Assessing price fairness in microfinance

An explanatory companion, developed by Daniel Rozas, Jan 2016

In a business with social objectives, the concept of fair pricing is an integral concern. You can't claim to be fulfilling social objectives if you overcharge your customers. Now, the concept of "overcharging" isn't actually all that simple. When goods are sold, one could look at the cost of those goods, factor in operating expenses, provide some room for a reasonable profit margin, and – voila! – arrive at a fair price. At least there's no confusion as to what constitutes a price.

But in microfinance, such confusion is very much present. As Chuck Waterfield and the Microfinance Transparency project have educated us over the years, price depends a great deal on how it's presented. A standard formulaic presentation – an APR – is a good metric for comparing the pricing of different products. The trouble is, credit pricing is inescapably tied to the product features. Is the loan small or short-term? Well, it will come with high operating costs, yielding a fair price – one that covers costs and provides a reasonable profit margin – that can easily run into the 100s of percent.

But it's not just the product features that affect price fairness. So does the business model. Making expensive short-term loans can be reasonable and fair. Making expensive short-term loans that are regularly rolled-over (the "payday" lending model) is not at all fair, since the high short-term loan price is being applied to a loan that has effectively a much longer term. Similarly, allowing flexible repayment (for example, an optional grace period or a payment extension) lowers the effective cost of the loan even as its features remain the same.

Lastly, even if one can set parameters for fair pricing of a given product, it is largely impossible to implement that fair pricing in practice. Consider a 25% APR loan that comes with a range of features:

Weekly payment for 30% APR loan

weeks \ $	100	300	500	1000
4	25	76	127	254
12	9	26	43	86
36	3	9	15	31
52	2	7	11	22

Though borrowers should and do use APR to compare loans, most will inevitably look at payments to assess how much they can afford to borrow. And the table here is already somewhat counter-intuitive – borrowing $100 for 4 weeks costs almost exactly the same as borrowing $300 for 12 weeks. But ok, perhaps one can do the mental calculations and see that this is in fact an equally-priced loan (repayments include principal, which can be very easily subdivided into periods). But what if the loan were presented with a fair price, i.e. reflecting the higher costs of making short-term / small-sized loans? Here's a stylized example:

APR for fair-priced loan

weeks \ $	100	300	500	1000
4	107%	89%	81%	70%
12	71%	59%	54%	47%
36	43%	36%	32%	28%
52	36%	30%	27%	23%

Source: MIX and MF Transparency; term factors based on work by Emmanuelle Javoy

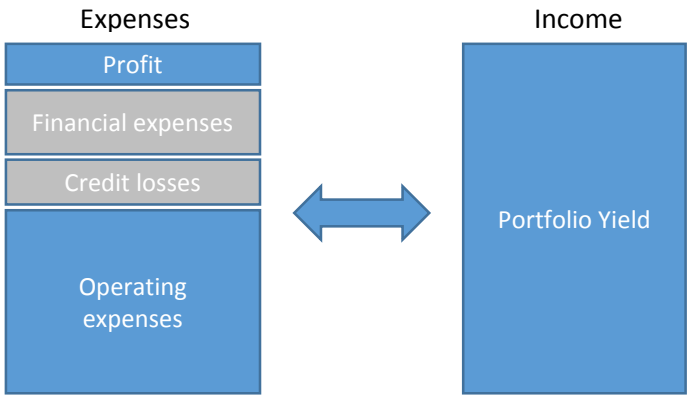
If one can imagine a perfectly reasoned conversation over a payments table, I struggle to imagine a reasonable conversation over this APR chart. What do you mean my $100, 4-week loan costs four times more than the $500, 52-week loan? You're charging me less when I borrow more?

And yet, this chart is a pretty good approximation of what often takes place in practice, due to pricing schemes that tack on flat fees and other costs that effectively increase the price of small/short-term loans. Even if in practice, the price is fair – it reasonably accurately reflects the loan costs – such practices are also non-transparent, preventing clients from being able to compare offers from different lenders.

There is thus a conflict between fair pricing in its absolute form, where each product's price reflects its cost, and the demand for pricing transparency. And indeed, a reasonable fair pricing standard should not require that every product reflect its respective costs. Cross-subsidization within the portfolio is both appropriate and widely practiced, whether knowingly or not. And that implies that measuring price fairness may likewise be more suitable at the portfolio level than for each product. This also has the added advantage of avoiding the complexity of gathering a large set of data to evaluate pricing for multiple product permutations.

Measuring by induction

Indeed, to assess price fairness, one need not look at price at all. Consider the following accounting equivalence:



For financial institutions that derive their main revenue from loans, the two sides would be largely the same. If we posit that an institution whose operations are reasonably efficient, credit losses are limited, financing costs are market-driven, and profits are fair, then its pricing (as reflected by its income) will likewise be fair. As it turns, assessing fairness on the expense side is both easier and more accurate.

Consider each of the expense-side categories:

Profit is one of the main causes for consternation for social investors. Among the key charges of microfinance critics is that high prices are fueling exorbitant profits off the backs of the poor. There is no better way to counter this than by demonstrating that these profits are in fact modest.

Financial expense: almost no MFI has much control over this. Cost of debt is set by the market. Meanwhile, while deposit-taking institutions can substantially lower their financial expense by raising lower-cost deposits, this comes at the price of higher operating costs to support the new deposit-taking infrastructure and staff. The savings from one are usually fully offset by the expenses from the other.[1]

Credit losses are essentially what separates microfinance from subprime lending. The role of the former is to identify capable clients and lend amounts that they can repay. The subprime model also targets the poor, they make much more limited (if any) efforts to evaluate the borrowers, and instead rely on higher price markups to make up for the high resulting default rates. Of course even responsible lenders may experience higher losses due to external factors (economic stress, political unrest, natural disaster, etc.), persistently high credit losses are rare for well-run MFIs.

Operating expense is nearly always the largest component of an MFIs' costs – an unavoidable byproduct of focusing on small loans. Indeed, for many institutions, operating expense can easily consume half or more of their total expense. And yet, unlike with the other three factors, setting standards or benchmarking operating expenses is exceptionally difficult – they are inevitably tied up with the specific institutional model – where they operate, whom they serve and with what sort of loans, the scope of their deposit operations, if any, and many other factors. Yet any effort to assess fair pricing by evaluating the institution's expenses requires developing a suitable benchmark for operating expense. Indeed, doing so is necessary to be able to credibly answer the question of whether or not an MFI is efficient.

Changing the Smart Campaign's responsible pricing framework

Until now, assessing responsible pricing has entailed comparing an MFI's offerings with those of its competitors. That comes with a number of challenges – developing consistent peer groups is difficult, and the methodology cannot distinguish cases situations where the peer group was composed of inefficient or excessively profitable institutions, making the peer group comparison problematic.

The proposed framework relies on a new approach: assessment by induction. Rather than assessing price directly, it aims to assess the expense components. Specifically, it focuses on two: profit and operating expense, given that financial expense is nearly always outside the MFIs' control, and credit losses are already assessed as part of avoiding overindebtedness. Below is an explanation of the framework and underlying methodology.

[1] Rozas D., Exploring the Business Models Behind Microsavings, Financial Access Initiative, Nov 2015

1. Preliminary steps

1.0. Required metrics

Indicator	MIX Market definition
ROA	Return on assets
OpEx	Operating expense over assets
FinEx	Financial expense over assets
Credit losses	Provision for loan impairment
Yield	Yield on Gross Portfolio (nominal), recalculated as ratio over average assets
Assets	Assets
Voluntary deposits	Total deposits – compulsory deposits
Deposits to loans	Voluntary deposits to loans ratio
Average loan balance	Average outstanding balance
GNI per capita	GNI per capita, Atlas method (current US$) (World Bank)
Rural population density	Rural population / total land area (km2)

1.1. Adjust for compulsory deposits

Compulsory deposits can substantially distort pricing and other financial metrics. Consider a hypothetical case – if to lend $100, and MFI requires $50 as compulsory deposit, it is in effect lending only $50. Yet its loan portfolio and balance sheet will reflect the larger value. An APR pricing methodology nets out compulsory deposits from the loan amount. For the same reason, financial metrics must be similarly adjusted. The calculations are as follows:

- Adjusted loan portfolio = loan portfolio – compulsory deposits
- Adjusted assets = assets – compulsory deposits
- Recalculate Yield, FinEx, ROA, Credit Loss Ratio, OpEx, Avg Loan Balance, Deposits to Loans ratio, and using the adjusted values for loan portfolio and assets. **These recalculated values should be used for all subsequent calculations**.
- For multi-year averages (for example, 3yr avg ROA), first recalculate the values for each year, then calculate the multi-year average.

1.2. Test data validity

In some cases, MFIs may have significant income from sources other than its loan portfolio. In other cases, financial operations (for example, portfolio securitizations) may alter the balance sheet, converting what otherwise would be loan income into income from asset transfers. These and other situations can break down the validity of the inductive test, since either the expenses or income comparison no longer reflect lending operations.

To insure that the test is assessing the correct metrics, it's important to compare that the two sides of the accounting equivalence – the four components on the expense side must closely equal the portfolio yield on the income side:

$$\text{ROA} + \text{OpEx} + \text{FinEx} + \text{Credit Loss} \approx \text{Yield}$$

If the two sides are within a 5% margin of each other, then one can proceed to subsequent tests. If they are outside this threshold, it's important to evaluate the source of the discrepancy and make the necessary adjustments, as appropriate. For example, in the case of an institution that sells or securitizes large portions of its loan portfolio, either off-balance sheet assets need to be included (affecting both portfolio and assets, along with other metrics) or income from the portfolio sale needs to be excluded. Similarly, if an institution has significant non-loan income (for example, from a bond portfolio, as is common for many banks), then this income should be excluded from the yield calculation.

The guiding principle should be that loan-related income and cost of associated activities are included on both sides of the equation.

2. Components not included in pricing assessment

Both FinEx and Credit losses are excluded from this portion of the assessment.

In the case of FinEx, the vast majority of financial institutions have little to no influence on the cost of debt, making assessment largely irrelevant. Assessment of pricing of savings products, over which FIs have direct control, may be added at some point in the future, if it's deemed relevant.

Credit losses are already fully addressed under the rubric of Prevention of Overindebtedness, and there is no reason to duplicate it here.

3. Assessing appropriate profit

Assessing appropriate profit is a two-step process, first a quantitative benchmarking, and in the event profit is found to exceed the maximum threshold, a qualitative assessment of the use of excess profits.

3.1. Profit benchmarking

To benchmark profits, calculate a 3-year average ROA (use ROA adjusted for compulsory deposits for each of the years), then apply the following test:

ROA	Assessment action
<1%	Assess institutional sustainability
1-3%	Normal range
3-6%	Elevated range
>6%	High range

If ROA is in the normal range, no further profit assessment is required. Move to OpEx assessment. In the event ROA falls in either the elevated or high range (i.e. above 3%), proceed to next step.

3.2. Evaluation of elevated / high profits

A high ROA does not necessarily constitute excessive profit. There may be many reasons why profits would fall in this range that are perfectly consistent with appropriate pricing, including (but not limited to) the following:

- Profits diverted to external entity (ex: affiliate NGO) that provides services that are important for clients (ex: non-financial services)
- Profits shared with clients

- High inflationary environment
- Grow client base with limited access to outside equity
- Build up equity and strengthen FI
- Early stage institutions
- Subject to regulation that increases earnings requirements (e.g. high reserve requirements, etc.)
- Profitability inflated by donations, subsidies or other temporary or short-term events
- High country risk necessitates an additional cushion to protect against adverse events

These and other reasons need to be evaluated on a case-by-case basis, with final decision made by the certification committee. The primary goal here is to assess whether the high profits are either 1) a result of the context in which the MFI is operating (inflation, high country risk, etc.), or 2) they are used in ways that benefit the clients in some way.

If high profits mainly benefit shareholders above the levels justified by the operating context (e.g. after accounting for inflation, country risk, etc.), then the MFI's profitability should be seen as inconsistent with appropriate pricing, and the MFI should not be certified with one exception: in the event profits are in the elevated (but not high) range, are assessed to be primarily benefiting shareholders beyond levels reasonable given inflation/country risk, but the MFIs OpEx is at least 3% below its expected level (see below), then the MFI's profits can be said to be offset by higher efficiency, and it remains eligible for certification.

4. OpEx Assessment

As with profit assessment, OpEx is a two-step process, consisting of a quantitative benchmark, and if necessary, followed by a qualitative assessment.

4.1. OpEx benchmarking

Assessing operating expense is done by following a multi-factor model that estimates the expected OpEx given key factors of the MFI and its operating context. The model is as follows (*subject to change, based on testing on an updated MIX dataset*):

Expected OpEx = 0.7928661 +
[GNI per capita] * 0.0000144 +
ln([Average outstanding balance]) * -0.053171 +
[Voluntary deposits to loans] * 0.0156794 +
ln([Assets]) * -0.0185402 +
[Rural Population Density] * -0.0002098

If the actual OpEx is < Expected OpEx + .065, then the institution's OpEx is seen as consistent with appropriate pricing. No further analysis is required.

If actual OpEx is greater than this level, then proceed to qualitative assessment.

4.2. Assess appropriateness of high OpEx

The OpEx model, while robust, is not perfect. Moreover, there may be reasons for having a higher OpEx that are specific to the MFI's operations and that could never be captured by any model. These include (but are not limited to) the following:

- MFI operating in a low-security environment, requiring significant spending on non-standard security costs
- MFI is serving particularly difficult-to-reach clients
- MFI serving an exceptionally under-privileged population, requiring add-on services (youth, disabled, etc.)
- MFI is operating non-financial programs that are useful to clients

The final assessment should be made by the certification committee, based on the level of excess OpEx and the scale of the operations (e.g. security, difficult outreach, etc.) not captured by the OpEx model.

5. Concluding the fair pricing assessment

The final assessment is based on meeting the criteria for both appropriate profit and appropriate OpEx. However, for institutions that exceed one of these two metrics, without sufficient justification, the certifier can take into consideration the other component to judge whether it may to sufficient degree offset the excess in the other. For example, an institution with elevated profits, but a lower than expected OpEx that sufficiently offsets that profit excess, can still be eligible for certification. The same approach can work when the two metrics are reversed, i.e. higher OpEx, but lower ROA can still offset each other.

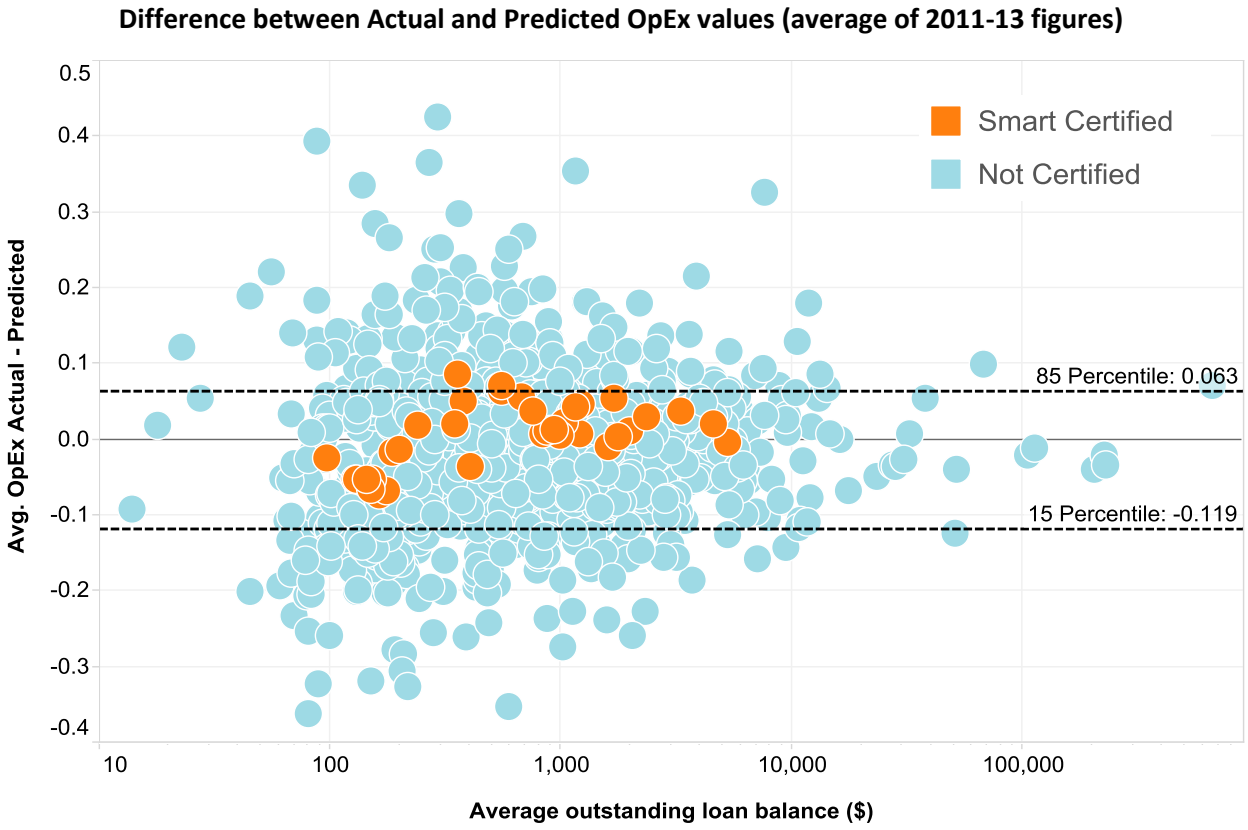
That said, the offsets are limited, and should in principle not be eligible to offset more than 3% of excess. An institution with (unjustified) profits above 6% should not be eligible for certification, regardless of their OpEx level.

Appendix A: Developing OpEx Model

The model is built on a multi-factor regression, using MIX Market data:

- Panel of MFIs reporting during 2006-2013 (inclusive)
- 284 MFIs, 45 countries, 2,124 observations
- MFIs selected according to minimal data quality (required fields populated), and have at least 6 out of the 8 years reported

When applied to the dataset, the model is able to explain 40% of variation in OpEx. More importantly, taking an average of 2011-2013 reported values, 85% of reported OpEx values do not exceed the predicted OpEx value by more than .063 points. Among 38 certified MFIs, only 2 exceed this level. However, note that these figures have not been adjusted for compulsory deposits. Those adjustments may increase the number of observed outliers.



The actual regression output is as follows:

Source	SS	df	MS
Model	11.2557341	5	2.25114682
Residual	16.4678897	2098	.007849328
Total	27.7236238	2103	.013182893

Number of obs = 2104
F(5, 2098) = 286.79
Prob > F = 0.0000
R-squared = 0.4060
Adj R-squared = 0.4046
Root MSE = .0886

operatingexpenseassets	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logALB	-.053171	.0022791	-23.33	0.000	-.0576405	-.0487015
gnipercapita	.0000144	8.63e-07	16.70	0.000	.0000127	.0000161
depositstoloans	.0156794	.0053141	2.95	0.003	.005258	.0261008
logAssets	-.0185402	.0012669	-14.63	0.000	-.0210247	-.0160557
ruralpopulationdensity	-.0002098	.0000177	-11.82	0.000	-.0002446	-.000175
_cons	.7928661	.0212149	37.37	0.000	.7512617	.8344704

A number of other indicators were also evaluated as part of this analysis, with some having substantial value in predicting OpEx (for example, if an institution is a cooperative). However, these have not been included in the model, since they cannot reasonably be judged as criteria for assessing fair pricing. Thus, while it is reasonable to expect large institutions to have economies of scale and thus have more efficient operations (hence the inclusion of the Assets indicator), it is not reasonable to expect institutions to have higher efficiency because they happen to be cooperatives. And if they do have lower than expected OpEx, then certainly their pricing would be judged efficient, when compared to other institutions. Likewise, an institution with a low number of borrowers per staff member can be expected to be less efficient, but should not then be held to a lower bar because of that choice. For this reasons the variable is excluded from the OpEx model.

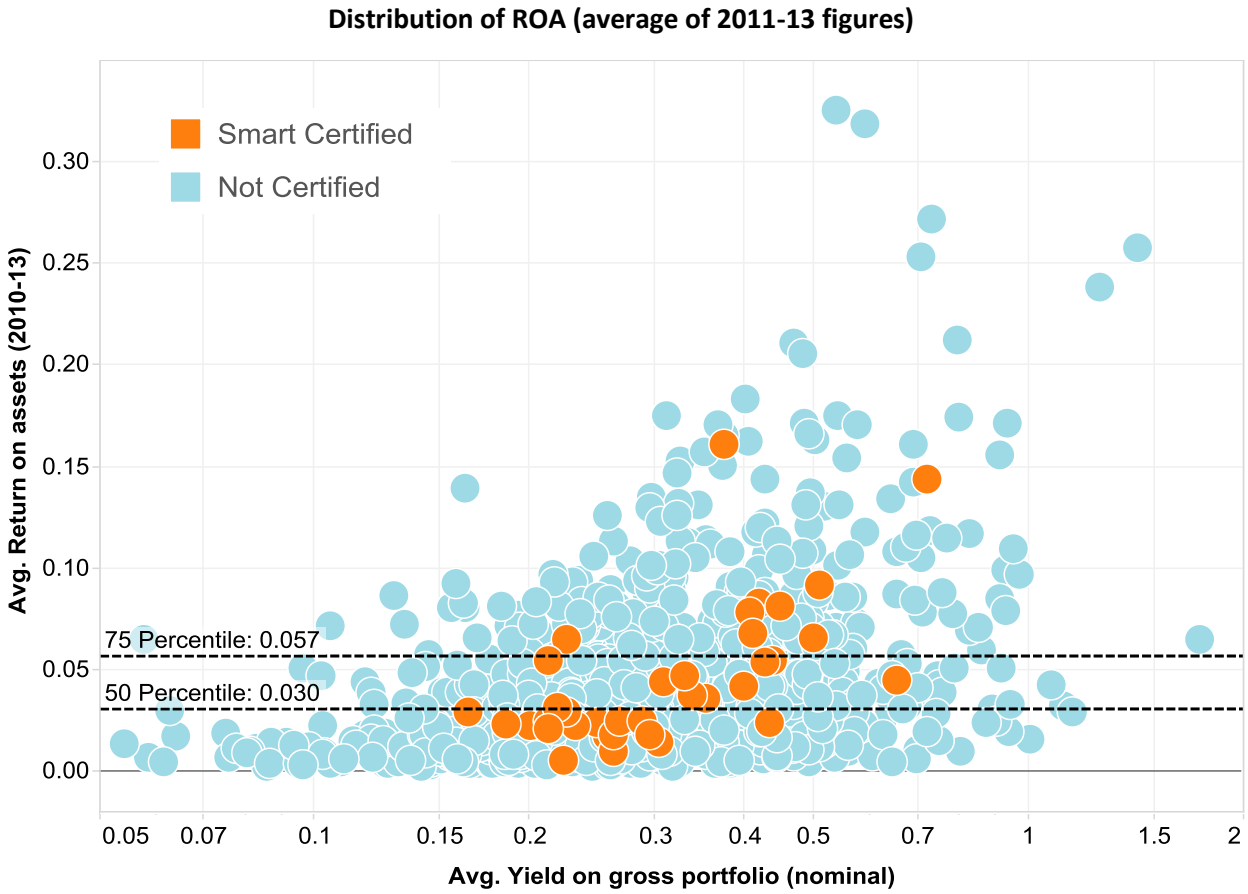
A list of these indicators is described below:

Variable	Explanation	Effect on price
Borrowers per staff member	Standard efficiency metric	↓
Avg Salary / GNI per capita	Higher salary levels relative to national averages mean higher costs.	↑
Portfolio / Assets	MFIs with high asset utilization face lower operating costs	↓
Write-off ratio	High writeoffs often mean high costs from collections	↑
Degree of competition (HHI)	No significant impact on OpEx.	n/a
Market share	Moderately significant and positive, implies possible monopoly effect (high market share implies less competition to push efficiency improvement)	↑
Credit bureau quality (Microscope)	Small downward effect on OpEx, but data not available for all countries	↓
MFI is a Cooperative	Large & negative effect on OpEx (-11.8%). Coops appear more efficient than other MFI types. Not included in model, since this is simply an observation, not a useful predictive factor.	↓
MFI is a for-profit	Small, but significant effect on OpEx (2.4%).	↑

Appendix B: Developing the fair profit assessment

The fair pricing model is largely based on prior work developed by Chuck Waterfield.[2] However, the main change is to express the profit level over assets (ROA) rather than equity (ROE), since the former is more directly comparable to income figures. By contrast equity returns can be heavily affected by changes in the institution's financial leverage – a factor that is wholly unrelated to loan pricing.

A simple distribution of profit levels shows that half of MFIs have three-year average ROA levels below 3%, while only a quarter of MFIs exceed 5.7%. These delineations are the basis of the proposed guidelines. Unlike with OpEx distribution, profit distribution of 38 certified MFIs largely follow the broader group, with exactly half (19) showing ROA below 3%, and another 10 below 6%, and the final group of 9 with an ROA exceeding 6%, in two cases with a large margin. Note again that these figures are not adjusted for compulsory deposits.



[2] Waterfield, C., Growth, Profit & Compensation in Microfinance: How much is too much?, MFTransparency.org, Sep 2012