MEASURING MICROFINANCE

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Abstract

MFIs are measured according to two dimensions. One is their outreach to poor people, that is, their ability to provide poor families access to financial services. This is the MFIs' social mission. The other dimension is their financial sustainability, that is, their ability to pay their employees, lenders, and other suppliers, in short, their ability to produce a profit from their operations. We set out the main microfinance measures and confirm earlier findings that profitability is rather weak in microfinance, and that operational costs constitute a large part of the total costs. We argue that researchers should put more efforts into identifying the MFI's cost drivers because social outreach is related to high costs and thus difficult to upheld as competition in the industry hardens.

Introduction

Controversies have been a hallmark of microfinance in the years following the initial euphoria due to the awarding of the 2006 Nobel Peace Prize to Grameen Bank and Mohammad Yunus. Microfinance institutions (MFI) have been accused of making people credit-dependent. How, though, do we measure MFIs' success or lack of success? This paper aims to discuss various ways of measuring MFI performance.

MFIs are measured according to two dimensions (Murdoch, 1999). One is their *outreach* to poor people, that is, their ability to provide poor families access to financial services. This is the MFIs' *social mission*. The other dimension is their *financial sustainability*, that is, their ability to pay their employees, lenders, and other suppliers, in short, their ability to produce a profit from their operations.[1] The "microfinance promise" (Murdock, 1999) is that the MFI is able to reach out to low-income people and at the same time be profitable. This means that MFI performance has three aspects, that is, outreach, financial sustainability, and the relation between the two. In this chapter, we look into these three aspects, starting with financial sustainability, which offers the easiest approach to the subject. We add numbers along the way in order to illustrate the magnitudes of the various measures.

The data sample for this chapter is drawn from the "Mersland data" that we have used in a number of articles and book chapters. The data are collected by rating agencies and most of the reports are publicly available on the agencies' websites or other websites such as www.ratingfund2.org. The rating agency representative visits the MFI and collects financial and outreach data as well as data on ownership, regulation, the MFI's governance, its number of clients, financial products, and other data. We underline that the MFIs do not self-report their data. The data sample does not include the largest MFIs, which are rated by big international rating agencies, and most of the smallest savings and credit cooperatives (SACCOs) and similar self-organizing schemes are also omitted. On each visit, the representative usually collects data for the previous four years. In our data set, a number of MFIs have been rated more than once, giving us a series of data stretching up to eight years in all. Thus, we have an unbalanced panel

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[1] Zeller and Meyer (2003) argue that microfinance should be measured according to three dimensions: financial sustainability, outreach, and impact. In this book, we do not include impact as a performance dimension since this would change the unit of analysis from the MFI to the customer. Moreover, the impact for customers is, to a large extent, dependent on market conditions and entrepreneurial efforts, and to a lesser degree on the MFI.

data set stretching from 1998 to 2010 with most of the data belonging to the period from 2001 to 2007. Since MFIs neither drop out of the sample nor enter it in any systematic way, we are able to perform panel data analyses in a regular manner (Greene, 2010). Beisland and Mersland (2013) perform tests on the reliability of the accounting data and conclude that the MFI data are as reliable as we can find among Western firms. Thus, both the data collection methods *a priori* and the *a posteriori* tests of reliability can be taken by researchers to imply that the data are well-suited for the purpose at hand.

Financial sustainability

The main accounting figures for the average MFI are set out in Table 1.

Table 1: The main variables in the net income statement of an average MFI (amounts in nominal US dollars).

	Mean	Std. Dev.	p25	p50	p75	Obs	% of revenue
Total financial revenues	1427348	2137106	247616	694200	1835227	1406	100.0
Total financial expenses	243914	609941	14000	77958	263962	1406	17.1
Net loan loss provisions	95940	199190	5656	30886	102876	1400	6.7
Financial margin	1090627	1729175	180459	537800	1419363	1404	76.4
Operational expenses	864002	1142467	191544	482605	1101607	1455	60.5
Wages	458184	631007	95142	257840	601000	1337	32.1
Administrative costs	358446	537780	81084	191053	453213	1339	25.1
Operational margin	207685	543114	-9766	61785	284781	1454	14.6
Total assets	6009042	9699353	1126000	2731999	7389822	1462	421.0
Total loan portfolio	4340811	6124968	784483	2033094	5296950	1472	304.1

The total financial revenues form the point of departure, but notice that the numbers do not add up perfectly, since we have different subsamples for each variable. Subtracting the total financial expenses and loan loss provisions, we arrive at the financial margin. In percentage terms, this margin is 76.4 percent of total financial revenues. Subtracting operational costs from the financial margin gives us the net operational income, which is 14.6 percent of revenues. Operational expenses consist of wages, administrative expenses, and expenses for housing. The wage bill is the largest cost item for the MFI. This means that microfinance is a labor-intensive business. Labor is required to credit screen loan applicants, and to collect payments from clients.

3

Notice that wages and administrative costs do not add up to the amount of total operating expenses because the sample sizes differ. We also include total assets and the total loan portfolio, since these appear in many measures. With these figures, we are ready to demonstrate the measures most commonly used in microfinance.

An often-used measure is the return on assets (ROA), defined as the net operating income of the MFI divided by its assets. This is an important measure since it enables analysts to compare the MFI's performance to that of other MFIs and firms in general. It tells an investor what return to expect from an investment in the MFI. A return should cover the risk-free rate together with a markup covering the systematic risk of the MFI (Berk and DeMarzo, 2014). Such a risk-adjusted return is hard to calculate for the MFI, since only a few are listed. Indirect ways of calculating the required risk-adjusted rate of return exist, but require much country-specific information and will take us too far from the purpose of this paper.

Armendáriz and Murdoch (2010, p. 244) report the *operating self-sufficiency* (OSS) measure. This measure shows us whether the MFI is able to cover its expenses. For an MFI that aims to break even on its operations, this is potentially a very relevant way to check its financial sustainability. We measure this using two variants, OSS1 and OSS2.

$$OSS1 = \frac{Operating\ revenue}{Expenses\ on\ (funding\ +\ loan\ loss\ provision\ +\ operations)}$$

Operating revenue includes interest and commissions earned on loans. These items are the two dominating income categories for the MFI specializing in lending. Expenses on funding consist of the interest paid to depositors and the interest and fees on loans from funds or other financial institutions as well as bond holders. Loan loss provisions are what the MFI needs to set aside to cover the costs of defaults, that is, losses amassed from customers that do not repay their loans, in whole or in part.

The interpretation of the OSS1 measure is simple. If $OSS1 > 1.0$, or 100%, the MFI is able to pay its expenses.

The second OSS measure is even simpler than the first:

$$OSS2 = \frac{Operating\ revenue}{Operating\ expense}$$

Compared to OSS1, this new measure does not include expenses associated with funding. This is a relevant measure in microfinance since funding structures can differ a lot across MFIs depending on their access to donors and lenders, which in turn depends on the country in which the MFI operates. Managers of MFIs are, therefore, in the foremost position to influence the operating costs.

A major input in microfinance operations is the institution's own capital, the equity. Should we insert an expense for the use of equity into the overall expense measure? After all, the capital used in the MFI has alternative uses that would pay interest. Such an expense should be adjusted for the risk inherent in investing in an MFI. If the cost of using equity is not included, we implicitly allow a subsidy into the MFI. The conventional procedure has been not to include such a capital cost for the pragmatic reason that it is difficult to measure the cost of equity, especially the risk adjustment. A risk adjustment is meaningful in developed countries with deep financial markets, but is difficult to assess in low-income countries with few assets that have a market value. We follow the convention here of not including a cost for the use of the institution's own funds, as this is also related to subsidies in microfinance, to which we return below.

Christen et al. (1995) introduced the *financial self-sufficiency* (FSS) measure with the intention of restating financial results in terms of market values. The FSS can be written as follows:

$$FSS = \frac{Adjusted\ operating\ revenue}{Adjusted\ expenses\ on\ (funding\ +\ loan\ loss\ provision + operations)}$$

We can recognize all the major elements from the OSS1 measure here, but now the terms are adjusted. Christen et al. suggest two major adjustments, that is, one for the inflation in each country, and the second for implicit and explicit subsidies. The adjustments for subsidies account for three types of subsidies: concessionary borrowings, cash donations, and in-kind subsidies.

Let us look at these terms in turn. Should we adjust for inflation? This is necessary when inflation rates are high and different between countries. However, the mechanics of the conversion from local rates to the amounts set out in Table 1 take care of most of the trouble with inflation. The amounts are converted into US dollars for each year. Moreover, many MFIs keep their local banking in US dollars. Therefore, the only inflation adjustment we would need to undertake would be that for US inflation, and in any case, the decision makers probably watch

the nominal terms closer than some inflation-adjusted numbers. However, in econometric work inflation adjustment is necessary.

Subsidies are more difficult to handle. First there is the subsidized debt. MFIs receive funding at reduced rates relative to the market. In our sample, two thirds of the MFIs receive subsidized debt. The amount of subsidized debt relative to the total debt of the MFI is about 47 percent among those MFIs that receive subsidized borrowing. Instead of the recorded total financial expenses in Table 1, we should have computed the expenses that would result if the subsidies were removed. We can see that this would affect 17.1 percent of the expenses in Table 1. Furthermore, we would have to compute the market rate of borrowing in each country, that is, the yearly advantage of subsidized debt (the market rate of borrowing less the subsidized rate) times the amount of borrowing. The difficulty is to find both the subsidized rate and the market rate. The market rate should be adjusted for the systematic risk in each MFI. This is hard to measure, since we need both the market rates of return for the MFI over a longer period, and the rate of return for a market portfolio. These are uncertain terms in the countries we are looking at, and require a detailed analysis for each MFI. Such an investigation is beyond the possibilities of this chapter. Since the subsidies only affect the total financial expenses, our approach of not applying adjustments does not result in a very large inaccuracy.

Direct donations should only to a limited degree affect the analysis here, since they mostly enter the income statement as a funding element for assets. We calculate measures relative to assets or portfolios, and thus avoid the problem of how they are funded. Thus, we do not use the financial sustainability measure (FSS) in this chapter.

We have calculated the ROA and two OSS measures, together with the financial margin percentage and the net income as a percentage of revenues, and displayed them in Table 2. Note that the numbers are in percentages.

Table 2: Main financial sustainability measures distributed by year. The recorded numbers are medians.

Year	Financial margin %	NI-% of revenues	ROA	OSS1	OSS2
1998	77.7	27.1	7.1	137.7	254.1

1999	80.1	14.6	3.5	117.1	208.2
2000	75.2	3.2	0.5	103.3	143.8
2001	76.1	4.8	1.5	105.1	147.6
2002	82.8	10.3	2.4	111.5	143.8
2003	81.2	12.4	3.1	114.2	150.3
2004	81.7	13.5	3.3	115.6	149.5
2005	80.4	8.7	2.0	109.6	149.5
2006	79.7	12.8	3.2	114.3	151.1
2007	77.6	9.6	2.3	110.6	148.5
2008	78.7	14.2	3.6	116.6	169.0
2009	77.1	12.0	5.4	113.7	169.5
Pooled	79.9	11.0	2.5	112.3	150.4
Obs.	1400	1397	1397	1397	1403

We report the figures for all years. However, the first and last years contain only a few observations. Thus, their values may be distorted by random occurrences in the year. The ROA measure shows that the return on investments in MFIs is very low, at the median.[2] A median return of 2.5 is hardly above the risk-free rate in most countries in the sample. Moreover, notice that ROA measures are unadjusted for subsidies. A second noteworthy feature is that ROA does not show a specific upward or downward trend over time. On the contrary, other than in the randomly influenced first two and last two years, the median value of ROA1 stays within a rather narrow band of 1.5 to 3.3 percent.

The median is not the result of a widely dispersed distribution of values around the center. Figure 1 illustrates.

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[2] Rating agencies use average annual assets in the denominator when calculating ROA. Because of the industry's growth median ROA as reported by the rating agencies is therefore 2.7 percent in our dataset.
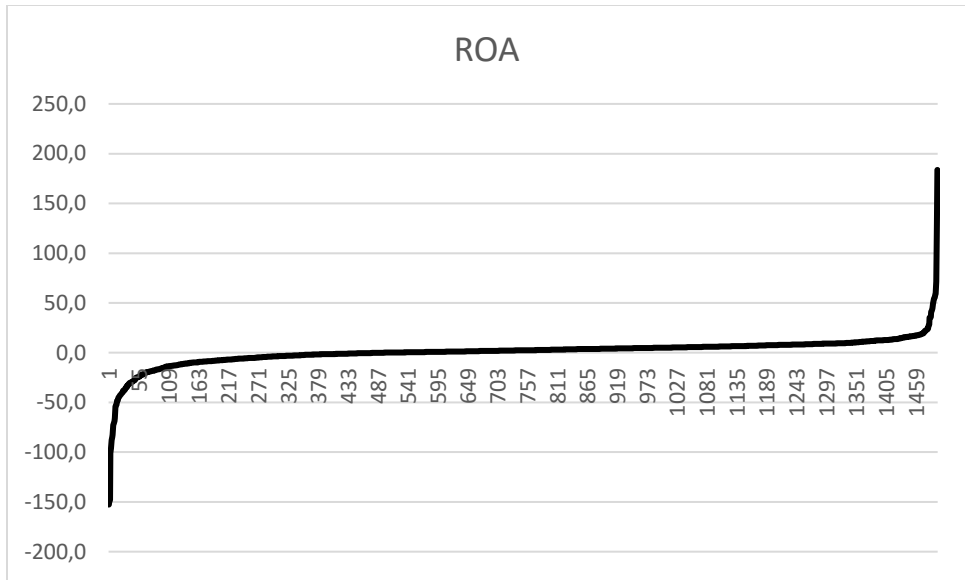
Figure 1: The ROA measure sorted from lowest to highest value.

The figure shows some outliers at the low and high ends of the distribution, but most of the MFIs' ROAs clustering around zero. In fact, one third of the MFIs have an ROA less than zero. Thus, microfinance lending is not a lucrative business proposal, except for a few very profitable MFIs.

Outreach

The MFI's goal, or mission, is to give low-income people in developing countries, in particular, access to financial services, especially loans. This is termed the MFI's *outreach* for short. Microfinance's great achievement is to provide banking for the so-called unbankable in the conventional banking system. We emphasize two main dimensions of outreach (Schreiner, 2002), its *breadth* and *depth*. The breadth dimension refers to the number of clients to which the MFI is able to reach out, while the depth dimension refers to the clients' poverty level. Outreach increases with greater breadth and greater depth. The MFI may increase its outreach by increasing the number of clients it has at the same income level, or by moving into lower income levels. In the microfinance literature, there has been a concern that MFIs undertake a mission drift into higher income levels. However, if competition is increasing among MFIs, as well as

8

from the entry of ordinary banks, an equally likely path is for MFIs to drift into lower income levels, where their comparative advantages are greater.

Indeed, competition in microfinance is increasing, particularly in countries such as Bangladesh, Peru, and Bolivia. Microcredit Summit reports that MFIs now serve around 200 million clients with loans (www.microcreditsummit.org). Nevertheless, most people in developing countries remain without banking provision. According to the World Bank, 75 percent of adults living on less than 2 US dollars per day do not have a bank account, and in Sub-Saharan countries borrowing from friends and families is ten times as common as borrowing from a bank or an MFI (the Global Findex database, www.worldbank.org).

How do we measure outreach, in particular the breadth and depth dimensions? Yaron (1992) suggests a composite index, "the Outreach Index", of measures such as the average loan, the number of clients reached etc. Recently, new attempts have been made to grasp the multidimensionality of outreach, and in particular to make the measurement of social performance as transparent and standardized as that of financial performance (Copestake, 2007). One such attempt is the Social Performance Task Force (SPTF) that has worked to set common standards of social performance for the microfinance sector since 2005. It has agreed on four main dimensions, namely, sustainably serving increasing numbers of poor and excluded people, improving the quality and appropriateness of financial services, improving the economic and social conditions of clients, and ensuring social responsibility to clients, employees, and the community served (Hashemi, 2007). The French Comité d'Echanges, de Réflexion et d'Information sur les Systèmes d'Epargne-crédit (CERISE) has created the Social Performance Indicators (SPI) index. The index encompasses four dimensions, each containing three sub-aspects: targeting and outreach (geographic and individual targeting, pro-poor methodology), products and services (range of traditional services, their quality and innovativeness), benefits to clients (economic, client participation, social capital/client empowerment), and social responsibility (to employees, consumers, and the community and the environment). In this chapter, we choose to focus on the single measures themselves, and thereby avoid the difficult weighting considerations that go into a composite index. Furthermore, composite measures are often hard to understand (Greene, 2012). Another worry is that there seems to have been an

increase, recently, in the number of indicators of social responsibility. Only the largest MFIs are able to assimilate, update, and report on the full range of measures.

We start with the *breadth* measures. These have perhaps been somewhat neglected in the academic literature, but are actually important, showing the extent to which low-income households can gain access to financial products. The accumulated effects of access can be truly transformational in a community, as households can plan ahead and escape the limitations of the local market. The breadth measures encompass the number of clients the MFI serves as well as the size of its portfolio. The larger are these measures, the more outreach the MFI produces. We are also, though, interested in the growth in these numbers, as in Randøy et al. (2014). Specifically, we investigate the loan portfolio, the extent of savings, the number of credit clients, and the number of savings clients, as well as their growth rates.

We construct a table with the loan portfolio, the number of credit clients, and the relation between them, namely the average loan, as well as similar relations for savings (see Table 3).

Table 3: Aspects of the breadth dimension of outreach: Loan and voluntary savings portfolios

	Average	St.dev.	Min	Max	Obs.
Loan portfolio	4337102	6126381	8512	59700000	1472
Credit clients	12735	26316	20	394462	1461
Average loan	676	825	10	6946	1456
Savings	1205229	5699261	0	110487895	1433
Savers	4974	23767	0	413095	1202

The amounts are in nominal US dollars, converted from local currency at the exchange rate appropriate for each year?].

The average MFI has a loan portfolio of about US$ 4.3 million (nominal amounts) and the largest has a loan portfolio close to US$ 60 million. The growth in the portfolio and the number of credit clients is set out in Table 4.

Table 4: Growth in portfolio (Panel A) and number of credit clients by year.

Panel A: Portfolio growth

Year	Average	Median	St.dev.	Min	Max	Obs.
1999	0.348	0.277	0.298	0.010	0.744	6
2000	0.423	0.411	0.356	-0.298	1.182	22
2001	0.652	0.492	0.692	-0.342	3.388	61
2002	0.447	0.337	0.429	-0.382	1.806	113
2003	0.523	0.336	1.164	-0.522	12.405	160
2004	0.456	0.343	0.568	-0.574	3.210	186
2005	0.546	0.349	0.879	-0.915	6.625	189
2006	0.985	0.408	2.575	-0.748	21.392	173
2007	0.796	0.450	1.691	-0.531	12.616	112
2008	0.673	0.313	2.390	-0.879	13.164	30
2009	0.047	-0.016	0.215	-0.247	0.626	17
Total	0.612	0.364	1.416	-0.915	21.392	1069

Panel B: Credit clients growth

Year	Average	Median	St.dev.	Min	Max	Obs.
1999	0.505	0.543	0.336	0.031	1.005	6
2000	0.526	0.358	0.595	-0.247	2.256	22
2001	0.503	0.299	0.651	-0.275	3.784	58
2002	0.368	0.298	0.361	-0.397	1.486	113
2003	0.272	0.199	0.365	-0.583	2.168	159
2004	0.317	0.187	0.551	-0.672	4.737	184
2005	0.427	0.223	0.659	-0.482	5.111	186
2006	0.494	0.240	1.086	-0.334	9.615	173
2007	0.553	0.226	1.829	-0.482	17.850	112
2008	0.330	0.202	0.400	-0.324	1.343	30
2009	0.294	0.092	0.900	-0.227	3.735	17
Total	0.404	0.233	0.872	-0.672	17.850	1060

We have portfolio growth rates for 1069 MFIs and credit client growth rates for 1060 MFIs. For the whole period, the growth rates are astounding: 61.2 percent on average per year (median 36.4 percent) for the loan portfolio and 40.4 percent on average (median 23.3 percent) for the number of credit clients. Furthermore, the yearly averages are very high, although fluctuating somewhat. The individual banks have growth rates that vary considerably, as is evident from the very high standard deviations and the low minimum and high maximum growth rates. Thus, the overall outreach to low-income credit clients is increasing considerably, but with a wide dispersion in growth rates among MFIs, as would be expected in any industry, and especially in a new and growing industry.

As expected, the growth rates in the loan portfolio and number of credit clients are closely related. Running a fixed effects panel regression with portfolio growth as the dependent, the Human Development Index (HDI) as a country control, and year indicator variables reveals that the credit client growth coefficient is 0.85 and is significant at the 1.0 percent level.

The *depth* measures are less straightforward. We use the measures proposed in Mersland and Strøm (2010). These include the average loan, lending to rural households, and lending to women. We use both the nominal average loan in US dollars and the average loan divided by the GDP per person. This last measure makes comparisons across countries easier, and also shows how the MFI follows the income trend in the country in which it resides. The average loan is perhaps the most often used proxy for the depth dimension. The lower is the average loan from an MFI, the higher is its depth outreach. Depth outreach also increases with a priority for lending to rural households and to women.

Table 5: Depth dimension aspects

	Average	St.dev.	Min	Max	Obs.
Average loan	676	825	10	6946	1456
Avg. loan/GDP per person	0.551	0.820	0.009	8.247	1456
Female borrowers	0.462	0.499	0.000	1.000	1421
Rural borrowers	0.675	0.469	0.000	1.000	1427

We have already seen the size of the average loan in Table 3, and we will comment more on this measure below. Female borrowers and rural borrowers are both indicator variables. 45.8 percent of the MFIs have a particular focus on serving female clients, and 67.7 percent of the MFIs either serve only rural areas or rural areas alongside urban areas. Thus, 32.3 percent of the MFIs serve urban settings only. The rationale for measuring female and rural focus is that these measures largely overlap with low-income households. Women usually have a disproportionately large share of the responsibility for their families. A loan to a woman is thus a loan to the family to a larger extent than when a loan is made to a man. However, the measure is not without problems. First, if the wife receives the loan, the husband may feel less obliged to contribute to the household or the husband and wife may have colluded to obtain a loan for the husband, but

applied for by the wife. In MFIs with a conscious gender policy, she will obtain a loan more easily than her husband. Second, it turns out that men establish more businesses and larger businesses than women when gaining access to credit. For instance, Bruhn and Love (2009) utilize the natural experiment setting of the Azteca Bank in Mexico, which started out as an MFI by opening 800 branches simultaneously in 2002. They find that men started more informal businesses, but that more women joined the labor force as wage earners after the establishments of the branches. Thus, the development effects may well be larger in the case of loans to men.

The income level is generally lower in rural areas than in cities. Furthermore, with the rapid urbanization taking place, agriculture requires modernization through investment. These are good reasons for serving rural clients. Salim (2013) studies the location pattern of Grameen Bank and BRAC, and finds that both deviate from pure profit-maximizing behavior when choosing locations for branches in Bangladesh. Thus, the targeting of rural clients is a deliberate choice aimed at the rural poor.

The average loan is defined as the loan portfolio divided by the number of credit clients. This appears to be a natural measure for outreach; the smaller is the average loan of the MFI, the more likely it is to give priority to those most in need, the lower end of the low-income households. Therefore, the MFI may put a cap on the maximum amount it is willing to give to one borrower, so as to allow as many borrowers as possible to gain access to credit. As the MFI ages, however, it is likely that many of its clients will want larger loans, simply because their economic situation has improved. If the cap is still in force, the maximum loan amount policy may induce cross-borrowing, that is, the practice of taking loans from other credit institutions. For instance, this may happen if the borrower wants to invest in a house or in some productive equipment. The end result may be that the MFI loses its knowledge of the client's credit position. If this is precarious, then even the small loan it is willing to make could be in danger of default. Another motivation behind this measure may lie in the MFI's appeal to international donors and investors. These groups may be willing to fund the MFI out of a concern for social responsibility, and use the average loan as a yardstick of how well the MFI reaches out to low-income households. Mersland et al. (2011) use four different measures of internationalization to find that international organizations give greater support to MFIs with a more pronounced social mission. These two aspects of the average loan, the practice of cross-borrowing and the international

donor and investor community's influence upon the lending policies of the MFI, are under-researched areas.

One conclusion is that we should expect and welcome a larger average loan with time, as the community the MFI serves becomes economically more viable. Copestake (2007) notes that the average loan may increase for a number of reasons, including the accumulation of loan arrears, a shift towards relatively richer clients, and the effects of dollar exchange rates and inflation. A shift towards richer clients can be a deliberate strategy taken to achieve better diversification in the client base, as well as to cross-subsidize the poorest clients. Is the average loan really increasing over time for MFIs? Figure 2 gives an overview of the average loan in our sample of MFIs by MFI age. The reason for distributing by MFI age is that the argument for mission drift is that the MFI offers larger loans as it matures. We report both the nominal US dollar average loan and the average loan adjusted for GDP per person, as in Ahlin et al. (2011).
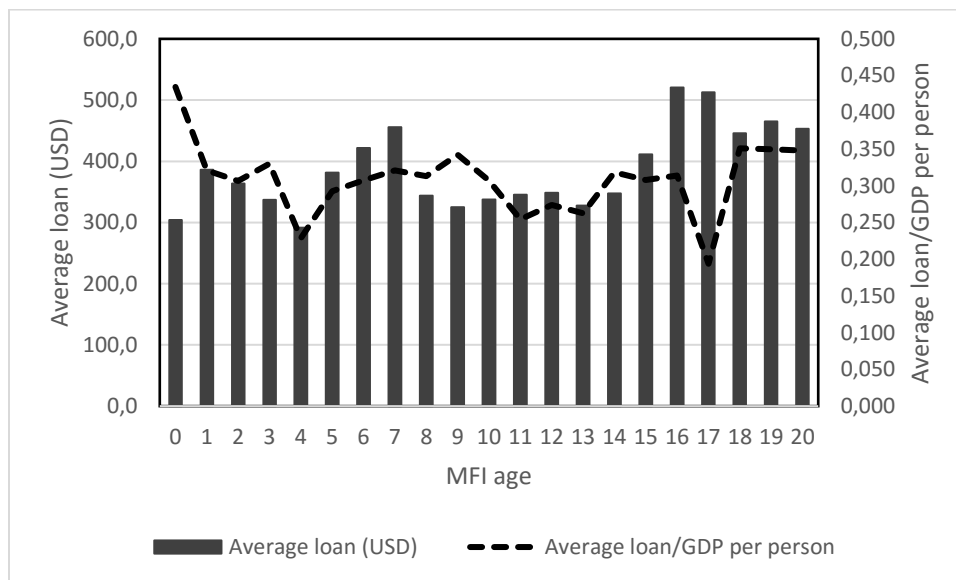

Figure 2: The medians of nominal average loan in US dollars and the average loan per GDP per person, distributed by MFI age

The figure shows, first of all, that the median average loan fluctuates around the long-term median value, whether measured in nominal US dollars or adjusted for the GDP per person in the

country. The average loan has no discernable trend during the lifetime of the MFI. This is consistent with the finding of a lack of mission drift in Mersland and Strøm (2010), based on a subset of the present data sample. The result is further confirmed if we run a simple dynamic regression (not reported) with the one-period-lagged average loan as the independent variable together with the (natural logarithm) of the HDI of the UN, in the manner of Arellano-Bond/Blundell-Bover (Greene, 2012). The persistence parameter on the lagged average loan is in the region of 0.50 to 0.75, which means that the average loan has a downward trend.

Let us look at the yearly development in the average loan as well, shown in Figure 3. To this end, we construct relative series of the two average loan measures by first choosing the median average loan from 1999 to 2008 from Table 6, setting the value in 1999 to 100 percent, and then measuring the yearly median values relative to the 1999 value. We do the same for the GDP-adjusted average loan, and also for the portfolio yield.
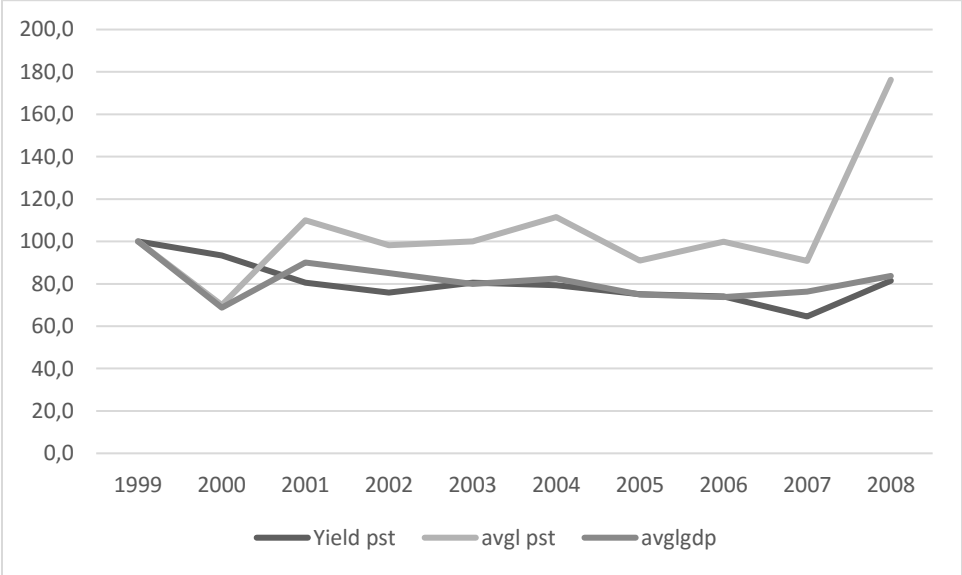

Figure 3: The relative development in the portfolio yield (Yield pst), average loan (avgl pst), and average loan per GDP per capita (avglgdp)

The figure shows that, in fact, the average loan per GDP/capita falls over the period relative to the average loan. The lack of mission drift is even more pronounced in the GDP-adjusted average loan than in the original series. We have also included the portfolio yield in Figure 3. This is calculated as the total financial revenue divided by the total loan portfolio (see Table 1). The portfolio yield is a good yardstick of the average lending rate that the MFI is charging. This rate has a decreasing trend as well, almost parallel to the average loan per GDP/capita. The portfolio yield can also be taken as an outreach measure; thus, when a MFI has a lower portfolio yield, more poor households are able to obtain loans from the MFI and benefit from it.

Costs

Costs are important for the MFI both from a financial sustainability and an outreach point of view. With lower costs, the financial sustainability is more assured, and the better able the MFI is to reach out to low-income households that are relatively more costly to service than higher-income households (Mersland and Strøm, 2010). Thus, both adherents to the view that MFIs should seek profit maximization, and adherents to the social mission view will agree that lowering operational costs is important. A fair prediction is that low-cost MFIs are more likely to survive against stronger competition in future, another is that low-cost MFIs are able to reach out to more low-income households.

Table 1 showed that the operational costs are overwhelmingly the most important of the main cost items for the MFI, constituting 60.5 percent of the total financial revenue. Therefore, it is imperative for the MFI to pay close attention to the operational costs. This is further underlined by the fact that these costs are at least partly controllable by the MFI, in contrast to funding costs that are market determined to a larger extent.

A common procedure is to construct the operational costs relative to the portfolio. Table 7 below shows how this measure develops over the years in our sample.

Table 7: Operational costs of the portfolio distributed by year

Year	Average	St.dev.	p25	p50	p75	Obs.

1998	0.223	0.107	0.129	0.256	0.136	6
1999	0.307	0.113	0.164	0.331	0.449	22
2000	0.334	0.123	0.199	0.334	0.420	63
2001	0.278	0.129	0.186	0.228	0.371	127
2002	0.273	0.141	0.209	0.198	0.341	182
2003	0.286	0.148	0.199	0.228	0.363	231
2004	0.303	0.141	0.212	0.386	0.354	241
2005	0.292	0.139	0.208	0.376	0.325	236
2006	0.270	0.129	0.197	0.247	0.340	199
2007	0.259	0.111	0.184	0.263	0.289	118
2008	0.274	0.121	0.215	0.239	0.317	30
2009	0.447	0.168	0.245	0.528	0.408	17
Total	0.287	0.135	0.201	0.299	0.345	1472

Again, the time series is fluctuating. We cannot find any clear trend over time. This means that the average MFI has not been able to improve its cost position during the period, despite the very rapid rise in the loan portfolio seen in Table 4. One would expect to see a lower fraction of operational costs over time as MFIs gain large-scale advantages. An inspection of the median value of operational costs distributed by MFI age (not reported) shows that the fraction hovers around 20 percent during an MFI's lifetime. The persistently high operational costs constitute the main cost problem for MFIs, as they have gained control of the repayment problem which originally was the main MFI challenge.

An interesting research area is the investigation of the cost drivers for MFIs. Some work has commenced in this area. For instance, Hartarska et al. (2013) find scale economies in a sample of MFIs similar to ours when estimating a system of cost function and cost share equations. In an earlier study, Hartarska et al. (2010) find no evidence of scope economics. That is, the MFI's efficiency does not improve when the number of financial products increases. In a study of the founder CEO, Randøy et al. (forthcoming) find that the founder is better able to contain costs than later hires. Mersland and Strøm (2014) use a stochastic frontier approach to investigate whether the MFI's choice of lending method, either individual or group, has consequences for cost efficiency. They find that the group loan is more costly.

Even though these studies are interesting and valuable, we are still lacking a thorough understanding of the MFI's cost drivers. This is of academic as well as practical interest. For academics, it would be interesting to study a number of questions that have only barely been touched upon. For instance, how do costs develop with changes in the MFI's business model?

Can the MFI's governance influence its cost efficiency? Do costs vary with ownership structure, regulation, and competition? For practitioners, it is important to be aware of cost trends and cost drivers.

When operational costs are 60.5 percent of total financial revenue, it is important to know what factors drive the costs. In Table 8, we collect some binary MFI characteristics and look at whether the operational costs of the portfolio vary with each characteristic.

Table 8: Potential cost drivers for the operational costs of the MFI's loan portfolio

	Average	St.dev.	p25	p50	p75	Obs	Diff	t-value
Not shareholder owned	0.278	0.264	0.132	0.198	0.348	987	-0.027	-0.944
Shareholder owned MFI	0.305	0.359	0.149	0.207	0.341	485		
Not regulated	0.302	0.296	0.138	0.212	0.375	1034	0.049	1.937
Regulated	0.252	0.305	0.133	0.189	0.272	410		
Locally initiated	0.257	0.273	0.121	0.181	0.305	888	-0.080	-3.158
Internationally initiated	0.336	0.331	0.165	0.244	0.406	574		
Individual and group loan	0.269	0.288	0.134	0.192	0.317	1221	-0.109	-2.967
Group loan	0.378	0.335	0.170	0.308	0.484	249		
Urban borrowers	0.291	0.300	0.140	0.206	0.352	1200	0.019	0.611
Rural borrowers	0.271	0.292	0.118	0.190	0.325	270		
Diverse financial institution	0.292	0.291	0.123	0.209	0.354	245	0.005	0.157
Pure financial institution	0.286	0.302	0.138	0.199	0.342	1216		
No gender bias	0.266	0.330	0.127	0.188	0.303	778	-0.042	-1.731
Gender bias	0.309	0.258	0.147	0.229	0.391	656		
Unsubsidized debt	0.330	0.417	0.137	0.210	0.389	444	0.070	2.234
Subsidized debt	0.260	0.215	0.134	0.195	0.318	953		
No performance pay	0.264	0.270	0.126	0.194	0.330	574	-0.039	-1.642
Performance pay	0.303	0.318	0.141	0.206	0.368	858		

"Diff." is the difference between the two averages in each category (e.g. not shareholder owned versus shareholder owned). The t-value is calculated by dividing the difference between the average values by a standard error extracted from a regression of operational costs on every indicator variable using clustered standard errors, as in Villalonga and Amit (2006).

We choose the lowest significance level to be 10 percent, which corresponds to a t-value of about ±1.64, and comment only on the significant differences in Table 8. It turns out that the operational costs of the portfolio are higher for the non-regulated MFIs, the internationally initiated, for group loans, for MFIs with a gender bias in their lending policy, for MFIs without subsidized debt, and for MFIs that reward their loan officers with performance-related pay. For the loan type, the cost difference between individual and group loans is even more pronounced if we compare MFIs that only offer group loans with MFIs that only offer individual loans, and leave out the category of MFIs offering both types of loans. We must expect that the MFIs with highest costs are at least able to produce satisfactory financial sustainability numbers. Thus, with increasing competition, we expect that more MFIs will be regulated, more will turn to individual lending, and more will drop their gender-biased lending policies. Whether fewer MFIs will use performance-related pay is doubtful since such salary incentives are normally attached to the repayment of loans. Thus, higher operational costs might be balanced by lower default costs. It is perhaps surprising that MFIs that are granted subsidized debt have the lowest operational costs. These MFIs should have the least need for subsidies. One explanation could be that the donors want to support the most viable MFIs. Naturally, these results are only partial, and only the starting point for more serious testing. Still, the large differences in some of these variables point towards fruitful and interesting research possibilities.

Conclusion

We have set out the main measures for MFIs' financial sustainability, their outreach in terms of offering financial services to low-income households, and some cost aspects. We have confirmed earlier findings that profitability is rather weak in microfinance, and that operational costs constitute a large part of the total costs. Microfinance is growing quickly in terms of households reached and portfolio growth, while, at the same time, the average loan per client is tending to remain about the same. The cost analysis reveals that high costs are associated with group lending and a preference for lending to women. These hallmark features of microfinance are thus in danger of eradication as competition hardens in the sector.

Many researchers have concentrated their efforts on the tradeoff between the MFI's social mission and its financial sustainability, fearing a mission drift from the serving of social goals to

the serving of profit goals. From the simple analysis in this chapter, it seems that more effort should be put into revealing the ways that MFIs can improve their financial sustainability by containing their operational costs.

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