

Measuring Results of Microfinance Institutions

Minimum Indicators That Donors
and Investors Should Track

A Technical Guide

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June 2009



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Acknowledgments

The author is grateful to Till Bruett, Jasmina Glisovic-Mezieres, and Alexia Latortue, all of whom contributed substantially to this paper.

Introduction

Funding agencies' microfinance interventions produce better results when design, reporting, and monitoring focus explicitly on key measures of performance that are measured and reported regularly. The more transparent the results, the more likely funders are to learn from successes and failures, and to take corrective actions when needed. Unfortunately, many projects that support retail microfinance providers fail to include such measurement. This is especially true of programs that channel support indirectly (through networks or wholesale "apex" facilities, for example) and credit components of nonfinancial programs (such as revolving funds lodged in social projects).

This Technical Guide is written for funding agency staff who design or monitor projects that finance microfinance institutions (MFIs) or community-managed loan funds (CMLFs). The main text covers indicators for MFIs; CMLF indicators are treated in an Annex A.

Which indicators?

This Guide offers basic tools to measure performance in a few critical areas:

1. Breadth of outreach—How many clients are being served?
2. Depth of outreach—How poor are the clients?
3. Loan repayment (portfolio quality)—How well is the lender collecting its loans?
4. Financial sustainability (profitability)—Is the MFI profitable enough to maintain and expand its services without continued injections of subsidies?
5. Efficiency—How well does the MFI control its operating costs?

This list has been kept short, and the treatment of indicators as basic as possible, to make this Guide useful for nonspecialists. These are the core indicators recommended in *Good Practice Guidelines for Funders of Microfinance* (CGAP 2006), based on decades of experience working with retail MFIs. There is widespread consensus on the three indicators of financial

performance—portfolio quality, financial sustainability, and efficiency—that occupy most of the discussion in this Guide.

However, virtually all noncommercial funders of microfinance see financial performance not as an end in itself but as a means to achieving social results, namely welfare improvements for clients. Two of the indicators—breadth and depth of outreach—capture social dimensions of performance, but they fall far short of tracking ultimate client benefits. Funders that want to monitor the social performance of their projects will usually want to track more than just outreach. Several groups are working to propose and test additional indicators that measure social performance more directly. But there is as yet no consensus on any small subset of those social indicators that should be reported by every retailer.¹

How should the indicators be used?

The five indicators suggested here do not capture all relevant aspects of MFI performance. Most funding agency project officers and investment analysts, and certainly all MFI managers, will want to monitor a longer list of indicators for any given MFI.² And there are important dimensions, such as governance quality, that simply cannot be quantified. The performance areas discussed here represent a minimum that should be

- treated in all project designs (reporting past performance of institutions that are expected to participate, and *ensuring that systems are in place to measure these indicators during the project*)
- monitored and reported during implementation
- included in all other appraisals or evaluations of existing institutions
- tracked regularly in agency-wide performance-monitoring databases

Funders provide much of their support to MFIs indirectly, through various wholesale facilities, including international networks, national apex funds, and other investment vehicles. To monitor whether such a wholesale facility is achieving its objectives, a funder needs to track the performance of the MFIs that the facility is financing. This list of core indicators should be tracked in all cases where a funder's resources are used to support retail MFI operations, whether directly or indirectly.³

The indicators apply to retail microfinance providers that lend directly to end-borrowers. They are also useful for projects supporting savings and loan cooperatives that serve poor or low-income clients, even if the coopera-

¹ See Annex D for further information on social reporting.

² See, for example, CGAP (2001) and ACT/SEEP (2005).

³ This would include any substantial financing of MFIs' portfolios or core operations, as well as projects where substantial amounts of resources are used for technical support to specific MFIs.

tives would not characterize themselves as “microfinance institutions.” This Technical Guide does not cover projects supporting market infrastructure or policy development, since there is no consensus so far about common indicators.

Annex A addresses indicators for community-managed revolving funds and other forms of microcredit that do not pass through formal MFIs that have paid staff. Annex B provides calculation examples. Annex C is a brief discussion of the Subsidy Dependence Index, one of the recommended measures of sustainability. Annex D lists useful references. Annex E recapitulates the definitions or equations for all the indicators

1. Outreach: Breadth (number of clients served)

Indicator

The best measurement of outreach is straightforward:

The number of clients or accounts
that are active at a given point in time

The number of active clients includes borrowers, depositors, and other clients who are currently accessing any financial services. This indicator is more useful than the cumulative number of loans made or clients served during a period.⁴ Among other distortions, cumulative numbers make an MFI that offers short-term loans look better than one that provides longer term loans, even though the latter may be more valuable for borrowers. To reflect actual service delivery, membership-based organizations should report on active clients, not just the number of members: members may be inactive for long periods, especially in financial cooperatives.

A single client may hold multiple accounts. All MFI information systems should be able to track numbers of active accounts, but some are not able to eliminate double-counting so as to arrive at the number of individual clients. In such cases, numbers of accounts is an acceptable indicator.

Commentary

Almost all microfinance interventions aim ultimately at expanding the number of clients being served. But rapid expansion sometimes proves to be unsustainable, especially during an MFI's early years when it needs to focus on designing its products and building its systems. It is usually counter-productive for funders to pressure MFIs for rapid expansion.

⁴ An exception is payment or other money transfer services, for which number of transactions is a more meaningful indicator.

2. Outreach: Depth (client poverty level)

Indicator

Many, though not all, microfinance projects have poverty reduction as an explicit objective, and are thus expected to reach poor clients. For such projects, there are various techniques for measuring client poverty levels, some quite expensive and others simpler, but as yet there is no widespread agreement on any one of them. If the project does not use a more sophisticated indicator, it should at a minimum report the following very rough proxy for the poverty level of loan or savings clients at a point in time:

$$\text{Average Outstanding Balance} = \frac{\text{Gross amount of loans or savings outstanding}}{\text{Number of active clients or accounts}}$$

This indicator is often shown as a percentage of per capita Gross National Income (GNI):

$$\frac{\text{Average outstanding loans or savings balance per client}}{\text{GNI per capita}}$$

The average outstanding balance includes only loan amounts that clients have not yet repaid, or savings that clients have not withdrawn. This point-of-time number should not be confused with total amounts loaned or deposited during the reporting period, or with the average initial amount of the loans in the portfolio.

Commentary

Expressing average balance as a percentage of GNI per capita allows for a comparison of how deeply MFIs from different countries reach down in their own national income distributions.⁵ Some regard an average outstanding loan balance below 20 percent of per capita GNI as a rough indication that clients are very poor. The Microfinance Information Exchange (MIX) classifies lenders as being MFIs if their average outstanding loan balance is not above 250 percent of per capita GNI.

Average outstanding balance is roughly related to client poverty, because better off clients tend to be uninterested in smaller loans or deposit accounts. But the correlation between account balances and poverty is

⁵ GNI comprises the total value of goods and services produced within a country (i.e., its Gross Domestic Product or GDP), together with its income received from other countries (notably interest and dividends), less similar payments made to other countries. The World Bank calculates GNI annually. For any country it can be found at www.worldbank.org in the data and research section or www.mixmarket.org in the environment section.

far from precise. Low account sizes do not guarantee a poor clientele. Likewise, growth in average loan size does not necessarily mean that an MFI is suffering from “mission drift.” Most MFIs have a sequential ladder of loan sizes for clients. As an MFI matures and growth slows, a lower percentage of its clients are first-time borrowers, and average loan sizes will rise even if there has been no shift in the market it is serving. Likewise, MFIs sometimes discover that their limits on the size of initial loans are unnecessarily conservative; relaxing those limits produces loan size growth that has nothing to do with abandoning poorer clients.⁶

Among the social performance indicators presently being developed are several more rigorous measures of client poverty. These indicators are more expensive to implement, but when they are available they are far more meaningful than average account size.

Funders who want to reach very poor clients should usually look for MFIs that already serve a low-end clientele, rather than trying to encourage higher end MFIs to change their market. Most MFIs that focus on the very poor use formal tools to screen potential clients by income level.

3. *Loan repayment (portfolio quality)*

This is the most revealing of the five performance areas. A retail lender’s ability to collect loans is critical for its success: if delinquency is not kept to very low levels, it can quickly spin out of control. Furthermore, loan collection has proved to be a strong proxy for general management competence. Long experience with evaluating microfinance projects has shown that very few successful projects have bad repayment, and very few unsuccessful projects have good repayment. More than any other indicator, this one deserves special care to ensure meaningful and reliable reporting.

Unfortunately, the reporting of loan collection is complicated. Institutions have used a range of ratios that measure very different things. Terminology and calculation methods are not always consistent. Ratios can obscure rather than clarify performance if they are not calculated according to international standards. *Therefore, whenever any measure of loan repayment, delinquency, default, or loss is reported, the numerator and denominator of the ratio should be explained very precisely.*⁷

MFIs’ self-reported collection performance often understates the extent of problems, usually because of information system weaknesses rather than

⁶ A much more reliable way to judge mission drift is to look at the character of the villages, towns, and neighborhoods where the MFI is opening its new branches.

⁷ For a list of issues that need to be clarified when interpreting measures of collection, see CGAP (2001) and Rosenberg (1999).

intent to deceive. Collection reporting should be regarded as reliable only if it is verified by a competent independent party.

Indicators

The standard international measure of portfolio quality in banking is *portfolio at risk (PAR)* beyond a specified number of days:

$$PAR (x \text{ days}) = \frac{\text{Outstanding principal balance of all loans past due more than } x \text{ days}}{\text{Outstanding principal balance of all loans}}$$

The number of days (x) used for this measurement varies. In microfinance, 30 days is a common breakpoint. If the repayment schedule is other than monthly, then one repayment period—e.g., week, fortnight, or quarter—could be used as an alternative. When any full or partial payment is past due, the whole outstanding balance of the loan is at higher than normal risk of nonrepayment. PAR should not be confused with arrears or past due payments, which measure the value of the past due amount rather than the full loan amount that remains outstanding.

The PAR ratio should also include the outstanding value of all renegotiated loans, including rescheduled and refinanced loans, because they have higher than normal risk, especially if any payment is missed after the renegotiation.

Some young or unsophisticated MFIs, and many revolving funds, do not yet have loan tracking systems that can produce a PAR figure. Most of these, however, should be able to calculate *loans at risk (LAR)*, a simpler indicator that counts the number of loans instead of their amounts. As long as repayment is roughly the same for large loans and small loans, LAR will not differ much from PAR.

$$LAR (x \text{ days}) = \frac{\text{number of loans more than } x \text{ days late}}{\text{total number of outstanding loans}}$$

PAR and LAR can be manipulated not only by excluding renegotiated loans, but also by aggressive use of write-offs, which remove past due loans from the books. When an MFI writes off a delinquent loan, that loan disappears from the MFI's books and therefore from PAR or LAR, which automatically makes the ratio look better. Thus, it is useful when reporting these measures to include a description of the MFI's write-off policy. (For instance, "the MFI doesn't write off loans" or "the MFI writes off loan amounts that remain unpaid more than six months after the final loan payment was originally due.") When reporting PAR, it can be useful to

include a write-off ratio as well, though the write-off ratio is not a substitute for PAR.

$$\text{Write-off Ratio} = \frac{\text{Value of loans written off during period}}{\text{Average gross loan portfolio during period}}$$

As an alternative to PAR, the current recovery rate (CRR) can be computed by most MFIs and gives a good picture of repayment performance—but only if it is interpreted very carefully.

$$\text{CRR} = \frac{\text{Cash collected during the period from borrowers}}{\text{Cash falling due for the first time during the period under the terms of the original loan contract}}$$

This ratio can be calculated using principal payments only or principal plus interest. Variations in late payments and prepayments cause CRR to jump around over short periods, often registering above 100 percent. Thus, it must be applied to a period long enough to smooth out random or seasonal variations—typically a year.

CRR and variants of it are often misunderstood. It is tempting, but badly mistaken, to think of CRR as a complement of an annual loan loss rate. For instance, if the MFI reports a 95 percent collection rate, one might be tempted to assume that its annual loan losses are 5 percent of its loan portfolio. In fact, if an MFI making three-month loans with weekly payments has a 95 percent collection rate, it will lose well over a third of its portfolio every year.⁸ Thus, the CRR indicator should never be used without translating it into an annual loan loss rate (ALR). Here is a simplified formula:

$$\text{ALR} = \frac{1 - \text{CRR} \times 2}{T}$$

where T is average loan term expressed in years

This calculation gives a good approximation of the percentage of an MFI's loan portfolio that it is losing to default each year. It is particularly reliable because it is based on actual cash flow, whereas PAR, LAR, and write-offs can be distorted by lenders' accounting practices.

Commentary

Repayment of an MFI's loans is a crucial indicator of performance. Poor collection of microloans is almost always traceable to management and systems weaknesses.

⁸ For an explanation of this surprising result, and fuller treatment of CRR and ALR, see Rosenberg (1999).

The strongest repayment incentive for uncollateralized microloans is probably not peer pressure, but rather the clients' desire to preserve their future access to a loan service that they and their families find very useful: thus, healthy repayment rates are a strong signal that the loans are of real value to the clients.

Finally, high delinquency makes financial sustainability impossible. As a rough rule of thumb when dealing with uncollateralized loans, PAR or LAR (30 days or one payment period) above 10 percent, or ALR above 5 percent, must be reduced quickly or they will spin out of control.

4. *Financial sustainability (profitability)*

In the long run, few retail providers can maintain and expand the financial services they offer unless they can cover all of their costs and generate net income.

Indicators

In banks and other commercial institutions, the most common measure of profitability is *return on assets (ROA)*, which reflects that organization's ability to deploy its assets profitably, and *return on equity (ROE)*, which measures the returns produced on the owners' investment.

$$ROA = \frac{\textit{After-tax profits}}{\textit{Starting (or period-average) assets}}$$

$$ROE = \frac{\textit{After-tax profits}}{\textit{Starting (or period-average) equity}}^9$$

These are appropriate indicators for institutions that do not receive subsidies. But donors and social investors typically deal with institutions that receive substantial subsidies, most often in the form of grants or loans at below-market interest rates. In such cases, the critical question is whether the institution will be able to maintain itself and grow when subsidies are no longer available. To determine this, financial reporting must be "adjusted" to reflect the impact of the present subsidies.

The most common subsidy-adjusted indicators use similar adjustments. The three main adjustments (subsidized cost of funds, in-kind subsidy, and inflation) are described in the table that follows.¹⁰

⁹ ROE calculations should use starting equity unless there has been a substantial infusion of new equity from an outside source during the reporting period.

¹⁰ MicroBanking Bulletin uses two additional adjustments that restate loan loss provisions and write-offs according to a standard accounting policy.

Adjustment	Calculation	Effect
Subsidized cost of funds adjustment (CFA)	<p>Period-average borrowings by the MFI <i>times</i> “market” interest rate <i>minus</i> actual amount of interest paid by the MFI during the period.</p> <p>A common benchmark for a market interest rate is the rate that commercial banks pay on 90-day fixed deposits. Arguably a more appropriate rate is the “prime” rate (rate banks charge on loans to their best customers) plus a few percent, because few MFIs could actually qualify for the prime rate.^a</p>	<p>This adjustment compensates for the effect of soft loans to an MFI (i.e., loans at a lower than market interest rate). It measures the difference between the cost of borrowings at the market rate and the MFI’s actual cost for the borrowed funds. The adjustment reduces net income.</p> <p>Note that this adjustment is not applied to deposit liabilities.</p>
In-kind subsidy adjustment (ISA)	<p>Estimated market cost of goods, services, and personnel <i>minus</i> actual cost of goods, services, and personnel.</p>	<p>This adjustment quantifies the benefit an MFI gets when it receives goods or services without paying a market price for them (e.g., donated computers or free services of a manager). It reduces net income. The adjustment is usually self-reported by MFIs and difficult to verify independently.</p>
Inflation adjustment (IA)	<p>Assets that are denominated in currency amounts^b <i>minus</i> liabilities that are denominated in currency amounts <i>times</i> the inflation rate for the period.</p> <p>This adjustment is usually based on net asset values at the beginning of the period, but using period averages may be appropriate for MFIs that receive large grants or other infusions of equity capital, during the period.</p>	<p>This adjustment reflects the loss in real value (i.e., purchasing power) of an MFI’s net monetary assets due to inflation. It usually reduces net income.</p>

^a A more sophisticated benchmark would be based on the probable cost (including interest, administrative expense, and reserve requirements) of the specific form(s) of commercial funding the MFI is likely to be raising when it moves beyond soft funding sources.

^b For instance, cash, investments, or loans, but not buildings or equipment.

Two subsidy-adjusted indicators are in common use: financial self-sufficiency (FSS) and adjusted return on assets (AROA). A third adjusted indicator, the subsidy dependence index (SDI), is technically superior but less frequently used. These measures are more complex than the indicators discussed previously, and there are slight variations in the ways of calculating each of them, so use of the references cited in Annex B is encouraged.

Financial self-sufficiency is a subsidy-adjusted indicator often used by donor-funded microfinance nongovernment organizations (NGOs). It measures the extent to which an MFI's business revenue—mainly interest received—covers the MFI's adjusted costs. If FSS is below 100 percent, then the MFI has not yet achieved financial breakeven.

$$FSS = \frac{\text{Business revenue (excluding grants and extraordinary items)}}{\text{Total expenses + CFA + ISA + IA}}$$

Adjusted return on assets measures an MFI's net profit or loss (including adjustments) in relation to the MFI's total assets.

$$ARO = \frac{\text{Accounting profit/loss (excluding grants) - CFA - ISA - IA}}{\text{Period-average total assets}}$$

The *subsidy dependence index* is used less often, though it is arguably the best of the indicators of adjusted profitability from a technical standpoint. It measures how much an MFI would have to increase its lending interest rate to cover all of its costs including adjustments.¹¹ Annex C summarizes the calculation of SDI. An SDI above zero means that the MFI still needs subsidy to operate—i.e., it has not achieved financial sustainability. A two-stage calculation produces first the amount of annual subsidy and then the index.

Commentary

Some believe that, absent exceptional circumstances, funders should support only microfinance providers that are on a credible track to financial sustainability. On the other hand, others believe that there should be room for permanently subsidized financial services for certain client groups. Whatever one's position on this question, it makes sense to measure institutions' financial sustainability, either to tell whether they are meeting a goal of the project, or else to present transparently the level of subsidy that is being invested for a particular result.

Trees do not grow to the sky. The fact that an MFI's sustainability indicator improves over a period of years does not necessarily mean that the MFI will reach financial sustainability. Sustainability indicators for MFIs will usually improve in the early years as prior year investments start to produce income, but many of these MFIs never become fully sustainable, and thus can never expand beyond the limits of scarce subsidized funding.

¹¹ SDI is framed in terms of increases in an MFI's interest rate on loans, but this is not meant to suggest that raising interest rates is the only path to sustainability. Cutting costs is at least as important.

It takes some sophistication to judge whether an MFI's sustainability is improving "fast enough." Most MFIs that have become profitable have done so within 10 years of start-up. However, now that microfinance knowledge and expertise are more widely available, MFIs should seldom take more than five years at most to reach sustainability, with the possible exception of MFIs working in rural areas with very low population density.

One important factor is the pace of growth. Rapid growth will temporarily depress an MFI's profitability because such growth requires new investments in staff and facilities that take time to become fully productive. For MFIs that are growing fast, analysis of mature branches and loan officers can often reveal whether the institution is on a trajectory that leads to sustainability.

5. *Efficiency*

Two indicators are recommended to measure whether a retail microfinance provider is cost effective. Both ratios focus on nonfinancial operating expenses. They do not include interest paid on the MFI's liabilities or loan loss provision expenses. Any type of institution can calculate both.

Indicators:

The most commonly used indicator of efficiency expresses nonfinancial expenses as a percentage of the gross loan portfolio:

$$\text{Operating expense ratio (OER)} = \frac{\text{Personnel and administrative expense}}{\text{Period-average gross loan portfolio}}^{12}$$

OER is the most widely used indicator of efficiency. It allows a quick comparison between an MFI's portfolio yield with its personnel and administrative expenses—how much it earns on loans versus how much it spends to make them and monitor them. Its substantial drawback is that it will make an MFI doing small loans look worse than an MFI doing large loans, even if both are efficiently managed.¹³ Thus, a preferable alternative is a ratio that is based on clients served, not amounts loaned.

¹² Gross loan portfolio means the total outstanding (not yet repaid) amounts of all loans. For an MFI that provides voluntary savings, average total assets could be used as the denominator. This ratio is sometimes called "administrative expense ratio" or simply "efficiency ratio."

¹³ For instance, assume that two MFIs each incur operating costs of \$1 million per year to service portfolios of 20,000 loans. An MFI whose average outstanding loan size is \$200 would have an OER of \$1,000,000 / (\$200 x 20,000) = 25%. An MFI whose loan size is only \$100 would have an OER of 50%, even though it is managing its costs just as efficiently as the other MFI.

$$\text{Cost per client (or loan)} = \frac{\text{Personnel and administrative expense}}{\text{Period-average number of active clients (or loans) [x GNI per capita]}}$$

This indicator shows how much it costs the retail financial service provider to serve each client. Because it does not penalize MFIs making smaller loans, cost per client is a better efficiency ratio for comparing institutions. If one wishes to benchmark an MFI's cost per client against similar MFIs in other countries, the ratio should be expressed as a percentage of per capita GNI, which is used as a rough proxy for local labor costs.

Commentary

Measured in terms of costs as a percentage of amounts on loan, tiny loans are more expensive to make than large loans. Only a few extremely efficient MFIs have an OER below 10 percent; commercial banks making larger loans usually have OERs well below 5 percent. The median OER of MFIs reporting to MIX Market for 2006 was about 19 percent.

As mentioned earlier, OER tilts the scales against MFIs making smaller loans: six \$50 loans cost more to make than one \$300 loan. Measured this way, an MFI can become more "efficient" by simply dropping its smaller borrowers, even without making any improvements in operating systems. Cost per client avoids this perverse result.

When a microfinance market starts to mature and MFIs have to compete for clients, price competition on interest rates will usually push the MFIs to become more efficient. But many MFIs do not yet face much real competition. External monitoring of efficiency is especially important in those cases.

Young or fast-growing MFIs will look less efficient by either of these measures, because those MFIs are paying for staff, infrastructure, and overhead that are not yet producing at full capacity.

A final note

Many funding agencies have a hard time determining the effectiveness of their support for retail microfinance. If an agency wants to keep track of whether its projects are producing sustainable results, it needs to collect these basic indicators regularly and make them available in an agency-wide database.

When designing projects and choosing MFIs to participate, staff need to check whether the MFIs have systems that can produce this minimum core information reliably. Where such systems are lacking, the project usually

needs to include the support necessary to build them. Without attention to reporting systems at the earliest possible stage, it is unrealistic to expect meaningful information to be produced later.

Summary

At a minimum, measure in five areas:

1. Outreach (breadth)
 - Number of active clients *or* accounts
2. Outreach (depth)
 - Average outstanding balance per client *or* account
3. Loan repayment
 - Portfolio at risk (PAR) *or*
 - Loans at risk (LAR) *or*
 - Current recovery rate (CRR) together with Annual loan loss rate (ALR)
4. Financial sustainability (profitability)
 - For nonsubsidized institutions:
 - Return on assets (ROA) *or*
 - For subsidized institutions:
 - Return on equity (ROE)
 - Financial self-sufficiency (FSS) *or*
 - Adjusted return on assets (AROA) *or*
 - Subsidy dependence index (SDI)
5. Efficiency
 - Operating expense ratio (OER) *or*
 - Cost per client

Annex A

Indicators for community-managed loan funds and other noninstitutional microcredit

Some projects provide communities or other social groups with funds to finance loans to their members. When such loans are approved and disbursed by the community itself rather than by paid staff of a formal institution, record-keeping may be limited, so that it is often difficult to measure financial sustainability (profitability) or efficiency.¹⁴ However, the other three core performance areas can and should be tracked, especially collection performance.

Outreach (breadth)

This is measured the same way for revolving funds as for MFIs: number of clients with active loans or savings accounts.

Outreach (depth—client poverty level)

The revolving fund records may make it hard to determine the total outstanding balance of the loan portfolio. In such cases where average outstanding balance cannot be determined, a less adequate substitute is initial loan size, which is more easily determined. This indicator should normally be expressed as a percentage of per capita GDP.¹⁵

Repayment

Measuring repayment is crucial for revolving loan funds, because they are so prone to repayment problems (most externally financed revolving funds do not revolve for very long). Even if the purpose of the activity is to get resources into the hands of the community rather than to set up a permanent financial facility, a revolving fund with high default is not a good vehicle for the resource transfer. The distribution of benefits is likely to be inequitable,

¹⁴ Indian self-help groups are the most prominent CMLF model. In village banking models (e.g., FINCA) and solidarity group models (e.g., ACCION), paid staff of the MFI exercise authoritative guidance over the groups, so these are treated as MFI models, not CMLF models.

¹⁵ If loans are paid off in installments whose timing and amount are equal, the relation between average initial loan size and average outstanding balance tends to be as follows:

No. of payments in the whole loan	1	2	3	4	8	12	24 or more
Avg. o/s balance as % of average initial loan amount	100%	75%	67%	63%	56%	54%	near 50%

These percentages will be materially higher if the loan portfolio is growing fast.

because the defaulters appropriate most of the value of the fund. Loans that do not have to be repaid are much more likely to be captured by local elites. Furthermore, distributing loans that don't get repaid can do harm by creating a culture of nonpayment that makes it difficult for responsible, sustainable lenders to serve the population involved.

For these and other reasons, no revolving funds should be set up without ensuring at the very least that there is a system in place to track loan collection performance. Two of the collection measures described above—loans at risk (LAR) and current recovery rate (CRR)—can be maintained using simple manual systems. See pages 6 and 7, respectively, to learn more about calculating these indicators.

If an existing revolving fund has no system for continuously tracking collection performance, it is usually practical to compute LAR (one repayment period) manually as of the date of the measurement. CRR is a more revealing indicator, but only if it is translated into an annual loss rate (Rosenberg 1999).

If the project being reviewed has many revolving loan funds and it is not possible to do repayment analysis on all of them, then a sufficient random sample can be selected for analysis.

Annex B

Calculation Examples

Outreach—Breadth and Depth

Breadth of outreach	Number of active loans outstanding as of Dec. 31, 20xx	100,000
Depth of outreach	Outstanding principal balance of all loans as of Dec. 31, 20xx	\$10,000,000
	÷ number of active loans outstanding	<u>100,000</u>
	Average outstanding loan balance	\$100
	÷ per capita GNI	\$250
	= Average outstanding balance as a % of GNIpc	40%

Portfolio Quality

Portfolio at risk > 30 days (= “Non-perf’ing loans”)	Outstanding principal balance of all loans with at least one payment past due more than 30 days	\$200,000
	Outstanding balance of loans that are not more than 30 days late but have been renegotiated	<u>\$50,000</u>
	Total amount at risk	\$250,000
	÷ Outstanding principal balance of all loans	<u>\$10,000,000</u>
	PAR (NPL) >30	2.5%
Write-off ratio	Amounts written off during FY 20xx	\$160,000
	÷ Total outstanding portfolio at beginning of FY 20xx	<u>\$8,000,000</u>
	Write-off Ratio	2.0%
Loans at risk >30 days	Number of loans with at least one payment past due more than 30 days	200
	Number of renegotiated loans that are not more than 30 days late	<u>50</u>
	Total number of loans at risk	250
	÷ Total number of outstanding loans	<u>10,000</u>
	LAR > 30	2.5%
Current recovery rate	Total principal (or principal + interest) payments received in cash during FY 20xx	\$19,000,000
	÷ Total P (or P + I) due to be paid in FY 20xx under the terms of the original loan contracts	<u>\$20,000,000</u>
	CRR	95%
Annual loan loss rate	1 - CRR	5%
	÷ Avg loan term (6 months) expressed in years	0.5
		10%
	x 2 = ALR	20%

Profitability

Return on equity	A	Net operating profit (not including grants) for FY 20xx	\$200,000
	B	total equity capital at beginning of FY	\$2,000,000
	C	ROE ($A \div B$)	10%
Return on average Assets Adjustments	D	Total assets at beginning of FY	\$19,000,000
	E	Total assets at end of FY	\$21,000,000
	F	Average assets for FY [$(D + E) \div 2$]	\$20,000,000
	G	ROAA ($A \div F$)	1.0%
Inflation adjustment	H	Avg. currency-denominated assets for the FY (<i>year-beginning + year-end</i> $\div 2$)	\$18,500,000
	I	Avg. liabilities for the FY	\$17,500,000
	J	Inflation rate for FY	5%
	K	IA [$(H - I) \times J$]	\$50,000
Cost-of-funds adjustment	L	FY-average outstanding principal for Soft Loan #1	\$5,000,000
	M	Market interest rate (prime + 2)	12%
	N	Imputed interest amount at market rate ($L \times M$)	\$600,000
	O	Actual interest paid during FY on Soft Loan #1	\$200,000
	P	CFA for Soft Loan #1 ($N - O$)	\$400,000
	Q	CFA for Soft Loan #2 (<i>computed the same way</i>)	\$100,000
	R	Total CFA ($P + Q + \dots$)	\$500,000
In-kind subsidy adjustment	S	Market value of rental of branch premises	\$100,000
	T	PFI's actual payment for rental of branch premises	\$0
	U	ISA ($S - T$)	\$100,000
Adjusted return on average assets	V	Net profit for FY (from A)	\$200,000
	W	Total adjustments ($K + R + U$)	\$650,000
	X	Adjusted net profit (loss) ($V - W$)	(\$450,000)
	Y	AROA ($X \div F$)	-2.25%
Financial self-sufficiency	Z	Total operating revenue (excluding grants) for FY	\$5,000,000
	A'	Total operating expense for FY	\$4,800,000
	B'	Adjusted expense for FY ($A' + W$)	\$5,450,000
	C'	FSS ($B' \div Z$)	91.7%

Efficiency

Operating expense ratio	A	Administration & personnel cost for FY 20xx	\$1,800,000
	B	Outstanding loans, beginning of FY	\$8,000,000
	C	Outstanding loans, end of FY	\$10,000,000
	D	Average outstanding loans for FY $[(B + C) \div 2]$	\$9,000,000
	E	OER $(A \div D)$	20.0%
Cost per loan (or Client)	F	Number of active loans (or clients), beginning of FY	80,000
	G	Number of active loans (or clients), end of FY	100,000
	H	Average active loans (or clients) for FY $[(F + G) \div 2]$	90,000
	I	Absolute cost per loan (or client) $(A \div H)$	\$20
Cost per loan (or Client) as % of GNI per capita	J	Most recent GNI per capita	\$250
	K	Cost per loan (client)/GNIpc $(I \div J)$	8.0%

Annex C

Subsidy Dependence Index

SDI measures how much an MFI would have to increase its lending interest rate to cover all of its costs including adjustments.¹⁶ An SDI above zero means that the MFI still needs subsidy to operate—i.e., it has not achieved financial sustainability. A two-stage calculation produces first the amount of annual subsidy and then the index.

$$(1) \quad S = A (m - c) + [(E * m) - P] + K$$

where:

S = Annual subsidy received by the MFI

A = MFI concessional borrowed funds outstanding
(annual average)

m = Interest rate the MFI would be assumed to pay for borrowed funds if access to borrowed concessional funds were eliminated

c = Weighted average annual concessional rate of interest actually paid by the MFI on its average annual concessional borrowed funds outstanding

E = Average annual equity

P = Reported annual before-tax profit (adjusted, when necessary, for loan loss provisions, inflation, and so on)

K = Sum of all other annual subsidies received by the MFI (such as partial or complete coverage of the MFI's operational costs by the state)

$$(2) \quad SDI = \frac{S}{LP * i}$$

where:

SDI = Index of subsidy dependence of MFI

S = Annual subsidy received by the MFI (see above)

LP = Average annual outstanding loan portfolio of the MFI

i = Weighted average interest yield earned on the MFI's loan portfolio

¹⁶ SDI is framed in terms of increases in an MFI's interest rate on loans, but this is not meant to suggest that raising interest rates is the only path to sustainability. Cutting costs is at least as important.

Yaron (1992) and Schreiner (2001) contain fuller treatment of SDI, including a more sophisticated version that factors in the time value of subsidies.

Annex D

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The three references listed in "General" all have sections on sustainability/profitability.

Annex E

Indicator Definitions and Equations

Outreach: Breadth (number of clients served)

The number of clients or accounts that
are active at a given point in time

Outreach: Depth (client poverty level)

$$\text{Average Outstanding Balance} = \frac{\text{Gross amount of loans or savings outstanding}}{\text{Number of active clients or accounts}}$$

This indicator is often shown as a percentage of per capita Gross National Income (GNI):

$$= \frac{\text{Average outstanding loans or savings balance per client}}{\text{GNI per capita}}$$

Loan repayment (portfolio quality)

Portfolio at risk:

$$\text{PAR (x days)} = \frac{\text{Outstanding principal balance of all loans past due more than x days}}{\text{Outstanding principal balance of all loans}}$$

Loans at risk:

$$\text{LAR (x days)} = \frac{\text{number of loans more than x days late}}{\text{total number of outstanding loans}}$$

Write-off ratio:

$$\text{Write-off Ratio} = \frac{\text{Value of loans written off during period}}{\text{Average gross loan portfolio during period}}$$

Current recovery rate:

$$\text{CRR} = \frac{\text{Cash collected during the period from borrowers}}{\text{Cash falling due for the first time during the period under the terms of the original loan contract}}$$

Annual loan loss rate:

$$\text{ALR} = \frac{1 - \text{CRR} \times 2}{T}$$

where T is average loan term expressed in year

Financial sustainability (profitability)

$$\text{Return on Assets (ROA)} = \frac{\text{After-tax profits}}{\text{Starting (or period-average) assets}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{After-tax profits}}{\text{Starting (or period-average) equity}}$$

Subsidy adjustments:

Cost of funds adjustment:

$$\text{CFA} = \text{Period-average borrowings} \\ \text{times "market" interest rate} \\ \text{minus actual interest paid on borrowings}$$

In-kind subsidy adjustment:

$$\text{ISA} = \text{Estimated market cost of goods, services, and personnel} \\ \text{minus actual cost of goods, services, and personnel}$$

Inflation adjustment:

$$\text{IA} = \text{Assets that are denominated in currency amounts} \\ \text{minus liabilities that are denominated in currency amounts} \\ \text{times the inflation rate for the period}$$

Adjusted return on assets:

$$\text{ARO A} = \frac{\text{Accounting profit/loss (excluding grants)} - \text{CFA} - \text{ISA} - \text{IA}}{\text{Period-average total assets}}$$

Financial self-sufficiency:

$$\text{FSS} = \frac{\text{Business revenue (excluding grants and extraordinary items)}}{\text{Total expenses} + \text{CFA} + \text{ISA} + \text{IA}}$$

Subsidy dependence index (see Annex C)

Efficiency

$$\text{Operating expense ratio (OER)} = \frac{\text{Personnel and administrative expense}}{\text{Period-average gross loan portfolio}}$$

$$\text{Cost per client (or loan)} = \frac{\text{Personnel and administrative expense}}{\text{Period-average number of active clients or loans [x GNI per capita]}}$$

