of Female Employee to Total	0.1155	0.1434	0.1619	0.2181	0.2947
Ratio of Loan Loss to Total Loan	0.0130	0.0181	0.0231	0.0161	0.0153
Salary Expenses to Loan Outstanding	0.1367	0.1212	0.1378	0.1146	0.1024
Dropout Ratio - PRIME	0.0676	0.1256	0.1488	0.1813	0.1953
Dropout Ratio - Total	0.1330	0.1527	0.1752	0.2135	0.2061
Fraction of Subsidy to Total Revenue	0.1511	0.0912	0.1640	0.1025	0.1112

The MFI branches in the sample are not too big in size. Their total assets have a mean of Taka 12.30 million in 2012. But there is significant variation of size of branch. The range of total

assets is Taka 0.24 million to Taka 35.7 million. The size of MFI branch determines its lending capacity. The mean loan outstanding of sample MFI branches is Taka 10.20 million in 2012. The branches under PRIME project have relatively lower volume of loans. Their average loan outstanding is Taka 5.26. The average number of borrowers of sample branches is 1,577 while that of PRIME branches is 1,077 in 2012. The average loan size per borrower is Taka 8,025 in 2012. The branches providing loans to only PRIME borrowers have much lower average loan size. Their average loan size is Taka 6,068. The average loan productivity of employees of sample branches is Taka 0.93 million in 2012. The loan productivity of PRIME branches is significantly lower. Their mean loan productivity is Taka 0.76 million. The dropout ratio of members is quite significant. The mean dropout ratio is about 20 percent. The mean loan loss ratio is about 1.5 percent while the average ratio of salary expenses to total loan outstanding is about 10 percent. The average direct subsidy to total revenue is about 11 percent in 2012. The branches are not too old. Their mean age is about 7 years. The branches operate with a very few employees to reduce their operating costs. The average number of employees of sample branches is about 11.

6. Sustainability of MFI Branches

In this study, both operational self sufficiency and financial self sustainability ratios of MFI branches were estimated. Unlike many other studies, this study does not consider grants and donations as income of MFI while estimating the operational self sufficiency. Table 2 shows the mean, median and standard deviation of sustainability ratios. It also shows the percentage of branches attaining full self sufficiency.

Table 2
Sufficiency Ratios of MFI Branches by Year

	Operational Self Sufficiency				Financial Self Sustainability			
Year	Mean	Median	σ	% Branches Sustainable	Mean	Median	Σ	% Branches Sustainable
2008	0.7986	0.7253	0.4629	26.80	0.6131	0.5743	0.3479	13.07
2009	0.8839	0.7910	0.5120	30.29	0.7023	0.6522	0.3498	15.92
2010	0.8298	0.7257	0.4345	29.38	0.6963	0.6464	0.3389	15.12
2011	0.9545	0.9072	0.3620	35.98	0.7634	0.7358	0.2700	13.53
2012	1.0018	0.9978	0.3986	49.54	0.8119	0.8099	0.2843	22.27

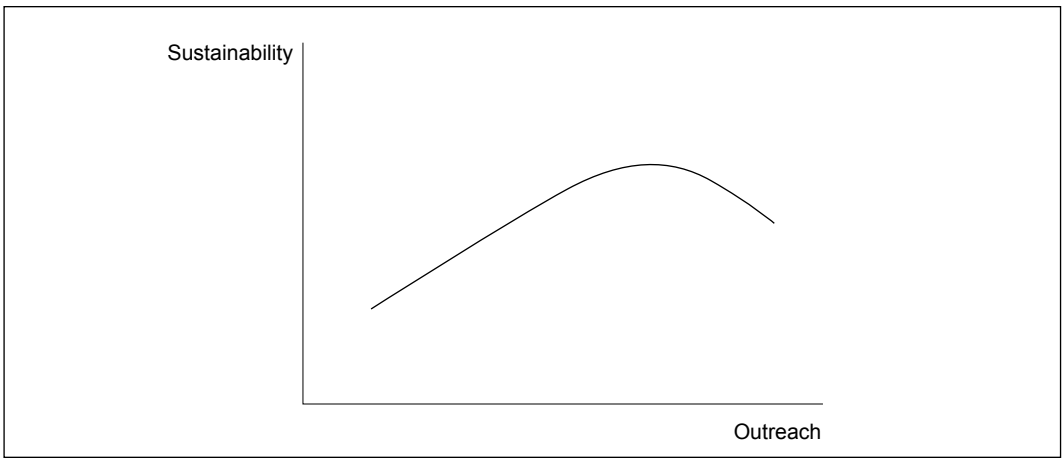
The estimates of sustainability indicate that MFI branches move towards operational self sufficiency over time. This supports the view that MFIs learns over time. The mean operational self sufficiency ratio of more than 1.0 in 2012 indicates that MFI branches are operationally sustainable on an average even before receiving grants, donations and other cash subsidies. The median OSS ratio of about 1.0 indicates that about 50 percent of MFI branches have attained operational self sufficiency. The financial self sufficiency ratio (FSS) has also an increasing

trend. The mean FSS was 0.8119 in 2012. The median was very close the mean FSS. This indicates that on an average MFI branches have still to cover 19 percent of its costs when input costs are marked to the market. In 2012 more than 22 percent of MFI branches attained full financial self sufficiency. These self sufficient branches must have attained the outreach or scale of economy or productivity that facilitated them to attain financial self sufficiency. In the following sections we provide the analysis of sustainability by outreach, loan productivity, scale of poverty, loan size and operational area.

7. Outreach and Sustainability

Outreach of MFIs and their sustainability have received wide attention in recent years. There are two aspects of outreach – breadth of outreach and depth of outreach. Breadth of outreach relates to the number of borrowers served by MFI while the depth of outreach relates to serving the poorest segment of the community. The scale of operation almost always has an impact on the cost of any production unit. In most cases, as the scale of operation increases, a production unit becomes more cost efficient. The economies of scale however disappear as the scale goes too high. The cost structure of a production unit is usually U-shaped and as such the relation between sustainability and breadth of outreach is expected to be inverted U-shaped. Figure 1 shows the relationship between breadth of outreach and sustainability.

Figure 1
Breadth of Outreach and MFI Sustainability



Two questions emerge from this. First, does the cost structure of an MFI resemble the cost structure of regular production units? Second, at what level of operation will the cost minimize and the profit maximize? It is indeed vital for any MFI to identify the optimum scale of operation because this has implications for its sustainability. In this section, the sample MFI branches have been grouped into four quartiles based on outreach. The number of borrower has been taken as a measure of outreach. Then the mean OSS has been estimated for each quartile for the particular year. Table 3 shows the results.

Table 3
Mean Sustainability Ratios of MFI Branches by Breadth of Outreach

Breadth of Outreach	2008	2009	2010	2011	2012
Operational Self Sufficiency Ratio					
(Lowest) First Quartile	0.7265	0.8078	0.7907	0.8790	0.9064
Second Quartile	0.7239	0.9637	0.7928	0.9641	0.9805
Third Quartile	0.9158	0.8738	0.8720	1.0016	1.0706
(Highest) Fourth Quartile	0.8137	0.8830	0.8583	0.9700	1.0394
ALL BRANCHES	0.7986	0.8839	0.8298	0.9545	1.0018
Financial Self Sufficiency Ratio					
(Lowest) First Quartile	0.4679	0.6009	0.6948	0.7596	0.7730
Second Quartile	0.5959	0.7326	0.6675	0.7564	0.7949
Third Quartile	0.7294	0.7034	0.7239	0.7790	0.8627
(Highest) Fourth Quartile	0.6545	0.7658	0.6989	0.7599	0.8166
ALL BRANCHES	0.6131	0.7023	0.6963	0.7634	0.8119

Two findings emerge from the estimates of mean sustainability ratios of MFI branches. First, both operational and financial self sufficiency ratios reach their peak in the third quartile of outreach. This means that as MFI branches increase their outreach up to a certain level they enjoy economies of scale, but they suffer from the diseconomies of scale when they grow too high in terms of outreach. The question is, when a branch should stop expanding its outreach in order to remain sustainable. According to the estimates of the latest year, the mean number of borrowers in the fourth quartile is 2632 while the mean number of borrowers in the third quartile is 1676. This indicates that the optimum outreach is likely to be between 1676 and 2632 in the market structure they are operating. Second, the sustainability ratios in general increase over time in all quartiles. The growing sustainability ratios over time in all quartile are likely to be outcomes of other critical factors that determine the efficiency of MFIs. This essentially indicates that an MFI may attain financial sustainability in the long run despite having diseconomies of scale.

8. Reaching the Poor: Mission Drift or Diseconomy?

There is growing literature documenting a tradeoff between reaching the extreme poor and financial sustainability. Many of these studies provide evidence that MFIs do not reach the poorest segment in order to remain sustainable (Cull, Demirguc-Kunt and Morduch 2007; Von Pischke 1996; Christen 2000; Quayes 2012; Heres and Lensink 2011; Millson 2013). This is often viewed as mission drift (Cull, et. al. 2007; Quayes 2012; Christen 2000). Identifying the poorest borrowers was a challenge for researchers. The average loan size was taken as a proxy for the level of poverty of borrowers. There had been debate over the appropriateness of the use of average loan size as a proxy. Nevertheless, most researchers used this variable to identify the extreme poor. The findings were almost identical. MFI have higher cost to reach the extreme poor.

In this study we use the average daily wage of unskilled labor as an alternate measure of the level of poverty of borrowers where the MFI branch is operating. In areas where sample branches are operating, the average daily wage rate of unskilled labor varies between Taka 80 and Taka 600 depending on the economic activities and opportunities. In the most poverty stricken areas unemployment (in many cases seasonal unemployment) is widespread and daily wage is minimum. On the other hand, daily wage is quite high in urban, suburban or other areas where there is high demand for labor. Taking the daily wage of unskilled labor as a proxy for poverty level in the area, we estimate the mean sustainability ratio for each quartile of poverty level where branches are operating. The findings are striking. Table 4 shows the estimates.

The estimates in the table do not show any consistent pattern to infer that MFI branches are less sustainable in the most poverty stricken areas. Evidences indicate that an MFI in the most poverty stricken area can be equally sustainable as an MFI in the least poverty stricken area. In other words, the level of poverty is not a deterrent to attain sustainability of an MFI branch.

Table 4
Mean Sustainability Ratios of MFI Branches by the Level of Poverty in the Area

Level of Poverty	2008	2009	2010	2011	2012
Operational Self Sufficiency Ratio					
Most Poverty Area 1	0.7522	0.8154	0.8462	0.9468	0.9779
Quartile 2	0.8436	0.9340	0.8019	0.9284	1.1188
Quartile 3	0.8229	0.9115	0.8222	0.9612	0.9737
Least Poverty Area 4	0.8804	0.9909	0.8215	0.9863	1.0697
ALL BRANCHES	0.7986	0.8839	0.8298	0.9545	1.0018
Financial Self Sufficiency Ratio					
Most Poverty Area 1	0.6012	0.6970	0.7352	0.7962	0.8343
Quartile 2	0.6607	0.7085	0.6438	0.7205	0.8459
Quartile 3	0.6215	0.6780	0.6743	0.7364	0.7636
Least Poverty Area 4	0.5909	0.7989	0.6744	0.7715	0.8565
ALL BRANCHES	0.6131	0.7023	0.6963	0.7634	0.8119

These findings however do not provide answer to a vital question whether lending to the extreme poor is more risky. If the credit risk is higher for the extreme poor borrowers, loan loss ratio should be higher for branches that provide loans to the extreme poor. We provide estimates of loan loss ratios of the MFI branches by the poverty level where they are operating. Table 5 shows the estimates.

The estimates of loan loss ratio of MFI branches by the poverty level do not show any consistent pattern to indicate that MFI branches in the most poverty stricken areas are exposed to higher risk of loan default. In other words, poorer borrowers do not impose higher risk exposure to MFI branches. This provides further evidence to infer that MFI branches in the most poverty stricken areas can be equally sustainable as MFI branches in the least poverty stricken areas.

Table 5
Mean Loan Loss Ratio of MFI Branches by the Level of Poverty

Level of Poverty	2008	2009	2010	2011	2012
Operational Self Sufficiency Ratio					
Most Poverty Area 1	0.0140	0.0184	0.0189	0.0160	0.0166
Quartile 2	0.0106	0.0132	0.0175	0.0175	0.0148
Quartile 3	0.0122	0.0128	0.0266	0.0188	0.0147
Least Poverty Area 4	0.0235	0.0239	0.0381	0.0231	0.0153
ALL BRANCHES	0.0140	0.0163	0.0237	0.0180	0.0156

If the sustainability of MFIs is associated with the scale of poverty of borrowers as documented in many studies, how should we interpret the positive relationship between higher loan size and sustainability? Before making a plausible interpretation, we analyze the relationship between sustainability and average loan size of MFI branches. First MFI branches were divided into four quartiles based on their average loan size. Then mean sustainability ratios were estimated for each loan size quartile. Table 6 shows the results.

Table 6
Mean Sustainability Ratios by Loan Size Quartile

Loan Size Quartile	2008	2009	2010	2011	2012
Operational Self Sufficiency Ratio					
(Smallest) Quartile 1	0.5104	0.7102	0.6469	0.8005	0.7657
Quartile 2	0.7402	0.8814	0.6592	0.8639	1.0094
Quartile 3	0.8755	0.8435	0.8769	0.9805	1.0039
(Largest) Quartile 4	1.0547	1.1131	1.1413	1.1997	1.2366
ALL BRANCHES	0.7986	0.8839	0.8298	0.9545	1.0018
Financial Self Sufficiency Ratio					
(Smallest) Quartile 1	0.4401	0.5844	0.6044	0.7014	0.7016
Quartile 2	0.5817	0.6551	0.5938	0.6991	0.8106
Quartile 3	0.6955	0.7377	0.7380	0.8096	0.8316
(Largest) Quartile 4	0.7381	0.8072	0.8533	0.8563	0.9016
ALL BRANCHES	0.6131	0.7023	0.6963	0.7634	0.8119

The results are similar to the findings of many other studies in different markets. Both operational and financial self sufficiency ratios increase almost consistently with the increase in loan size. But how do we explain this positive relationship? Collateral free microcredit programs require high transaction costs due to the structure of credit management. As the loan size increases the transaction cost per monetary unit of loan reduces. This has significant impact on the sustainability of MFIs. This finding raises a few questions to be answered. First, if MFIs change their strategy to increase their loan size to the extreme poor, do the borrowers have the capacity to utilize the credit? Second, what loan size will maximize sustainability or profitability of MFIs?

The first issue has been examined by classifying the MFI branches into two groups – those who have lower loan size than the median loan size of all branches and those who have higher loan size than the median loan size[2]. In the next step, mean financial self sufficiency ratios were estimated for each quartile of poverty level for each group. The results are presented in Table 7.

The estimates in the table indicate that the mean financial self sufficiency ratios are in general higher for MFIs having higher loan size than those for MFIs with lower loan size. It is remarkable to note that MFIs having higher loan size in the most poverty stricken area do not underperform or outperform to MFIs in least poverty stricken area with respect to sustainability. This provides indications that borrowers in the most poverty stricken areas have the capacity to utilize a larger loan. This finding has policy implications for MFIs working in the poorest region of the country.

Table 7
Mean Financial Self Sufficiency Ratios of MFI Branches by Poverty Level and Loan Size

Poverty Quartile	2008	2009	2010	2011	2012
MFIs with Smaller Loan Size					
(Most Poverty Area) Quartile 1	0.5464	0.6348	0.6949	0.7561	0.8165
Quartile 2	0.4127	0.5360	0.4681	0.5390	0.5812
Quartile 3	0.4950	0.5723	0.5470	0.6695	0.7059
(Least Poverty Area) Quartile 4	0.4851	0.7840	0.5423	0.7058	0.8017
MFIs with Larger Loan Size					
(Most Poverty Area) Quartile 1	0.6749	0.7491	0.7681	0.8543	0.8534
Quartile 2	0.9442	0.8054	0.8195	0.8461	0.9047
Quartile 3	0.7097	0.7719	0.8392	0.8124	0.8499
(Least Poverty Area) Quartile 4	0.6967	0.8138	0.7499	0.8137	0.8956

Nevertheless, a question still remains: what size of loan the extreme poor can utilize effectively? The samples of this study, the MFI branches in the upper panel (with smaller loan size) have a mean loan size of Taka 5081 while the MFIs in the lower panel (with larger loan size) have an average loan size of Taka 10,970. This means that the sustainability ratio of MFI increases significantly when the average loan size is doubled. Further analysis indicate that MFI branches having largest loan size (quartile 4) and operating in the most poverty stricken (quartile 1) area have a median FSS ratio of 0.8710 and a mean FSS ratio of 0.8514 in 2012. These MFI branches have an average loan size of Taka 17,699 in the same year. This means that MFI branches working in the most poverty stricken area can amplify their financial sustainability by increasing their average loan size further. However, it does not fully answer the question regarding the optimum loan size for the extreme poor. This remains to be answered in future studies.

[2] The loan size was not categorized into quartiles here because there were inadequate numbers of observations in few cells when each loan size quartile is further classified by poverty level quartiles.

9. PRIME Intervention and Sustainability

Ever since PRIME project had been introduced, it created significant impact on the socio-economic development of poor people in the region. Nevertheless the effort to attain sustainability of MFIs participating in the PRIME project remained high on the agenda. Initially it was expected that these MFI branches will attain the threshold of operational self sufficiency. It is time to analyze the degree of sustainability of these MFI branches. Further to this, it is equally important to identify the critical factors that will boost the performance of MFI branches in the years to come.

In this study, the degree of PRIME participation has been measured by the ratio of borrowers of PRIME project to the total number of borrowers of a branch. Branches were categorized into four quartiles based on the degree of PRIME participation. Table 8 shows the mean sustainability ratios by the degree of PRIME participation.

Table 8
Mean Sustainability Ratios of MFI Branches by the Degree of PRIME Participation

PRIME Participation	2008	2009	2010	2011	2012
Operational Self Sufficiency Ratio					
(Least) Quartile 1	0.9307	1.0241	1.0790	1.1516	1.2253
Quartile 2	0.8560	0.8651	0.7398	0.9021	0.9920
Quartile 3	0.6887	0.8481	0.6752	0.9179	0.9634
(Most) Quartile 4	0.7222	0.8192	0.8108	0.8657	0.8369
ALL BRANCHES	0.7986	0.8839	0.8298	0.9545	1.0018
Financial Self Sufficiency Ratio					
(Least) Quartile 1	0.7429	0.8161	0.8548	0.8719	0.9161
Quartile 2	0.6919	0.6899	0.6356	0.7375	0.8202
Quartile 3	0.4484	0.6207	0.5850	0.7139	0.7907
(Most) Quartile 4	0.5331	0.6447	0.6987	0.7368	0.7059
ALL BRANCHES	0.6131	0.7023	0.6963	0.7634	0.8119

It shows that MFI branches having least PRIME participation are most sustainable both operationally and financially. These branches have a mean OSS ratio of 1.23 and FSS ratio of 0.9161 in 2012. This means that they are generating about 23 percent more operating revenue than their operating costs. When their costs are marked to the market, their revenues fell short of adjusted operating costs by about 8 percent. On the other hand, branches having most PRIME participation are least sustainable. In 2012, these branches had mean OSS ratio of 0.8369 and FSS ratio of 0.7059. This means that their operating revenues fell short of their operating expenses by about 6 percent. At market price, their operating revenues are about 29 percent less than their adjusted operating expenses.

Further to this, an analysis of sustainability ratios has been provided for MFI branches lending only to PRIME borrowers, branches lending to both PRIME borrowers and other borrowers and branches lending only to other borrowers. The results are provided in Table 9 below.

Table 9
Mean Sustainability Ratios of MFI Branches by Program Category

Program Category	2008	2009	2010	2011	2012
Operational Self Sufficiency Ratio					
PRIME only	1.0740	0.8770	0.8122	0.9107	1.0545
Both PRIME and Non-PRIME	0.7658	0.8862	0.8296	0.9526	0.9943
Non-PRIME only	0.9440	0.7592	0.9062	1.2234	1.3318
ALL BRANCHES	0.7986	0.8839	0.8298	0.9545	1.0018
Financial Self Sufficiency Ratio					
PRIME only	0.6551	0.5767	0.6499	0.7401	0.8350
Both PRIME and Non-PRIME	0.5944	0.7064	0.6967	0.7625	0.8084
Non-PRIME only	0.7466	1.0081	0.8910	0.9702	1.0380
ALL BRANCHES	0.6131	0.7023	0.6963	0.7634	0.8119

The operational self sufficiency ratios are much higher for non-PRIME branches than those for PRIME branches. In 2012, PRIME branches attained a mean OSS ratio of 1.0545. About 60 percent of PRIME branches attained the benchmark of operational self sufficiency. Compared to this, the mean OSS ratio of non-PRIME branches was 1.3318 in 2012 and two-thirds of non-PRIME branches are operationally self sufficient. The mean OSS ratio of branches lending to both PRIME and non-PRIME borrowers was 0.9943 in 2012. About 49 percent of these branches became operationally self sufficient in the same year. But it is worthwhile to mention that the OSS ratio has been increasing over time since 2010 for all categories of branches.

A similar difference between PRIME branches and non-PRIME branches is evident in the financial self sufficiency ratio. But in general FSS ratio has been growing over time since 2010. PRIME branches attained a mean FSS ratio of 83.50 in 2012 while the non-PRIME branches attained a mean FSS ratio of 1.0380. Only 10 percent of PRIME branches are financially self sufficient (FSS≥1.0). In contrast, all non-PRIME branches in the sample are financially self sufficient. Branches lending to both PRIME and non-PRIME borrowers attained relatively lower FSS ratio. The mean ratio was 0.8084 in 2012. Only 22 percent of these branches are financially self sufficient.

We also estimated the percentage of MFI branches that attained sustainability. For making this analysis, we identified the number of branches that attained sustainability ratio of 1.0 or greater than 1.0 and categorized them by the quartiles of PRIME participation. Then we estimated the percentage of sustainable branches in each category to the total number of branches in that category. Table 10 shows the estimates of the percentages of sustainable branches.

Table 10
Percentage of Branches Sustainable by PRIME Participation (Percent)

PRIME Participation	2008	2009	2010	2011	2012
Operational Self Sufficiency (with Subsidy)					
(Least) Quartile 1	66.67	74.51	80.39	8077	86.27
Quartile 2	59.46	42.86	60.78	76.47	81.48
Quartile 3	45.45	28.57	66.67	76.00	83.02
(Most) Quartile 4	34.48	41.10	48.39	40.00	46.00
ALL BRANCHES	48.05	47.37	61.32	67.91	73.97
Operational Self Sufficiency					
(Least) Quartile 1	38.46	47.06	58.82	61.54	76.47
Quartile 2	37.84	26.53	17.65	33.33	50.00
Quartile 3	09.09	19.05	13.89	26.00	37.74
(Most) Quartile 4	21.05	29.17	27.87	28.57	36.73
ALL BRANCHES	27.45	30.29	29.38	35.98	49.54
Financial Self Sufficiency					
(Least) Quartile 1	17.95	15.69	29.41	25.00	35.29
Quartile 2	16.22	14.29	07.84	07.84	22.22
Quartile 3	00.00	14.29	05.56	06.12	15.38
(Most) Quartile 4	11.48	17.81	14.75	16.00	14.00
ALL BRANCHES	13.07	16.42	15.12	13.53	22.27

Analysis of mean sustainability ratios over the years reveals that there is a consistent pattern of declining sustainability ratios as PRIME participation increases. Also, there is a positive trend of sustainability ratios, in general, over the years. But why do the MFI branches participating in the PRIME project consistently underperform the branches that have least participation? What are the critical factors that drive MFIs towards sustainability? Answers to these questions have vital implication for attaining sustainability of these branches in future.

Table 11
Key Success Factors by the Level of PRIME Participation

PRIME Participation	2008	2009	2010	2011	2012
Mean Number of Borrowers					
(Least) Quartile 1	1866	1885	1869	1769	1758
Quartile 2	1618	1483	1541	1606	1615
Quartile 3	1273	1245	1571	1637	1688
(Most) Quartile 4	908	910	1122	1167	1242
Mean Loan Per Employee (Taka)					
(Least) Quartile 1	727,458	788,912	876,617	1,068,248	1,200,428
Quartile 2	703,313	715,171	714,239	857,813	929,365
Quartile 3	467,922	451,814	593,257	799,722	925,518
(Most) Quartile 4	406,754	404,499	527,119	649,741	663,114
Number of Employees per 1000 Borrowers					
(Least) Quartile 1	6.17	6.68	6.74	6.52	6.95
Quartile 2	7.54	7.91	7.21	7.66	7.59
Quartile 3	8.10	9.71	6.91	6.90	8.19
(Most) Quartile 4	18.28	19.11	13.31	15.93	18.10
Mean Loan Size per Borrower (Taka)					
(Least) Quartile 1	4,364	4,918	5,583	6,831	7,878
Quartile 2	4,604	4,491	4,827	6,189	6,725
Quartile 3	3,314	3,495	4,035	5,393	7,066
(Most) Quartile 4	7,159	7,738	7,757	8,436	10,554
Mean Deposit-Advance Ratio					
(Least) Quartile 1	0.3259	0.3480	0.3274	0.3550	0.3781
Quartile 2	0.3346	0.3288	0.3337	0.3349	0.3772
Quartile 3	0.2772	0.2825	0.3786	0.3618	0.3630
(Most) Quartile 4	0.3730	0.3417	0.3941	0.5451	0.5537
Mean Loan Loss Ratio					
(Least) Quartile 1	0.0127	0.0201	0.0273	0.0222	0.0173
Quartile 2	0.0157	0.0152	0.0284	0.0102	0.0107
Quartile 3	0.0114	0.0065	0.0098	0.0112	0.0128
(Most) Quartile 4	0.0126	0.0185	0.0248	0.0289	0.0226

In this study, key success factors have been analyzed by the degree of PRIME participation. This may indicate the weaknesses of MFI branches participating in PRIME intervention. Five

success factors have been analyzed – number of borrowers, loan per employee, number of employee per 1000 borrowers, loan size and deposit-advance ratio. Table 11 shows the estimates of key success factors by the degree of PRIME participation.

The number of borrowers is an indicator of outreach. As MFI branches increase their outreach transaction costs decline. This contributes to the profitability of MFI branch. But as documented in the earlier section, in MFI operations there is diseconomy of scale. The samples of this study indicate that MFI sustainability ratios reach their peak in the third quartile of outreach. The average number of borrowers in the third quartile is 1676 in 2012. We also considered the average number of borrowers of MFI branches having highest quartiles of OSS ratio and FSS ratio (Table 12). The mean number of borrowers is 1616 for MFI branches in the highest quartile of FSS ratio and 1559 for MFI branches in the highest quartile of OSS ratio. Given the market structure where these MFI branches are operating, the optimum number of borrowers is likely to be around 1600. Compared to this, the average number of borrowers of MFI branches with PRIME participation is 1242 in 2012. This number is about 22 percent less than the threshold. Essentially, MFI branches participating in PRIME require expanding their outreach further to attain sustainability.

Table 12
Mean Success Factors of Most Successful MFI Branches, 2012

	MFI Branches in the Highest Quartile of FSS	MFI Branches in the Highest Quartile of OSS
Average Loan Size (Taka)	10,006	12,369
Average Number of Borrowers	1616	1559
Average Loan Per Employee (Thousand Taka)	1,102.09	1,150.28
Av. Number of Employee per 1000 Borrowers	9.58	11.61
Average Loan Loss Ratio	0.0106	0.0106
Average Deposit Advance Ratio	0.4450	0.3919

Loan productivity of employees is a critical factor that helps attain sustainability of financial institutions. Higher loan productivity of employees is translated into lower cost of loan production. MFI branches having highest participation in PRIME had an average loan productivity of Taka 663,114 in 2012, while the same number was Taka 1,200,428 for MFIs having least participation in PRIME. Compared to these, MFIs in the highest quartile of FSS had mean loan productivity of Taka 1,102,090 and those in the highest quartile of OSS had mean loan productivity of Taka 1,150,227. This means that MFI branches having most participation in PRIME are far away from the desired loan productivity. These branches have to almost double their loan productivity.

Employee-borrower ratio is a factor related to loan productivity. It is particularly useful to estimate manpower requirement for MFIs. MFI branches with most participation in PRIME had 18.10 employees for every 1000 borrowers in 2012, while the same number was only 6.95 for MFIs having least participation in PRIME. Compared to these, MFI branches in the highest quartile of FSS had 9.58 employees and branches in the highest quartile of OSS had 11.61 employees per 1000 borrowers in 2012. Obviously, branches with highest participation in PRIME are

overstaffed. Unless their employees and loan production are optimized, it will be difficult for these branches to attain sustainability.

Minimizing loan losses is always a key to success for any financial institutions. MFI's loan technology overcomes the problem of information asymmetry associated with lending without collateral. Higher loan losses create hurdles for attaining sustainability. Branches having most participation in PRIME have relatively higher loan losses. Their mean loan loss ratio was 2.26 percent in 2012. On the other hand branches having least PRIME participation had a mean loan loss ratio of 1.73. Compared to these, branches in the top quartile of sustainability had mean loan loss ratio of only 1.06 percent. That means, the loan losses of branches having most participation in PRIME are more than double the loan losses of most sustainable branches.

It has been documented earlier in this study that sustainability is positively related to average loan size per employee. MFIs attaining sustainability are found to have higher loan size. In 2012, MFI branches having most PRIME participation have an average loan size of Taka 10,554, while branches having least participation have an average loan size of Taka 7,878. The average loan size of branches with most PRIME participation is very close to the numbers of most successful MFI branches. The figures are Taka 10,006 and Taka 12,369 respectively for branches in the highest quartile of FSS and those in the highest quartile of OSS.

Cost of fund creates a significant competitive advantage for any institution. Usually higher deposit mobilization helps reduce the cost of fund. Interest rate on deposit is considerably lower than borrowing interest rate. MFI branches with most participation in PRIME were indeed successful in attaining higher deposit advance ratio and as such they have a lower cost of capital. These branches have a mean deposit-advance ratio of 0.5537 in 2012. On the other hand branches with least participation in PRIME have a mean deposit-advance ratio of 0.3781. Compared to these, the mean ratios were 0.4450 for MFI branches in the top quartile of FSS and 0.3919 for branches in the top quartile of OSS. This competitive advantage puts the MFI branches participating in PRIME one step ahead on their road to sustainability.

In fine, MFI branches having highest participation in PRIME are well ahead on two counts. They have higher loan size per borrower. This reduces their transaction cost significantly. Second, these branches have higher deposit-advance ratio which reduces their cost of capital. In spite of having these advantages, these branches are least sustainable. That means, the value from these advantages is outweighed by disadvantages due to lower outreach and overstaffing or lower loan productivity. Unless these branches can improve with respect to human resources and outreach, sustainability is likely to remain far distant.

10. Sustainability of MFI Branches by District

Structural factors often affect MFIs' performance. Some of the structural factors relate to local infrastructure, local economy, local politics, people's behavior and culture. It is really difficult to measure these unknown local characteristics and incorporate them in the analysis to derive a

robust result. As an alternative, the impact of these unobserved local characteristics has been captured by the variation of district-wise estimates of sustainability. Table 13 shows the mean sustainability ratios of MFI branches by district.

The estimates indicate that MFI branches in Gaibandha and Kurigram districts are more operationally self sufficient while branches in Lalmonirhat and Nilphamari districts are relatively less operationally self sufficient. Moreover, branches in Gaibandha and Kurigram, on an average, attained operational self sufficiency by 2012. Their mean OSS ratios are 1.08 and 1.07 percent respectively. On the other hand, the mean OSS ratio of branches in Lalmonirhat and Kurigram, though improved over time, fell short of the benchmark. This means that the majority of branches in these two districts have to strive for operational self sufficiency in the years to come. In order to be operationally self sufficient MFIs in these two districts have to reduce cost by about 10 percent or increase revenue by the same amount.

Table 13
Mean Sustainability Ratios of MFI Branches by District

District	2008	2009	2010	2011	2012
Operational Self Sufficiency					
Gaibandha	0.8427	0.9489	0.9387	0.9985	1.0787
Kurigram	0.8053	0.8325	0.9635	1.0626	1.0731
Lalmonirhat	0.7797	0.8138	0.7577	0.8179	0.8945
Nilphamari	0.7728	0.6976	0.6902	0.8743	0.9001
Rangpur	0.6714	1.0622	0.6704	0.8929	0.9547
ALL FIVE DISTRICTS	0.7986	0.8839	0.8298	0.9545	1.0018
Financial Self Sufficiency					
Gaibandha	0.6521	0.7715	0.7530	0.7480	0.8018
Kurigram	0.6322	0.6961	0.8056	0.8598	0.8886
Lalmonirhat	0.6297	0.6635	0.6685	0.7287	0.8222
Nilphamari	0.5279	0.5910	0.5811	0.7032	0.7676
Rangpur	0.5269	0.7365	0.5863	0.7208	0.7527
ALL FIVE DISTRICTS	0.6131	0.7023	0.6963	0.7634	0.8119

Analysis of financial sustainability however reveals that MFI branches in Kurigram are most sustainable while branches in Rangpur and Nilphamari are least sustainable. MFI branches in Kurigram have a mean FSS ratio of 0.8886 in 2012. That means, they are about 11 percent away from the benchmark. On the other hand branches in Rangpur and Kurigram have mean FSS ratios of 0.7527 and 0.7676. This means that their revenues fell short of expenses by about a quarter of their expenses when the expenses are marked to the market. It is likely that the regional characteristics of these districts affect the performance of these MFIs.

11. Determinants of Sustainability of MFIs

In this section the determinants of sustainability of MFI branches have been analyzed through regression. A random effect generalized least square regressions were conducted to identify the determinants of sustainability. Three sustainability indicators have been used – operational self sufficiency ratio, financial self sufficiency ratio and return on asset. As mentioned earlier, OSS ratio includes indirect subsidy, but excludes direct subsidy. FSS ratio excludes both direct and indirect subsidy. Finally, ROA includes both direct and indirect subsidy.

Six explanatory variables have been included in the regression model – loan productivity of employees (LoanProd), average loan size per borrower (AvLoan), breadth of outreach represented by log of the number of borrowers (Outreach), depth of outreach represented by the average daily wage rate in the branch area (Wage) and a dummy variable for branches in the top quartile of outreach (DumTopOutreach), deposit-advance ratio and dependence on direct subsidy. Three control variables were introduced relating to the characteristics of MFI branches – the age of MFI branch (Age), training of branch manager (ManTrain) and female field officer to total number of field officers (FemFO). Other control variables include fraction of borrowers under PRIME project to the total number of borrowers of branch (PRIME), competition among the MFIs (Competition) measured by the number of branches of other MFIs within five kilometers of branch area, literacy rate in the branch area (Liter), distance from Upazila (DistUP), distance from nearest bituminized road (DistBR), Dummy variable for branches in Lalmonirhat district (DumLal), dummy variable for branches in Nilphamari district (DumNil) and dummy variable for branches in Kurigram district (DumKuri).

The regression model is given below:

Sustainability =

$$\alpha_{it} + \beta\,\mathrm{LoanProd}_{it} + \gamma\,\mathrm{AvLoan}_{it} + \delta\,\mathrm{Outreach}_{it} + \mu\,\mathrm{DumTopOutreach}_{it} + \tau\,\mathrm{Wage}_{it}$$
$$+ \varphi\,\mathrm{DepAdv}_{it} + \xi\,\mathrm{Age}_{it} + \lambda\,\mathrm{ManExp}_{it} + \theta\,\mathrm{ManTrain}_{it} + \nu\,\mathrm{FemFO}_{it} + \phi\,\mathrm{Liter}_{it} + \pi\,\mathrm{PRIME}_{it}$$
$$+ \omega\,\mathrm{FracSubsidy}_{it} + \varphi\,\mathrm{Comptetition}_{it} + \eta\mathrm{DistUp}_{it} + \rho\,\mathrm{DistBR}_{it} + \psi\,\mathrm{DumLal}_{it} + \eta\,\mathrm{DumNil}_{it}$$
$$+ \varsigma\mathrm{DumKuri}_{it} + \mathrm{u}_{it}$$

Where

Sustainability	= Sustainability Indicator of MFIs
α	= Constant
LoanProd	= Loan productivity of employees
AvLoan	= Average Loan Size in Taka
Outreach	= Ln (Number of Borrowers)
DumTopOutreach	= Dummy Variable for branches in the Top Quartile of Outreach
Wage	= Average Daily Wage of Unskilled Labor
DepAdv	= Deposit Advance Ratio
Age	= Age of MFI Branch

ManTrain = Number of Training Imparted by the Manager

FemFO = Fraction of Female Field Officer to Total Field Officer

Liter = Literacy Rate in the Branch Area

PRIME = Fraction of PRIME Borrowers to Total Borrowers

FracSubsidy = Fraction of Subsidy to Total Revenue

Competition = Competition (Number of MFI Branches in the Branch Area)

DistUp = Distance from Upazila in Kilometer

DistBR = Distance from Bituminized Road in Kilometer

DumLal = Dummy variable for MFIs located in Lalmonihat district

DumNil = Dummy variable for MFIs located in Nilphamari district

DumKuri = Dummy Variable for MFIs Located in Kurigram

u_{it} = Error component

i = cross sectional units (MFIs) (1,2,3,……., N)

t = time period (1,2,3,……, T)

A random effect generalized regression model was chosen after conducting Hausman specification test. In addition, Variance Inflation Factor (VIF) and Farrar-Glauber tests were conducted to examine the possibility of multicollinearity. The test results are provided below:

Table 14
Results of Multicollinearity Tests

Variable	Variance Inflation Factor		Farrar Glauber Test	
	VIF	1/VIF	F Test	P Value
Age	1.2854	0.7779	14.910	0.0000
PRIME	1.2516	0.799	13.142	0.0000
LoanProd	1.6988	0.5887	36.500	0.0000
AvLoan	1.8213	0.5491	42.899	0.0000
Outreach	2.6663	0.3751	87.039	0.0000
DumTopOutreach	1.5478	0.6461	28.614	0.0000
ManTrain	1.1128	0.8987	5.891	0.0000
Competition	1.4075	0.7105	21.285	0.0000
Wage	1.0910	0.9166	4.756	0.0000
Liter	1.1822	0.8459	9.517	0.0000
DepAdv	1.1417	0.8759	7.403	0.0000
DistUp	1.3058	0.7658	15.975	0.0000
FemFO	1.1652	0.8582	8.629	0.0000
DistBR	1.2017	0.8322	10.536	0.0000
DumKuri	1.4987	0.6672	26.049	0.0000
DumNil	1.2793	0.7817	14.588	0.0000
DumLal	1.2046	0.8301	10.688	0.0000
FracSubsidy	1.1711	0.8539	8.937	0.0000

Variance inflation factor test indicates that all variables have VIFs far below the tolerance limit. Also the Farrar Glauber test indicates that F-values are significant at 1 percent level. These indicate that there is no significant multicollinearity among the variables. The regression estimates are provided in Table 15.

Table 15
Random Effect Generalized Least Square Regression Estimates on Sustainability

Variable	Variable Label	FSS	OSS	ROA
		Coefficient (Z-Value)	Coefficient (Z-Value)	Coefficient (Z-Value)
LoanProd	Loan per Employee	0.00000010	0.00000023	0.00000006
		3.50***	6.49***	3.41***
AvLoan	Average Loan Size	0.00000656	0.00001180	0.00000262
		5.49***	7.76***	3.72***
Outreach	Ln (Number of Borrowers)	0.110404	0.0921857	0.0288631
		4.91***	3.22***	2.17**
DumTopOutreach	Dummy for Branches in Top Quartile of Outreach	-0.0546442	-0.0587011	-0.0065173
		-2.17**	-1.84*	-0.44
FracSubsidy	Fraction of Direct Subsidy to Total Revenue	-0.5145304	-0.7327541	0.2134988
		-11.05***	-12.41***	7.79***
Wage	Average Daily Wage of Unskilled Labor	-0.0000623	0.000378	0.0000992
		-0.34	1.64	0.93
DepAdv	Deposit-Advance Ratio	0.3110172	0.0533771	-0.0033394
		10.54***	1.43	-0.19
PRIME	Fraction of PRIME Borrowers	-0.0624541	-0.0692067	-0.0196173
		-3.57***	-3.13***	-1.91
Age	Age of Branch	0.0004679	0.0017167	0.0009093
		0.24	0.70	0.81
ManTrain	No. of Training by Branch Manager	0.0036483	0.0055286	0.0001135
		1.67*	2.00**	0.09
FemFO	Female Field Officer to Total Field Officer	0.11097	0.0721884	0.0224473
		2.96***	1.52	1.02
Competition	Competition among MFIs in Branch Area	-0.0035374	-0.0065686	-0.0051103
		-1.87*	-2.71***	-4.55***
Liter	Literacy Rate in the Branch Area	0.0068312	0.0692984	0.0193053
		0.15	1.18	0.71
DistUp	Distance from Upazila	0.0033063	0.0023257	0.0007946
		2.12**	1.17	0.87

Variable	Variable Label	FSS	OSS	ROA
		Coefficient (Z-Value)	Coefficient (Z-Value)	Coefficient (Z-Value)
DistBR	Distance from Bituminized Road	0.0114644	0.0037979	0.0031217
		3.04***	0.73	1.41
DumKuri	Dummy for Kurigram District	-0.0168952	-0.0435782	0.0125675
		-0.70	-1.42	0.89
DumNil	Dummy for Nilphamari District	-0.0931946	-0.1386517	-0.0316072
		-3.54***	-4.15***	-2.04**
DumLal	Dummy for Lalmonirhat District	-0.0382263	-0.1084315	-0.0248058
		-1.22	-2.74***	-1.35
Constant		-0.1858816	0.041955	-0.2730039
		-1.11	0.20	-2.75***
R-squared	Within =	0.3339	0.3869	0.1421
	Between =	0.935	0.9638	0.8784
	Overall =	0.3553	0.4037	0.1465
Number of Observations		906	895	900
Groups		5	5	5

Note: Figures in the bracket indicate z-value. * Significant at 10%, ** Significant at 5%, *** Significant at 1%

The loan productivity of employees (LoanProd) has significant positive impact on the three measures of sustainability. This is quite expected because higher loan productivity indicates lower cost of labor. The average daily wage of unskilled labor in the branch area (Wage), proxy for the scale of poverty in the area, does not have significant impact on the sustainability. This implies that MFI branches can attain financial sustainability in areas of extreme poverty. This finding contradicts the findings of many studies that MFIs lending to the extreme poor are not sustainable and make a mission drift. This study brings evidence to support the hypothesis that the scale of poverty of borrowers is not a determinant of sustainability. MFI branches operating in areas of extreme poverty do not underperform MFI branches in other areas. This has significant implications for microfinance operations. MFIs reaching the extreme poor can be equally sustainable and they do not have to make a mission drift. As a result, financial systems approach can work viably to reach the extreme poor.

As documented in many other countries, average loan size (AvLoan) has a positive impact on sustainability ratios. This provides evidence that MFI branches having higher loan size have lower transaction cost. That means, a very small loan size is expected to create diseconomy for the MFI branch. Similarly, higher outreach (Outreach) has significant positive impact on sustainability of MFIs. But very high outreach (DumTopOutreach) has a negative impact on sustainability. This implies that the relationship between sustainability and outreach is inversed U-shaped. In other words, MFI branches enjoy economies of scale as their outreach increases,

but experience diseconomy when they expand their outreach beyond a certain level. Deposit-advance ratio (DepAdv) has a positive impact on the sustainability ratios. This is expected because deposits are cheaper sources of fund for any financial institution. Higher deposit mobilization helps reduce their cost of capital. The fraction of borrowers under PRIME project has a negative impact on sustainability ratios. This is quite expected because branches which are providing credit only under PRIME project are relatively new and they are still to attain the key efficiencies in microfinance operation. The fraction of direct subsidy to total revenue (FracSubisdy) has a strong negative impact on sustainability ratios. This provides evidence to support the hypothesis that subsidy creates disincentive for MFIs to become sustainable.

Although a positive relationship between age of branch and financial sustainability was expected, but this study does not find any impact of age on the sustainability of MFI branches. The coefficient of Age is not statistically significant. It is likely that the growth of an MFI branch over the years is captured by the outreach of branch. This implies that if a branch can expand its outreach to the optimum level, it can be sustainable irrespective of age. The number of training undertaken by the MFI branch manager (ManTrain) has a positive impact on sustainability. This provides indication that training to MFI managers help increase efficiency that contributes to sustainability. The fraction of female field officers to total field officer (FemFO) has significant positive impact on sustainability. This provides indications that female field officers perform better in dealing with borrowers. In Bangladesh most of the MFI borrowers are female. The employment of female field officers in MFI branches can help attain higher sustainability. The distance from Upazila (DistUp) and the distance from nearest Bituminized road (DistBR) have significant positive coefficients. Branches in the remote locations perform better in attaining sustainability. This finding is noteworthy. This study provides evidences to support the hypothesis that remoteness is not a deterrent to sustainability.

12. Conclusions

The issue that provoked wide attention of researchers was the sustainability of MFIs providing loans to the extreme poor. This study documents that MFI branches extending microfinance in areas of extreme poverty do not underperform MFI branches operating in relatively well off areas. Also this study provides evidence that MFI branches having higher loan size and operating in the most poverty stricken areas are no less sustainable than those operating in relatively well off areas. This finding has crucial implications for the development of MFIs' strategy to reach the extreme poor. Increasing the loan size to the poorest of poor can be an effective strategy for MFIs to attain sustainability. But to what extent the loan size should be increased to the extreme poor? This is an issue that remains to be researched in future. This study also provides evidence that direct subsidy creates disincentive for MFIs to attain sustainability. This finding has implications for refinancing institutions and development agencies to reshape the way they should support MFI for poverty alleviation.

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Appendix

Percentage of Branches Sustainable by PRIME Participation (Percent)

PRIME Participation	2008	2009	2010	2011	2012
Operational Self Sufficiency (with Subsidy)					
(Least) Quartile 1	66.67	74.51	80.39	8077	86.27
Quartile 2	59.46	42.86	60.78	76.47	81.48
Quartile 3	45.45	28.57	66.67	76.00	83.02
(Most) Quartile 4	34.48	41.10	48.39	40.00	46.00
ALL BRANCHES	48.05	47.37	61.32	67.91	73.97
Operational Self Sufficiency					
(Least) Quartile 1	38.46	47.06	58.82	61.54	76.47
Quartile 2	37.84	26.53	17.65	33.33	50.00
Quartile 3	09.09	19.05	13.89	26.00	37.74
(Most) Quartile 4	21.05	29.17	27.87	28.57	36.73
ALL BRANCHES	27.45	30.29	29.38	35.98	49.54
Financial Self Sufficiency					
(Least) Quartile 1	17.95	15.69	29.41	25.00	35.29
Quartile 2	16.22	14.29	07.84	07.84	22.22
Quartile 3	00.00	14.29	05.56	06.12	15.38
(Most) Quartile 4	11.48	17.81	14.75	16.00	14.00
ALL BRANCHES	13.07	16.42	15.12	13.53	22.27

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