Balanced Pricing in Microfinance:

Setting Prices to Balance the Needs of the Institution and the Clients

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OUR GOAL FOR THIS PROPOSAL

After decades of ignorance and neglect about the true prices that we were charging the poor, we have made great progress in the past seven years. We now have definitions and measurements for a large portion of the global industry.

However, we still struggle on interpretation of our prices. Sadly, the current standards promoted for judging pricing all have weaknesses and can easily lead to erroneous conclusions. Partly, this is because we are still learning about pricing. Pricing of microcredit is an exceedingly difficult concept to understand, and despite three decades of studying pricing, I am the first to say I am still learning. Yet despite the challenges, we should try even harder; pricing is as important a subject as it is a difficult subject.

I propose here an approach to evaluate the degree to which an MFI is achieving balanced pricing. Balance means the MFI is not heavily centered on its own self-interest, nor is it operating heavily on the expectation that donors will fund operations. The MFI looks for solutions that achieve balance between the two sides of the business transaction — itself and the poor — rather than leave that ethical responsibility to the pressures that are assumed to eventually come from the market's invisible hand. A responsible business proactively and intentionally makes balanced policy decisions rather than waiting for the market to force it to do so.

I present the rationale of this approach and then show how that logic is incorporated in the software "MFT Pricing Analysis Tool" which can be downloaded from www.mftransparency.org. In this paper, I also highlight areas where the approach can be improved with additional refinements to the logic. I invite your feedback and ideas via email at chuck@mftransparency.org. In the last part of this paper I give some initial ideas of how the implications of the balanced pricing concept apply to three different types of MFIs:

- those providing only larger microloans, e.g., ProCredit
- Those with broad market coverage, e.g., BancoSol
- Those who provide only the smallest of microloans, with loan sizes under 25% of GNI per capita, e.g., Compartamos

Microfinance has considered these all as the same market, but these three markets are as different from one another as microfinance is different from conventional finance.

LOGIC OF BALANCED PRICING

Beware of Averages!

A central principal in this Balanced Pricing methodology is the same principle that has been at the center of MFT's approach for seven years — avoid generalizations that come from looking at averages. Averages mask important information; they imply uniformity and hide important correlations. As MFT has been showing for eight years, looking at the average portfolio yield of all the MFIs in a country misses the critical element of the price curve. The curve only comes into view when showing portfolio yield of each MFI in the market relative to loan size. (Example graphs of this, and all the points raised in this introduction, will be shown later in this document.)

The average price in a country misses essential information about the MFIs in that market (and leads to erroneous conclusions), and MFT's pricing work also demonstrates that the average price of an MFI masks valuable information about that MFI (and can lead to erroneous conclusions). Most MFIs do not have one price, and the products of an MFI rarely have one price. Just as there are reasons for price variations in a market full of MFIs, there are reasons for price variations inside a single MFI.

That is a core element of the Balanced Pricing concept proposed here. Not recognizing this fact is why our industry still frequently reaches flawed conclusions on these topics.

Look for the Curves!

There are curves in microfinance — there are price curves and there are cost curves. The same principles that we have learned about pricing apply to analyzing the cost structure of an MFI as well — averages and market comparisons lead to incorrect conclusions. In fact, cost data adheres more closely to the logic of the curve than does pricing data, because the costs of an MFI are more forcefully shaped by market pressures than are the prices an MFI charges. Employees can demand a competitive wage, but clients cannot demand a competitive price because they do not know the prices they are paying.

Again, the higher the level of data that is averaged, the greater the loss of valuable information. The approach presented in this paper shows how data that can be assembled in one hour can be used to generate a remarkably detailed analysis of the dynamics of costs and income for an MFI. That analysis has profound implications for responsible microfinance.

The Cardinal Rules of Microfinance

For some 20 years, microfinance has held near-universal agreement on a set of cardinal rules:

MFIs must be efficient

Microfinance started with relatively high costs, mostly due to being on the learning curve, having small-scale operations, and choosing to bundle non-financial services, such as business skills training, with credit. We were told that these costs could not be scaled up, that the clients could not pay for them, and it was our obligation to streamline. We were told to act more like businesses than projects.

MFIs must charge prices to cover these efficient costs

Microfinance also started by charging very low prices, because we didn't expect the poor to be able to pay higher prices. We were told to raise our prices, and very often it was the donors telling us to raise our prices, or we wouldn't have access to their funding. So we started raising our prices. We were constantly evaluated on our sustainability ratios, measured as what percentage of our costs were covered by income. We were so far from reaching 100% sustainability that the word "profit" didn't even enter the vocabulary of microfinance until the late 1990's.

Microfinance doesn't do subsidies... or does it?

As the industry became more business-like, as it grew, as it entered the commercial world, it became more common to declare that subsidy is a thing of the past. We don't subsidize microfinance, and we shouldn't subsidize microfinance because we have shown that the business world can now take over without subsidy.

So MFIs aren't subsidized. Does that mean that clients are not subsidized? No. As we will see, there are actually different profit and loss levels with each and every client. That means some clients are receiving subsidies, and those subsidies come from other clients. In microfinance, profit and subsidy do not move in lockstep between aggregate and granular levels. If an MFI is subsidized, it doesn't mean every client is subsidized. If an MFI is profitable, it doesn't mean it made profit off of every client. Subsidies take place internally, and the amounts of subsidy and the recipients and sources of subsidy are determined by management as they make product design and pricing decisions. However, these decisions are entirely opaque, meaning we as yet know nothing beyond the very superficial question "Is the MFI profitable?"

We look at an MFIs overall financial statements to determine if there is profit, and how much, but this viewpoint entirely misses the reality that we don't know how that profit was generated. Some borrowers may be getting a bargain (i.e., a subsidy), but high profits generated from other borrowers may still be resulting in a net profit for the MFI.

Similarly, if an MFI has a variety of loan products, each product has a cost structure and a yield. It may well be that some loan products lose money while other products make large profits. Which product subsidizes which, and why? This has serious implications for responsible microfinance.

Responsible microfinance must have the goal to treat clients fairly

This cardinal rule doesn't have 20 years of history. The phrase responsible microfinance only entered our lexicon in 2009, when the industry came under intense scrutiny — both externally and internally — for behavior that was argued to be irresponsible. An essential question for responsible microfinance is: What can we learn by studying income and expenses at the client level, and how can we use those learnings to act more responsibly?

A DEEPER UNDERSTANDING OF INCOME AND EXPENSES

Sustainability, or profitability, is the comparison of the two areas of income and expenses. If an MFI has more income than expenses over a calendar year, that year is deemed to have been profitable. But that's where the analysis stops, because the data doesn't allow any deeper analysis. This Balanced Pricing approach provides a path to deeper analysis. I will describe the approach in two parts:

Part I: MFI-level averages show us that is that there are curves. They also show us why there are curves in microfinance when there aren't corresponding curves in conventional finance.

Part II: What do we find when we drill down inside to study the MFI's income and expenses? There are definitely internal cost curves, but there are rarely internal price curves that match those cost curves. That means there are cross-subsidies taking place. What can we learn from that, and how can a responsible MFI adjust its targeting, product design, and pricing to act more responsibly?

Part I: MFI-level Income Analysis

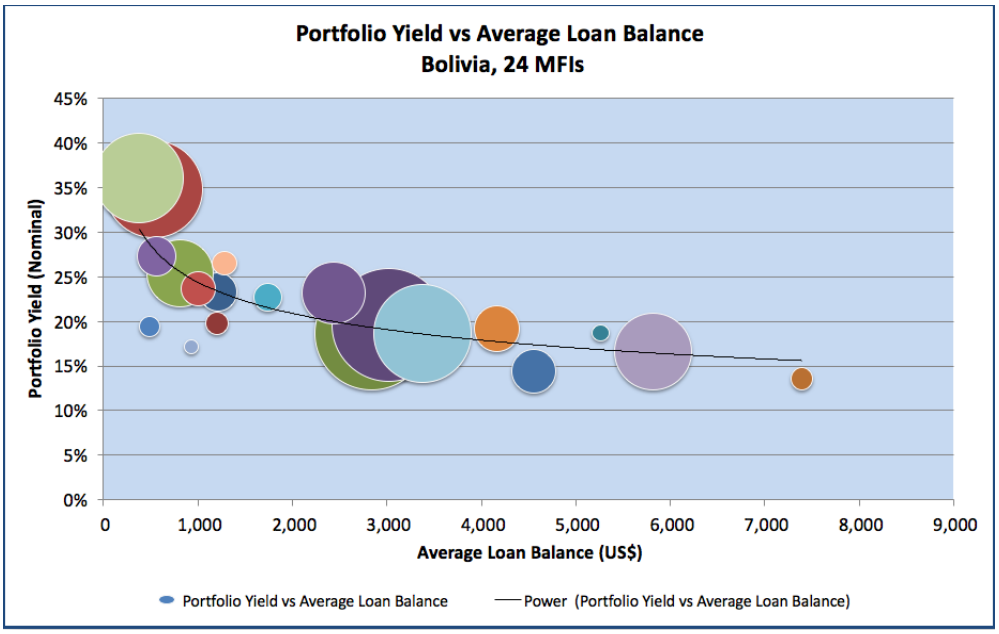
MFTransparency has collected pricing data for a broad cross section of microfinance. MFT has defined that true price as the cost of all interest, compulsory fees, compulsory insurance, value-added taxes, and compulsory deposits. This Full APR is the most appropriate indicator of the true price paid by the client. I'll show some Full APR data later in this article, and I'll also show a different price calculation — the APR from interest and fees. What causes confusion in the industry is that the cost from the perspective of the client is not the same as the income from the perspective of the MFI. The primary causes of the difference are:

- Compulsory insurance may or may not be managed internally by the MFI. The MFI may pass the income along to a third party, it may manage the insurance internally, or it may pass some of the income to a third party and keep a portion as a service fee.
- Value-added taxes are a true cost to the client, but the MFI generally passes this through to the government. Taxes are included in the truth-in-lending formulas of some countries, such as Mexico.
- Compulsory deposits certainly affect the cost to the client. This isn't income for the MFI, but might benefit the MFI indirectly if it has access to those deposits to use as financial resource to generate additional income.

The best income indicator for an MFI is its portfolio yield, which is the interest and fee income generated from clients divided by the average outstanding loan portfolio for that period of time. Let's look at portfolio

yield presented in MIX data for a mature microfinance country — Bolivia. This is data from 2011, before any government restraints to pricing were implemented.

The horizontal axis in that graph shows the average loan balance of the 24 institutions, and we can see clearly that portfolio yield is 15% to 20% for those MFIs with average balances over US$2000. For those MFIs with much smaller average loan balances, the portfolio yield ranges between 20% and 40%. There is a distinctive curve. MFIs exclusively targeting the poorest clients charge the highest prices. Why? Let's look at the cost data for these same MFIs.



Part I: MFI-level Expense Analysis

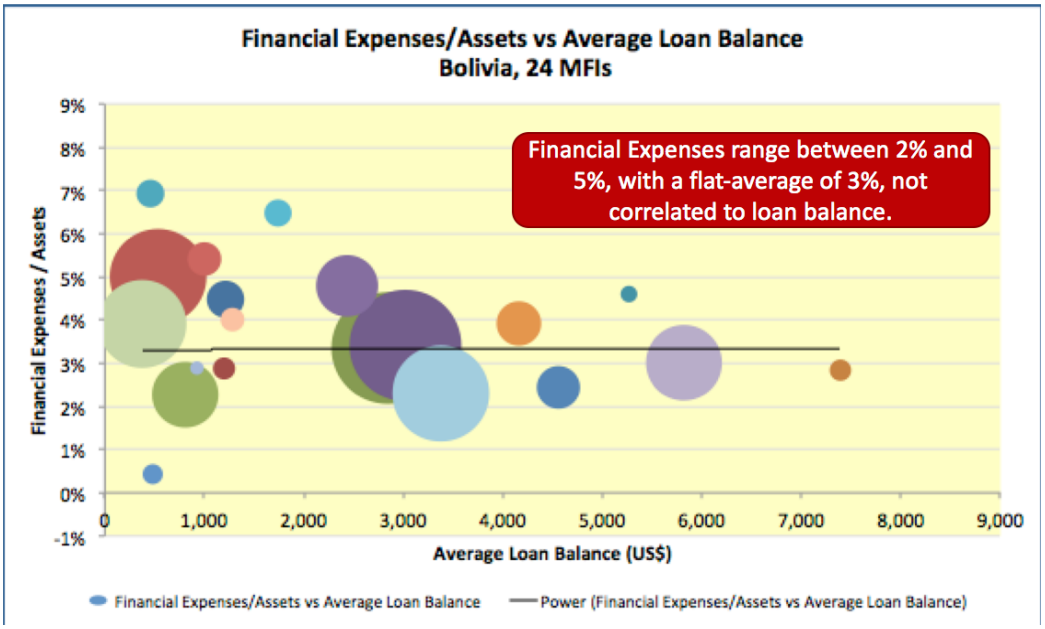
Financial institutions group expenses into three main categories — financial costs, loan loss expense, and operating costs is where everything else goes. They then use ratios to systematize and standardize decision making by comparing these figures that appear on their income statement to a scale indicator coming from the balance sheet. One approach uses Total Assets as the scale indicator, and a second uses Total Loan Portfolio. In microfinance, the portfolio generally represents more than 80% of total assets, so these ratios are relatively close. The software shown later in this analysis, will use Total Portfolio, because we are comparing costs to pricing, and pricing uses portfolio as a denominator, but the system could incorporate a factor to convert from Percent of Average Portfolio to Percent of Average Assets.

Component	
Financial Costs	10%
Loan Loss	2%
Operating Costs	20%
Profit	3%
Total Price	35%

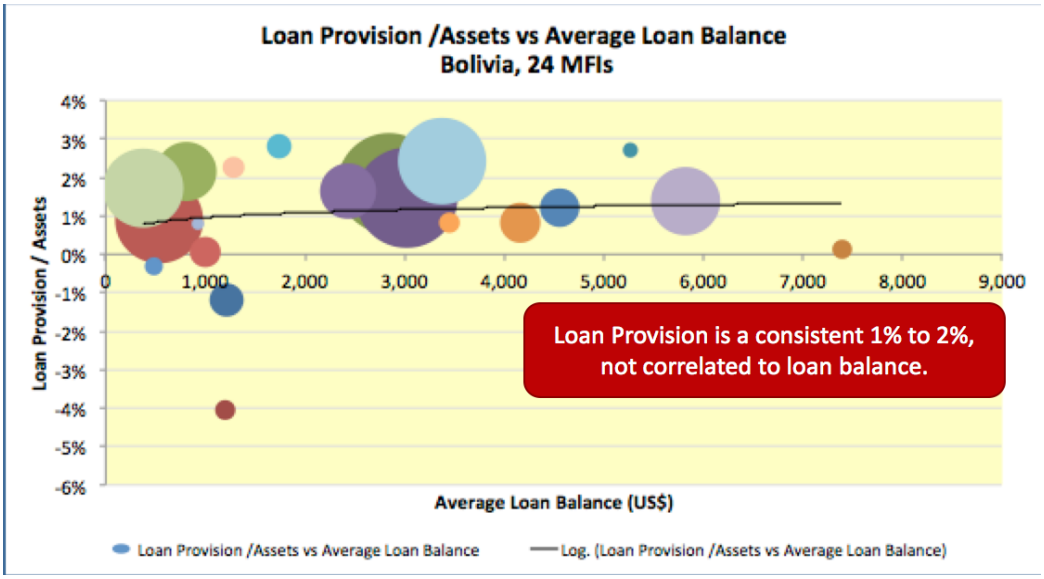
The table here shows some ratios that are not uncommon for an MFI — financial costs are 10%, meaning it spends 10 cents to borrow $1.00 of financial resources for one year.

Microfinance is proud of having excellent loan repayment, and although there are some high variations in this figure, the benchmark held out to the industry is 2%. The next line, highlighted in yellow, is the Operating Cost Ratio. It is the largest figure in this example, and this is generally true for microfinance. Adding up these three costs and building in a profit margin — 3% in this example — gives a target price of 35%. More accurately, this is the target for the Portfolio Yield of the institution. It will spend 32 cents for every dollar of portfolio over a year, and if it can generate 35 cents of income for each dollar, it has an RoA of approximately 3% — a figure conventional banks would be thrilled with.

Let's look at some figures for these three expense ratios using MIX data for the same 24 MFIs we saw previously. In the first graph, Financial Expenses (expressed as a percentage of Average Total Assets) ranges from 2% to 5%, much lower than the 10% figure we used in the table above. The horizontal axis in that graph shows the average loan balance of the 24 institutions, and we can see clearly that financial expenses are reasonably flat, i.e., an MFI spends the same for money used to make larger loans as it does for smaller loans. Note that the bubble size in all of these graphs represents the number of borrowers, and we don't see any significant indication that larger MFIs have lower financial expenses. Scale is an insignificant factor.



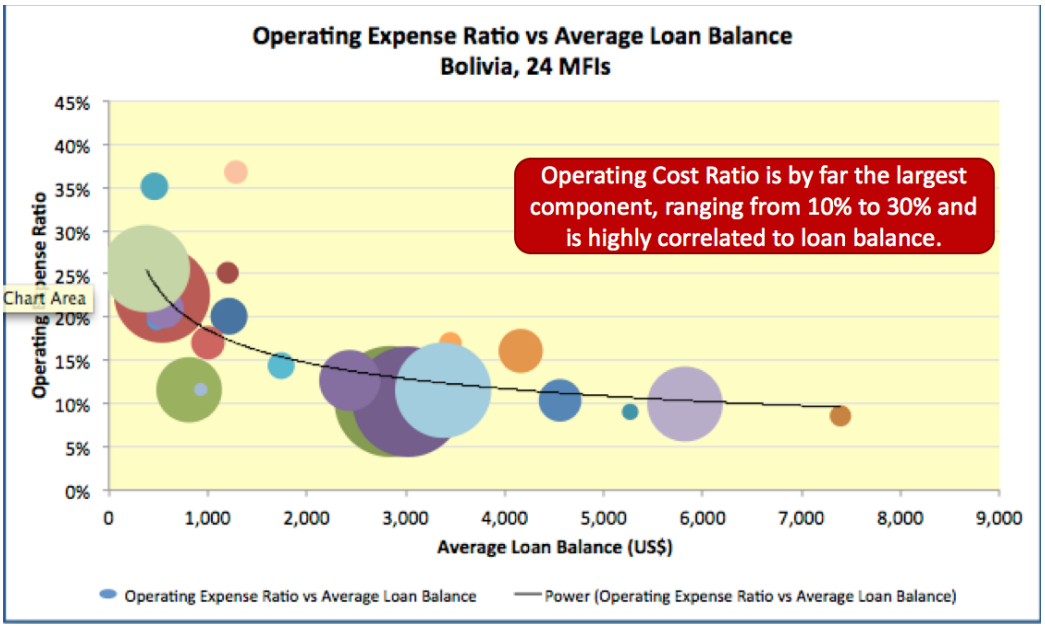
The next graph shows Loan Provision as a percentage of Assets. The figures are very small, consistently between 1% and 2%, and thus meeting industry benchmarks. Again, the line is flat, meaning loan repayment is not correlated to average loan balance.



The final graph shows the Operating Expense Ratio (this time using Portfolio as a denominator) for these same MFIs. The figures range from 10% to 30%, much larger than financial expenses and loan loss. Operating costs are the dominant expense for MFIs in Bolivia. Note that there is a very solid correlation between the Operating Expense Ratio (OER) and the average loan balance.

The OER is the standard measure of operating efficiency, and microfinance has long indicated a benchmark for this figure of 10% to 15%. Any MFI with a higher ratio is questioned as to its management and receives lower grades in its ratings report. Microfinance often argues that efficiency is correlated to scale, drawing on the "economies of scale" concept in general business.

Economies of scale mean that MFIs with a high OER are generally expected to see the OER decrease as they grow. Remember that in these graphs the bubble size represents number of clients. Oddly, some of the largest MFIs in Bolivia have a low OER of about 10%, but others have OERs of 25%. Paradoxically, some very small MFIs have OERs under 10%. I don't deny that an MFI will see some reduction in their OER as their scale grows, but these changes are very small, likely on the order of a 1% change in their OER. Undeniably, the Operating Expense Ratio is much more strongly correlated to average loan balance than it is to scale. The industry constantly misinterprets the changes in OER when it evaluates trend ratios of an MFI. We'll see serious implications of this shortly.

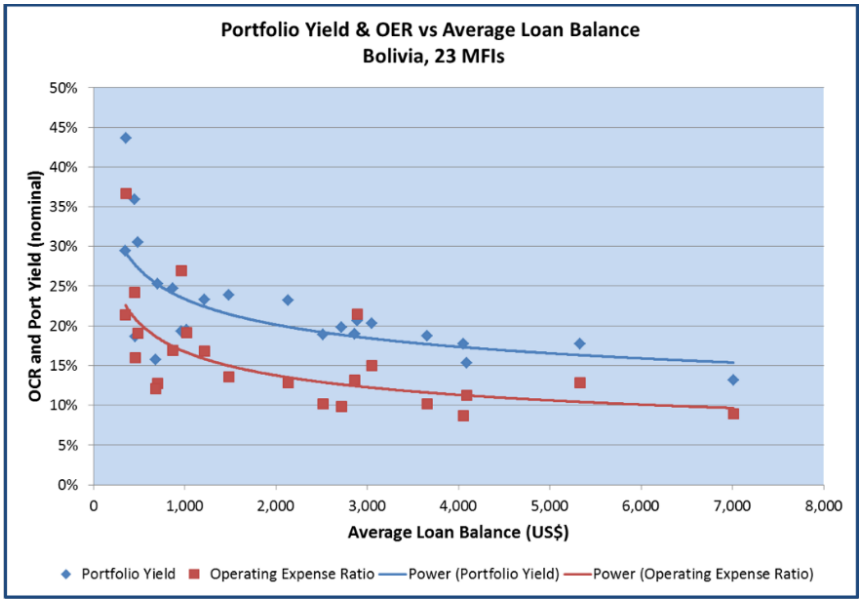


Part I: Comparing MFI-level Income and Expense

When viewing only portfolio yield data, we found a range of prices but no indication of why they ranged from 12% to 35%. Plotting the portfolio yield data relative to average loan balance showed a distinctive correlation, resulting in a curve, but provided no indication of why it formed a curve.

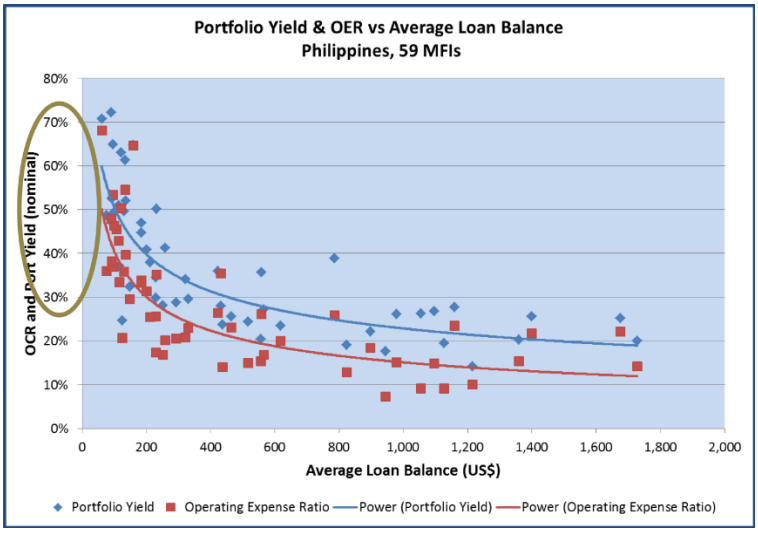
Examining the cost data showed the same wide range in Operating Expense Ratio and the same curve when plotted relative to average loan balance.

When we put the two data points on the same graph, we see a remarkable correlation. The blue dots are portfolio yield and the red dots are operating cost ratio. There is a spread between the two which is remarkably consistent on average. This spread would cover financial expenses and loan loss, with the difference resulting in either profit or loss.



From this we can argue that the Bolivian market does appear, on average to express some degree of market behavior, even though the average portfolio yield generated from some market segments is triple that generated from other market segments.

Below is the same graph showing Philippines data for 59 MFIs, where average loan balances are much smaller than Bolivia, and OER and Portfolio Yield are much higher on the left side of the graph. Again the average spread is remarkably consistent, though the portfolio yields range from 12% to 72%, a six-fold difference. The microfinance industry cannot legitimately say there is one market price for microcredit in either of these countries, nor in most of the countries where MFT has collected data.



Though we see some intriguing information using this data, the averaging techniques used at this level mask a great deal of very important information. To address those limitations, we proceed to Part II.

Part II: Dissecting MFI Income

We see clear price curves when we look at MFI portfolio yields in a country. Some countries have gentle curves, like Bolivia, while others have much more dramatic curves, like Philippines. Our next step is to go beyond the portfolio yield.

Comparing Portfolio Yield to APR (int + fee)

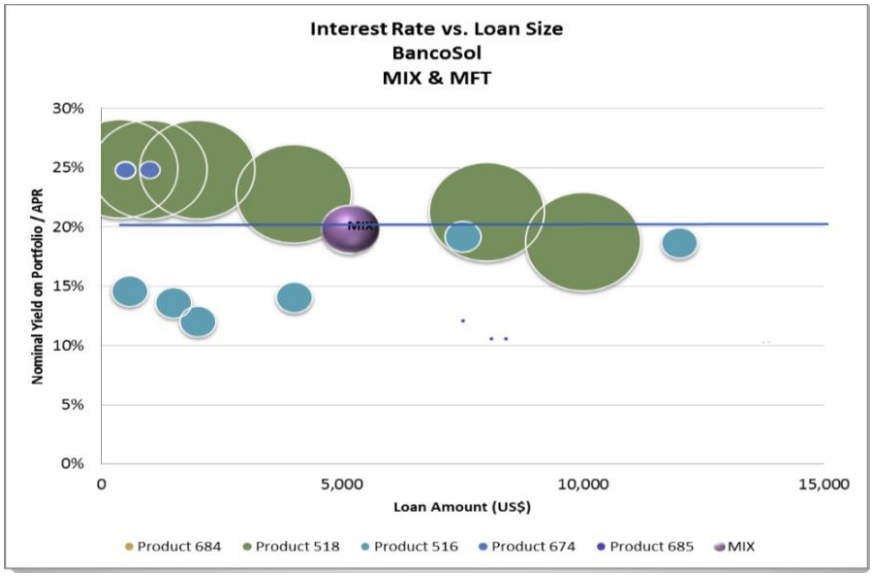
MFTransparency's work demonstrated conclusively that the prices an MFI charges are not the same as its portfolio yield. Because of the complexities of how we price loans, different products have different prices, and clients within a single product often pay different prices. Let's study the data of BancoSol, one of the largest MFIs in Bolivia, to evaluate this point.

We first find from MIX data that in 2009 BancoSol had a Portfolio Yield of 20% and an average balance per borrower of $2,713. We will be comparing this with pricing data collected by MFTransparency, which is based on initial loan amount, so we can double the size of this average

MIX (31-12-2009)			
MFI	Average loan balance per borrower	Yield on portfolio (nominal)	Initial Loan Size
BancoSol	2,713	19.82%	5,155

balance to come up with an approximation of the average initial loan size, $5,155.

The graph below shows this portfolio yield figure as the purple data point, correlated to an estimated average initial loan amount of $5,000. The horizontal line shows the assumption that this portfolio yield applies to all loans of all sizes.



The other bubbles show prices calculated from samples for four of Banco Sol's products, with bubble size representing number of clients for those products. The largest green bubbles are for the most popular loan product and show that clients pay prices ranging from 18% to 25% for that product, and that loan amounts for that product span from $500 to $10,000. The medium-sized blue bubbles show that for another product clients pay between 12% and 18%, again for a product covering a broad range of amounts. The smaller blue bubbles show a product with amounts under $1000 and a uniform price of 25%. There are also three tiny dots representing samples of a fourth product with loan amounts of about $8,000 and a price of about 11%.

These prices calculated from real loans from BancoSol show that the MFI doesn't have one price, and the products don't have one price. Prices range from 11% to 25%, producing a portfolio yield of 20%. These figures may seem relatively insignificant, but many other MFIs generate much more extreme variation in their pricing maps, as

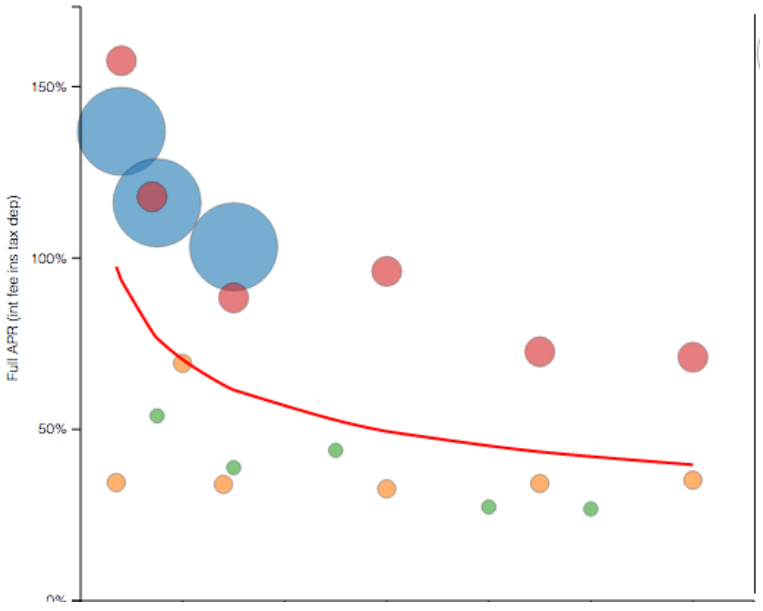


Figure 1: Full APR for ASKI

seen in the graph for ASKI, in the Philippines. This graph shows clients of this one MFI paying prices ranging from 25% to 160%. Bubble size indicates the number of clients, and in this case most of the clients of this MFI are paying prices over 100%. Prices for many of the MFIs in the Philippines and numerous other countries vary widely like this, and when prices vary this widely and are at levels this high, the implications for the clients are serious.

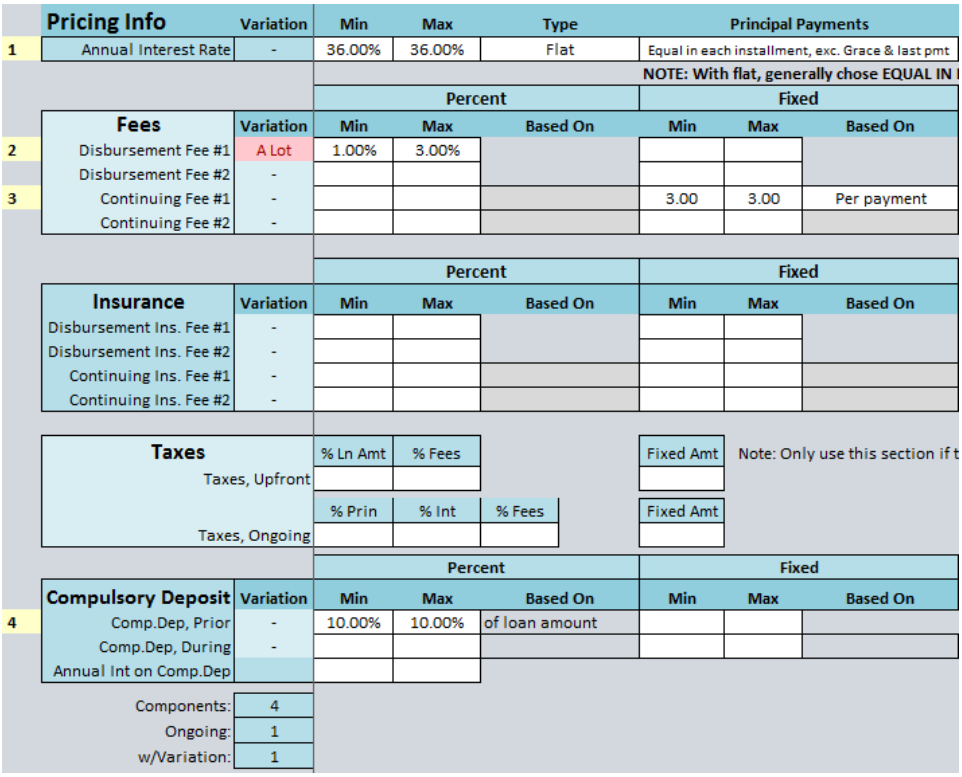
MFTransparency's Scatterplot Pricing Methodology

Beginning in 2014, MFTransparency modified its pricing methodology and those modifications are reflected in the new MFT Pricing Analysis Tool. Previously, we had calculated prices only from real loan documentation from recently disbursed loans. We collected between three and six samples per product and generated the exact price of those loans. We made every effort to get samples covering the range of conditions for that product, but there were cases where there could be gaps:

- A product with a wide range of both loan amounts and loan terms, together with complicated pricing, might not have the full span of its price range reflected in a small number of samples. For example, fixed upfront fees have a large impact on prices relative to loan size, and monthly payments of fees, insurance, or compulsory deposits have a large impact on prices relative to loan term.
- Products with varied pricing, such as when interest rates range from 30% to 45% or fees range from 1% to 3%, could escape having the full range of pricing reported. If we requested samples with the higher charges, the prices calculated would miss the lower range of pricing for the product. If the MFI gave us only samples with the lower charges, the prices would miss the higher range.

Recognizing the time involved in collecting and processing an even larger number of samples, our new methodology went a different direction. It was designed to use *less* samples, give *more complete* results, while also building in a means to determine the level of accuracy of those results.

The first step is to input the pricing components, their variations in range, and the means by which they are calculated. In the example below, all clients are charged 36% flat interest, but the disbursement fee ranges between 1% and 3%. In addition there is a continuing fee of 3.00 charged with each payment. All clients have 10% of their loan put into a security deposit (i.e., savings) at loan disbursement.



	Pricing Info	Variation	Min	Max	Type	Principal Payments
1	Annual Interest Rate	-	36.00%	36.00%	Flat	Equal in each installment, exc. Grace & last pmt

NOTE: With flat, generally chose EQUAL IN

	Fees	Variation	Percent Min	Percent Max	Percent Based On	Fixed Min	Fixed Max	Fixed Based On
2	Disbursement Fee #1	A Lot	1.00%	3.00%				
	Disbursement Fee #2	-						
3	Continuing Fee #1	-				3.00	3.00	Per payment
	Continuing Fee #2	-						

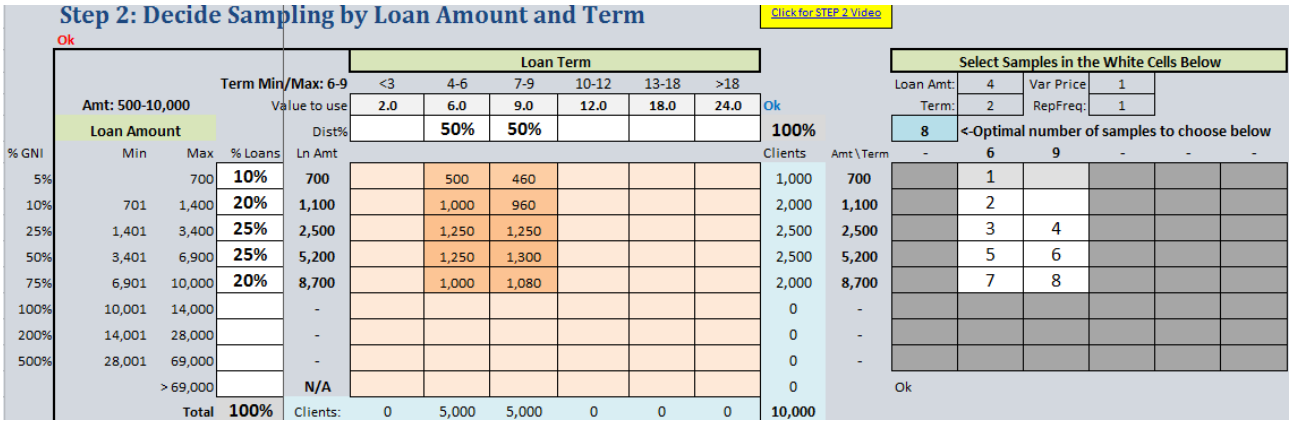
Insurance	Variation	Percent Min	Percent Max	Percent Based On	Fixed Min	Fixed Max	Fixed Based On
Disbursement Ins. Fee #1	-						
Disbursement Ins. Fee #2	-						
Continuing Ins. Fee #1	-						
Continuing Ins. Fee #2	-						

Taxes	% Ln Amt	% Fees		Fixed Amt	Note: Only use this section if t
Taxes, Upfront					
	% Prin	% Int	% Fees	Fixed Amt	
Taxes, Ongoing					

	Compulsory Deposit	Variation	Percent Min	Percent Max	Percent Based On	Fixed Min	Fixed Max	Fixed Based On
4	Comp.Dep, Prior	-	10.00%	10.00%	of loan amount			
	Comp.Dep, During	-						
	Annual Int on Comp.Dep							

Components:	4
Ongoing:	1
w/Variation:	1

The next step (shown below) requires estimations of how the loans are spread out by loan amount and by loan term. In this example, 10% of the loans are under P700, 20% are in the range of 700-1,400, and so on. For loan terms, half the loans are 6 months and half are 9 months. These figures do not need to be precise. Approximations still give very reliable results. The orange cells in the center of the left matrix show estimates of how the 10,000 clients of this loan product are distributed, based on the percentages entered.



Step 2: Decide Sampling by Loan Amount and Term

Click for STEP 2 Video

Ok

Term Min/Max: 6-9 | Amt: 500-10,000 | Loan Amount

% GNI	Min	Max	% Loans	Ln Amt	Loan Term <3	4-6	7-9	10-12	13-18	>18	Clients
				Value to use	2.0	6.0	9.0	12.0	18.0	24.0	Ok
				Dist%		50%	50%				100%
5%		700	10%	700		500	460				1,000
10%	701	1,400	20%	1,100		1,000	960				2,000
25%	1,401	3,400	25%	2,500		1,250	1,250				2,500
50%	3,401	6,900	25%	5,200		1,250	1,300				2,500
75%	6,901	10,000	20%	8,700		1,000	1,080				2,000
100%	10,001	14,000		-							0
200%	14,001	28,000		-							0
500%	28,001	69,000		-							0
		>69,000		N/A							0
		Total	100%	Clients:	0	5,000	5,000	0	0	0	10,000

Select Samples in the White Cells Below

Loan Amt: 4 | Var Price: 1 | Term: 2 | RepFreq: 1

8 <-Optimal number of samples to choose below

Amt \ Term	-	6	9	-	-	-
700		1				
1,100		2				
2,500		3	4			
5,200		5	6			
8,700		7	8			
-						
-						
-						

Ok

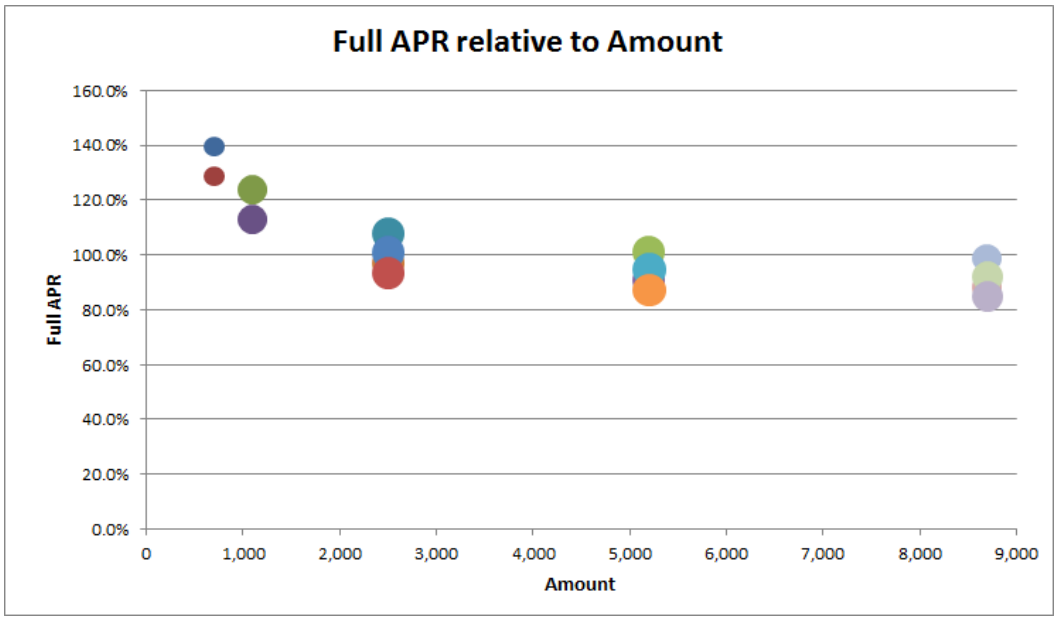
The matrix on the right side of the figure allows the analyst to pick a number of samples. In this case there are 8 samples identified, and each sample has a specified loan amount and loan term specified by the matrix.

The next section of the tool then auto-generates variations on the eight samples. In this case, there are different fees charged, so the tool has created two variations for each sample, charging 1% to one variation

and 3% in the other. The tool does allow the user to alter this, e.g., maybe loans under P.1000 always pay 3%, or maybe there are some loans that are charged 2%.

	Sam-Var	LoanAmt	LnTmMon	SampleNum	VarNum	SampClients	N/A	NumPmts	GraceMon	Frequency	interest	IntMethod	Fee1UpPc	Fee1UpFix	Fee1OnPc	Fee1OnFix
1	1-1	700	6.0	1	1	500		25	0.00	7	36.00%	Flat	3.00%			3.00
2	1-2	700	6.0	1	2	500		25	0.00	7	36.00%	Flat	1.00%			3.00
3	2-1	1,100	6.0	2	1	1,000		25	0.00	7	36.00%	Flat	3.00%			3.00
4	2-2	1,100	6.0	2	2	1,000		25	0.00	7	36.00%	Flat	1.00%			3.00
5	3-1	2,500	6.0	3	1	1,250		25	0.00	7	36.00%	Flat	3.00%			3.00
6	3-2	2,500	6.0	3	2	1,250		25	0.00	7	36.00%	Flat	1.00%			3.00
7	4-1	2,500	9.0	4	1	1,250		38	0.00	7	36.00%	Flat	3.00%			3.00
8	4-2	2,500	9.0	4	2	1,250		38	0.00	7	36.00%	Flat	1.00%			3.00
9	5-1	5,200	6.0	5	1	1,250		25	0.00	7	36.00%	Flat	3.00%			3.00
10	5-2	5,200	6.0	5	2	1,250		25	0.00	7	36.00%	Flat	1.00%			3.00
11	6-1	5,200	9.0	6	1	1,300		38	0.00	7	36.00%	Flat	3.00%			3.00
12	6-2	5,200	9.0	6	2	1,300		38	0.00	7	36.00%	Flat	1.00%			3.00
13	7-1	8,700	6.0	7	1	1,000		25	0.00	7	36.00%	Flat	3.00%			3.00
14	7-2	8,700	6.0	7	2	1,000		25	0.00	7	36.00%	Flat	1.00%			3.00
15	8-1	8,700	9.0	8	1	1,080		38	0.00	7	36.00%	Flat	3.00%			3.00
16	8-2	8,700	9.0	8	2	1,080		38	0.00	7	36.00%	Flat	1.00%			3.00

Once the modifications are entered, the tool then generates the prices of all sixteen samples, and they are displayed in the pricing scatterplots. The graph below shows the pricing related to loan amount, but the tool include a graph of pricing related to loan term, as well as numerous analysis tables for studying the impact of the price components. In this example, we see that prices range from 80% to 140%, and the prices follow the theoretical pricing curve.

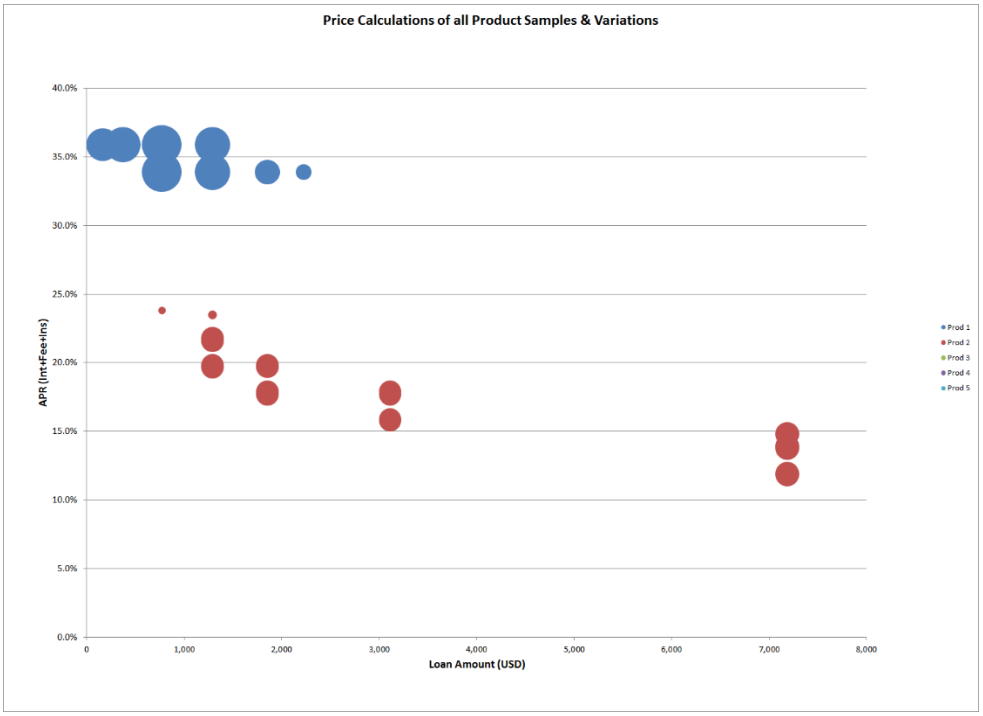


To determine if these automatic price calculations are reliable, the analyst requests two real loan samples of one of the products of the MFI. The analyst calculates the prices of those samples using the loan documentation and compares those prices to the auto-generated price of a loan of the same amount and term. If the prices differ, then there are either errors in the inputs or the MFI calculates interest or applies fees differently than done in the software. If the prices are very close to the same, then the analyst can assume that the data is entered properly and the MFI's procedures match standard procedures incorporated into the software. The previous pricing methodology would request and process up to 24 repayment

schedules for an MFI with four products; the new approach achieves more comprehensive pricing information while processing just 2 repayment schedules.

A case study example from Bolivia

For the remainder of this analysis in Part II, we will return to the example of Bolivia and will use pricing and expense figures from one of the MFIs in Bolivia that has relatively small loans and charges relatively higher prices. Inputting their data into the Pricing Analysis Tool yields the following pricing scatterplot, with Product 1 clients paying between 33% and 36% on smaller loans, and Product 2 clients paying between 12% and 24% on larger loans, with the higher prices falling on the smaller loans.



Part II: Dissecting MFI expenses

Our next step is to explore how we can break apart aggregate expense figures into expenses related to different loan sizes. We've seen in Part I that MFIs targeting different levels of the market have an Operating Cost Ratio that follows a curve. Let's start with a straightforward way to see why there is an operational cost curve (using simplified figures so the math is crystal clear).

Why is there a curve for the Operating Cost Ratio?

Assume your MFI generally makes loans of $500 for 12 months, and when you evaluate the costs your institution makes to disburse and monitor the loan, they total to $50. That gives you an Operating Cost Ratio of 10% and you are congratulated for excellent management, resulting in high efficiency.

Efficiency	1	2	3
Operating Cost per Loan			$50
Loan Size			$500
Operating Cost Ratio			10%

But the same evaluators encourage you to make smaller loans so that you are including more of the needy. So you decide to start providing loans of $250. You have your loan officers spend the same amount of time with these clients, and you pay the loan officers the same wage. Therefore, your expenses stay at $50 per loan, and that results in an operating cost ratio of 20%, twice as high as the larger loans. The evaluators return, and they question why your efficiency has gotten dramatically worse.

Efficiency	1	2	3
Operating Cost per Loan		$50	$50
Loan Size		$250	$500
Operating Cost Ratio		20%	10%

Even though you are now giving smaller loans, there are other MFIs giving much smaller loans of $100. You know if you are to go into this market, you'll need to get your cost per client down. You'll need to spend less time with the clients, and you may even need to pay these loan officers a lower wage than the other loan officers. You cut your costs per loan from $50 to $30, a dramatic improvement. But when compared to the loan size of $100, your operating cost ratio continues to escalate, reaching 30%. Your managerial skills are brought into question.

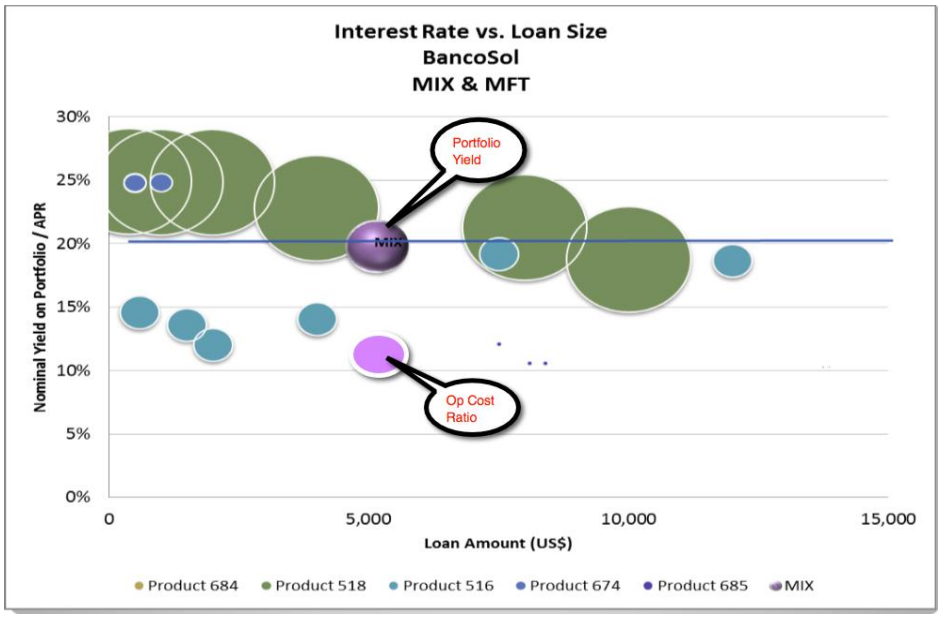
Efficiency	1	2	3
Operating Cost per Loan	$30	$50	$50
Loan Size	$100	$250	$500
Operating Cost Ratio	30%	20%	10%

Map out this data, and you'll find the curve we saw earlier. MFIs with smaller average loan balances have higher operating cost ratios. What we are seeing with this analysis, however, is something very important — different loans inside the same MFI have different operating cost ratios. This has implications for the prices we charge on our loans, and that is the next step in our analysis.

Allocating expenses by loan size

Let's go back to the BancoSol graph and add their average Operating Cost figure of 11% correlated with their average loan amount of 5,000, directly under their portfolio yield of 20%.

We have seen in Part I of the expense analysis that not every loan of BancoSol has an operating cost ratio. This figure of 11% is also a global average that masks the impact of the range of loan amounts, like the portfolio yield masks the range of prices paid by clients.



We know from MFT's work that we can generate the range of loan prices by generating the APRs of different samples of the different products. Can we create a reasonable estimate of the costs related to each of these loan samples? Yes, we can, and it doesn't even take much additional data or additional work. The process uses the Balanced Pricing Tool feature of the MFTransparency Pricing Analysis Tool.

To demonstrate, we will generate figures for the same MFI whose pricing scatterplot was shown on a previous page. The first section of the Balanced Pricing Tool assembles information entered during pricing calculations -- total number of clients, total portfolio, and smallest and largest loan sizes from the micro loan products. Using exchange rate and GNI information for the country, this section generates some useful ratios.

Loan Activity

Note: Figures for ALL microloan products of the Institution

	Nat'l Currency	USD	% GNI
Active Clients	132,000		
Total Portfolio	695,250,000	$103,000,000	
Avg Balance per client	**5,267**	**$780**	**38%**
Estimated avg initial loan	10,534	$1,561	77%
Range of Loan Amounts			
Min loan size	100	$15	1%
Max loan size	70,000	$10,370	508%

Country	Bolivia
GNI/Cap (US$)	$2,040
Exchange Rate:	6.75 per USD
GNI/Cap (local)	13,770

	From Analysis Below		
	Loan Size	OCR	Total Exp Ratio
Min	700	2.1%	12.1%
Max	69,000	131.0%	141.0%

The next section on the worksheet is the only area requiring any input. All other information in the tables and graphs is generated automatically. The first column allows input of the ratios we discussed earlier, with the Operating Expense Ratio split up into two parts — personnel expense and admin expense. These figures must all be based on loan portfolio, as indicated in the column title.

Financial Info	Figures Used to Determine Ratios			Cost Per Client		Figure Used in Calcs	
	% Portfolio	Nat'l Currency	USD	Nat'l	USD	Allocate by	Nat'l or %
Personnel Exp	10.0%	69,525,000	$10,300,000	527	$78	Client	**527**
+ Admin Exp	4.0%	27,810,000	$4,120,000	211	$31	Client	**211**
= **Operating Exp**	**14.0%**	**97,335,000**	**$14,420,000**	**737**	**$109**		
+ Financial Exp	6.0%	41,715,000	$6,180,000	316	$47	Portfolio	**6.0%**
+ Net Impairment Loss	4.0%	27,810,000	$4,120,000	211	$31	Portfolio	**4.0%**
= **Total Expenses**	**24.0%**	**166,860,000**	**$24,720,000**	**1,264**	**$187**		

They are then applied to the portfolio figure in the previous figure to generate an approximation of the budget in both national currency and USD. The middle section then divides these figures by the total number of clients to get costs per client for each expense area. In this example, personnel expenses are US$78 per client and admin is $31, for a total operating expense of $109. To these are added $47 of financial expense and $31 of loan loss, to give total expenses of $187 per client. As indicated in the earlier table, the average balance per client is $780, so this gives a total cost ratio of $187 / $780, or 24%.

However, this is the global average and is true only for that client who might get a loan with an average balance of $780. We need to do better than this. The columns on the right side of that table above allow you to decide how to allocate costs for different loan sizes using the grey cells that contain dropdowns with two choices - by client, or by portfolio. The personnel expenses of $78 (or 527 in national currency) are likely to remain the same regardless of loan size. Choosing "by client" means that BOL 527 will be applied to each loan. Admin expenses are also very likely to be correlated by client rather than by portfolio. However, financial expenses and loan loss, as we saw earlier, are constant percentages, independent of loan size. They are highly correlated to portfolio. In this example, they will be assigned at the rates of 6% and 4%.

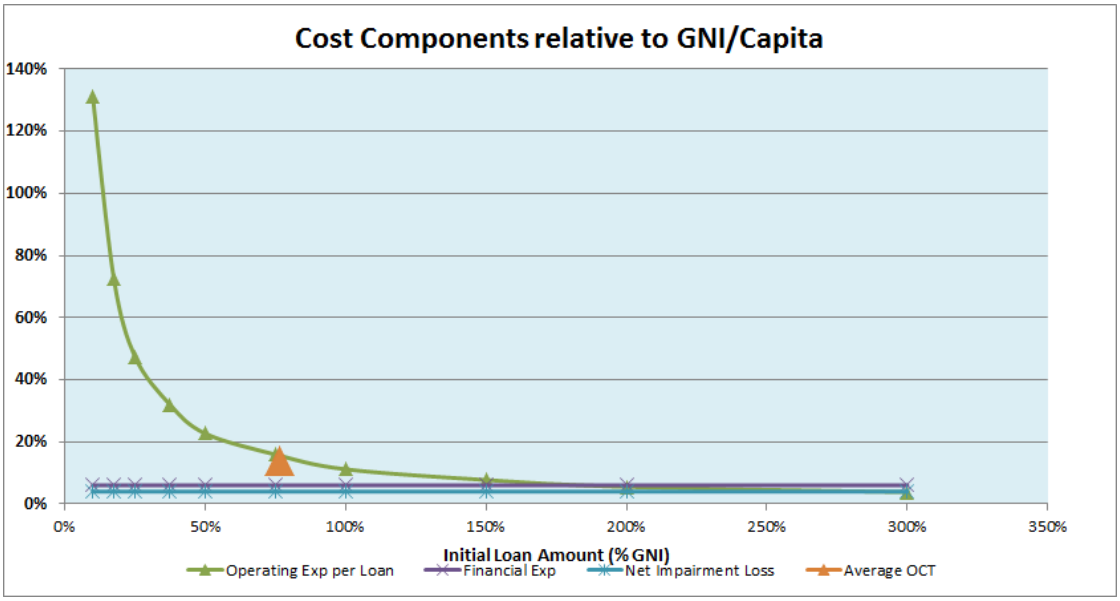
The remaining tables and graphs of the worksheet are now fully generated and can be reviewed. First, we need to understand the overall structure of the table on the next page. The columns are related to different loan amounts, expressed as a percentage of GNI/capita. There are more columns concentrated on the smaller percentages — 5%, 10%, 18%, and 25% — because this is where the curve is found. On the right side of the table are columns for 100%, 150%, 200% and 300%. As we will see, even with these large gaps of up to 100%, the figures are quite flat. There are two colors of columns — blue columns contain information directly linked to the segments identified on the pricing pages of the software, while green columns are extrapolations, averaging the information in the blue columns to either side.

Coverage by Loan Amount	5%	10%	18%	25%	38%	50%	75%	100%	150%	200%	300%
Original Loan (% GNI/Cap)	5%	10%	18%	25%	38%	50%	75%	100%	150%	200%	300%
Loan Amount Segments (upper limit)	**700**	**1,400**	**2,400**	**3,400**	**5,200**	**6,900**	**10,300**	**14,000**	**21,000**	**28,000**	**41,000**
Average Amt for Segment	700	1,050	1,900	2,900	4,300	6,050	8,600	12,150	17,500	24,500	34,500
Covered by this MFI?		X	X	X	X	X	X	X	X	X	X
Number of Clients		22,600		22,600		31,100	26,400	15,100		9,450	
Average Balance (local Curr)		562	1,016	1,551	2,307	3,252	4,636	6,587	9,516	13,387	19,441
Avg Bal (% GNI/Cap)		*4%*	*7%*	*11%*	*17%*	*24%*	*34%*	*48%*	*69%*	*97%*	*141%*
Costs Per Loan											
Personnel Exp (Fixed)		527	527	527	527	527	527	527	527	527	527
Admin Exp (Fixed)		211	211	211	211	211	211	211	211	211	211
Operating Exp per Loan		**737**	**737**	**737**	**737**	**737**	**737**	**737**	**737**	**737**	**737**
Financial Exp (Variable)		34	61	93	138	195	278	395	571	803	1,166
Net Impairment Loss (Variable)		22	41	62	92	130	185	263	381	535	778
Total Expenses per Loan		**794**	**839**	**893**	**968**	**1,063**	**1,201**	**1,396**	**1,689**	**2,076**	**2,682**
Cost Ratios											
Avg Balance (for dividing costs)		**562**	**1,016**	**1,551**	**2,307**	**3,252**	**4,636**	**6,587**	**9,516**	**13,387**	**19,441**
Personnel Exp		93.8%	51.8%	34.0%	22.8%	16.2%	11.4%	8.0%	5.5%	3.9%	2.7%
Admin Exp		37.5%	20.7%	13.6%	9.1%	6.5%	4.5%	3.2%	2.2%	1.6%	1.1%
Operating Exp per Loan		**131.3%**	**72.6%**	**47.5%**	**32.0%**	**22.7%**	**15.9%**	**11.2%**	**7.7%**	**5.5%**	**3.8%**
Financial Exp		6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%	6.0%
Net Impairment Loss		4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Total Expenses per Loan		**141.3%**	**82.6%**	**57.5%**	**42.0%**	**32.7%**	**25.9%**	**21.2%**	**17.7%**	**15.5%**	**13.8%**

The row titled **Covered by this MFI** indicates if the MFI has any loans in that portion of the market. Figures are then generated for these columns. In **Costs per Loan**, figures are applied as defined earlier. **Personnel Expenses** are 527 for each loan and **Admin Expenses** are 211. However, **Financial Expenses** are calculated as 6% of the average loan balance, so the figure varies in each column, as does **Net Impairment Loss**, calculated at 4%. **Total Expenses per Loan** range from 794 to 2,682.

The figures in **Costs per Loan** are then converted to **Cost Ratios**, dividing the amounts by the average balance for each loan. **Personnel** and **Admin Expenses** vary dramatically, while **Financial** and **Loan Loss Expenses** are a constant percentage because they were calculated using a constant percentage.

The information from the tables is now shown graphically. The first graph shows each cost component relative to the loan amount as a percentage of GNI/Capita. The orange triangle represents the 14% figure that is the average **Operating Expense Ratio** for the institution for the average loan balance of 75% of GNI per capita. **Financial expense** and **Net Impairment Loss** are both very small and flat. The **Operating Expense Ratio** creates a dramatic curve.



Could this be true? Based on the assumptions that the MFI spends 737 in operating costs per client over the course of an entire year, it is true. If the MFI does have a means to spend less money (i.e., spend less staff time) on clients with the very smallest loans, then the cost per client could have some variation in it. This is, in fact, what generally happens with group lending, as clients are grouped to reduce the time spent with each client. However, the product-specific OERs would only vary if the MFI had two products of significant scale, each using different lending methodologies. If the major products use similar methodologies, there would be no difference; if products have different methodologies but one of them has over 70% of the total portfolio, the impact on the calculations is likely to be marginal. I do plan to add this option into the next version of the tool.

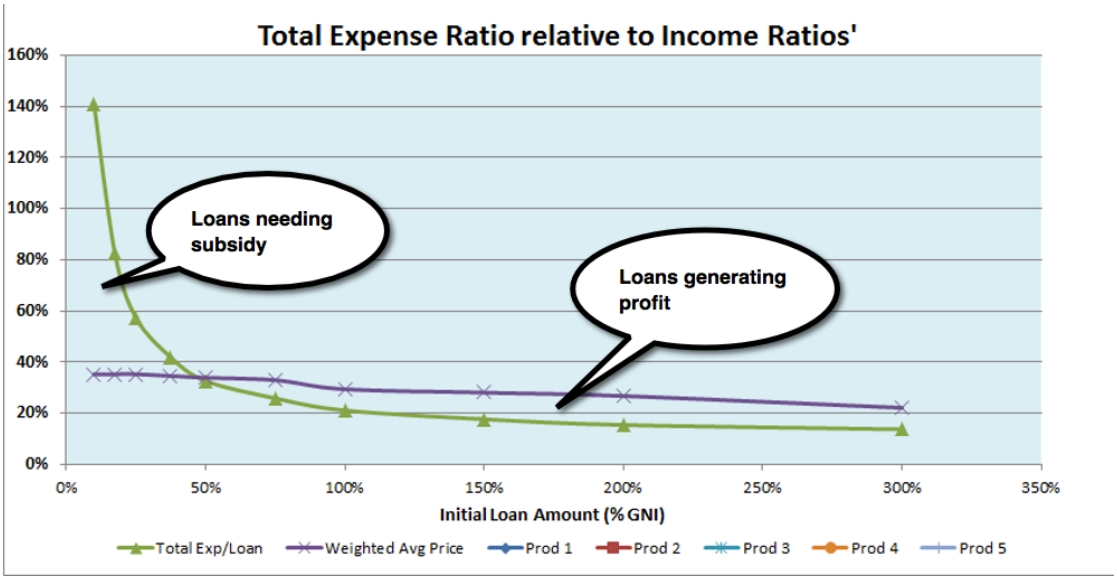
In the graph above, the OER line is flat for loans above 150% GNI per capita. It transitions to a sloped line from 150% to about 75%. It then increasingly becomes a steeper line that approximates a vertical line. These figures match those indicated in MFT's paper from 2011 paper Is Transparency Enough? What is Fair and Ethical in Pricing? The figures also reflect the reality that the cost curve must be an asymptotic curve where the OER approaches infinity as the loan amount approaches zero.

In conclusion: For those MFIs providing loans under 50% of GNI/capita to at least some of its clientele, the OER of these loans are very high, even scarily high. If these loans are to cover their costs, the prices will need to be equally as high, or the subsidies need to come from elsewhere.

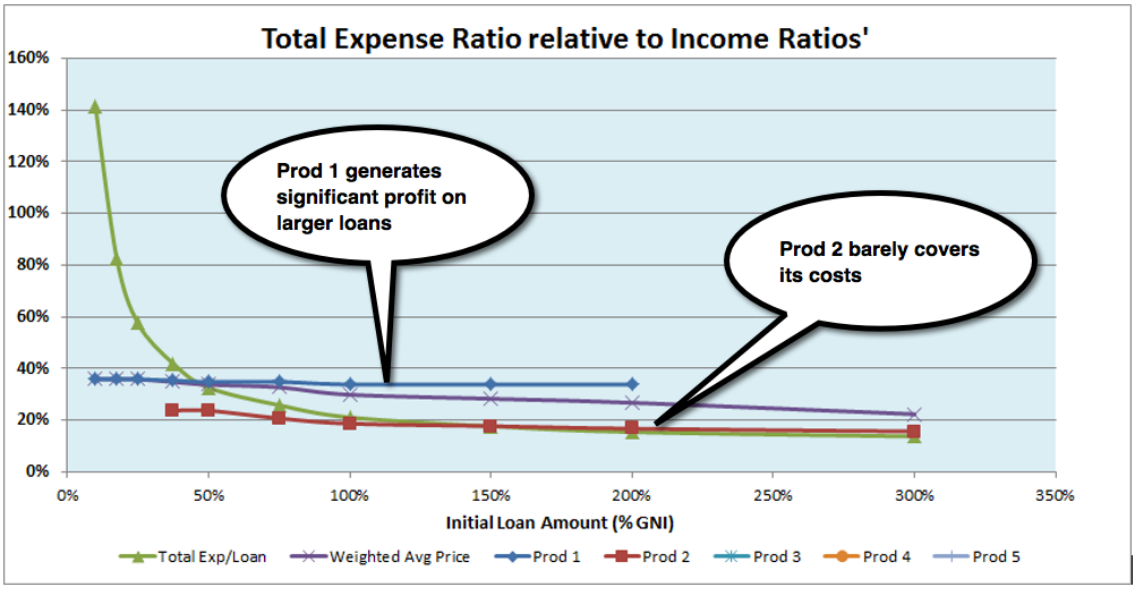
Part II: Comparing Income and Expense, Client-by-Client

We now have income and expense figures for each size of loan offered by this MFI, and we can compare them. The next graph shows two lines – the Total Expense Ratio, which is a dramatic curve, and the Weighted Average Price, calculated by using the distribution of clients by loan size and the prices charged on each size loan.

As expected, the smallest loans are not priced high enough to cover their full costs and the MFI therefore loses money on these loans. However, once loan sizes exceed 50% GNI per capita, their price exceeds costs and the MFI generates profit. It is important to recognize that these profit and loss figures are per unit of portfolio, so this information needs to be correlated to the amount of portfolio in each segment to determine the overall financial performance of the MFI. In other words, if the amount of portfolio in loans under 25% of GNI per capita is quite small, the MFI has modest losses. We'll do these calculations shortly.



Before doing those calculations, we can use the per product price calculations to evaluate the performance of each product. This next graph shows that Prod 1 has a consistently higher price than Prod 2, staying very close to 35% for loans ranging from 5% of GNI to 200% of GNI. As the cost of the larger loans drops much lower than the price, the MFI generates substantial profits on these larger loans in Prod 1.



Prod 2 has a much lower price, as shown by the red line. On the smallest amounts (around 40% GNI), the price is about 24%. The price drops continually, reaching about 12% on the largest loans at 300% of GNI per capita. In other words, this product sees some losses on the smallest loans in Prod 2, and likely doesn't generate enough profit on the largest loans to offset these losses.

Finally, the detailed table to the right shows the APR for each loan product for each loan amount and then calculates the spread, as the difference between the Total Expense Ratio and the APR. These figures are applied to the average balance per client figures to determine income, expense, and net result for clients at each loan amount. These figures are then multiplied by the number of clients at each loan amount to generate aggregate profit/loss figures. The very bottom rows tally the cumulative profit/loss figures for each product and the institution.

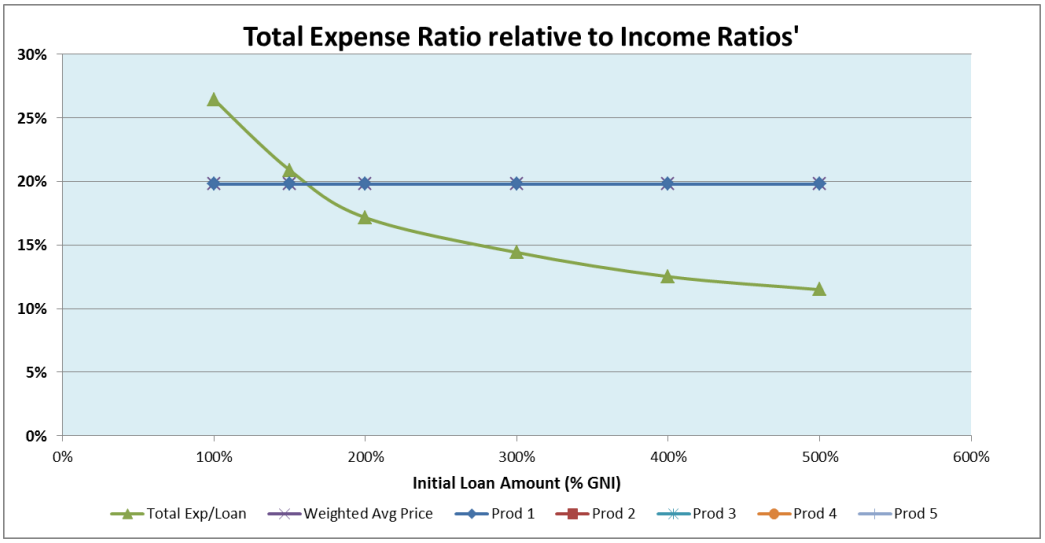
Original Loan (% GNI/Cap)		5%	10%	18%	25%	38%	50%	75%	100%	150%	200%	300%	400%	500%
APR (int + fee)														
Weighted Avg APR (int + fee)			36%	36%	36%	35%	34%	33%	30%	28%	27%	22%	18%	14%
	Village Banks		35.9%	35.9%	35.9%	35.4%	34.9%	34.9%	33.9%	33.9%	33.9%			
	Individual					23.8%	23.8%	20.8%	18.8%	17.8%	16.8%	15.8%	14.7%	13.6%
	Spread	.	-105.4%	-46.7%	-21.6%	-7.1%	1.2%	6.9%	8.7%	10.6%	11.3%	8.6%	5.3%	1.5%
1	Village Banks	.	-105.4%	-46.7%	-21.6%	-6.6%	2.2%	9.0%	12.7%	16.2%	18.4%	.	.	.
2	Individual	.	.	.	.	-18.2%	-8.9%	-5.1%	-2.4%	0.1%	1.3%	2.0%	1.9%	1.5%
Profit/Loss Per Client														
Income per client			202	365	557	802	1,100	1,520	1,972	2,734	3,590	3,062	3,969	4,752
1	Village Banks		202	365	557	814	1,129	1,605	2,203	3,173	4,443			
2	Individual					577	811	1,010	1,285	1,755	2,323	3,062	3,969	4,752
Cost per client			794	839	893	968	1,063	1,201	1,396	1,689	2,076	2,682	3,442	4,231
1	Village Banks		794	839	893	965	1,057	1,192	1,378	1,661	2,032			
2	Individual					1,017	1,114	1,256	1,451	1,750	2,141	2,682	3,442	4,231
Profit/Loss Per Client			(592)	(474)	(336)	(166)	38	319	576	1,045	1,514	380	527	520
1	Village Banks		(592)	(474)	(336)	(151)	72	414	826	1,512	2,410			
2	Individual					(440)	(303)	(245)	(166)	5	182	380	527	520
Profit/Loss, Aggregate														
Total Income			4,556,968		12,585,913		34,219,302	40,123,160	29,781,301			33,928,386		22,569,999
1	Village Banks		4,556,968		12,585,913		31,906,788	36,284,082	24,896,497			25,101,407		
2	Individual						2,312,515	3,839,078	4,884,804			8,826,979		22,569,999
Total Costs			17,934,282		20,170,757		33,046,707	31,705,160	21,080,393			19,619,193		20,098,173
1	Village Banks		17,934,282		20,170,757		29,871,930	26,934,228	15,565,926			11,483,079		
2	Individual						3,174,777	4,770,932	5,514,468			8,136,114		20,098,173
Total Profit/Loss			(13,377,314)		(7,584,844)		1,172,596	8,418,000	8,700,908			14,309,193		2,471,826
1	Village Banks		(13,377,314)		(7,584,844)		2,034,858	9,349,854	9,330,572			13,618,327		
2	Individual						(862,262)	(931,854)	(629,664)			690,865		2,471,826
Cumulative Profit/Loss			(13,377,314)	(13,377,314)	(20,962,158)	(20,962,158)	(19,789,563)	(11,371,563)	(2,670,655)	(2,670,655)		11,638,538	11,638,538	14,110,364
1	Village Banks		(13,377,314)	(13,377,314)	(20,962,158)	(20,962,158)	(18,927,301)	(9,577,447)	(246,875)	(246,875)		13,371,452	13,371,452	13,371,452
2	Individual						(862,262)	(1,794,116)	(2,423,780)	(2,423,780)		(1,732,914)	(1,732,914)	738,912

When an MFI has activity on the curve, there are likely significant cross-subsidies

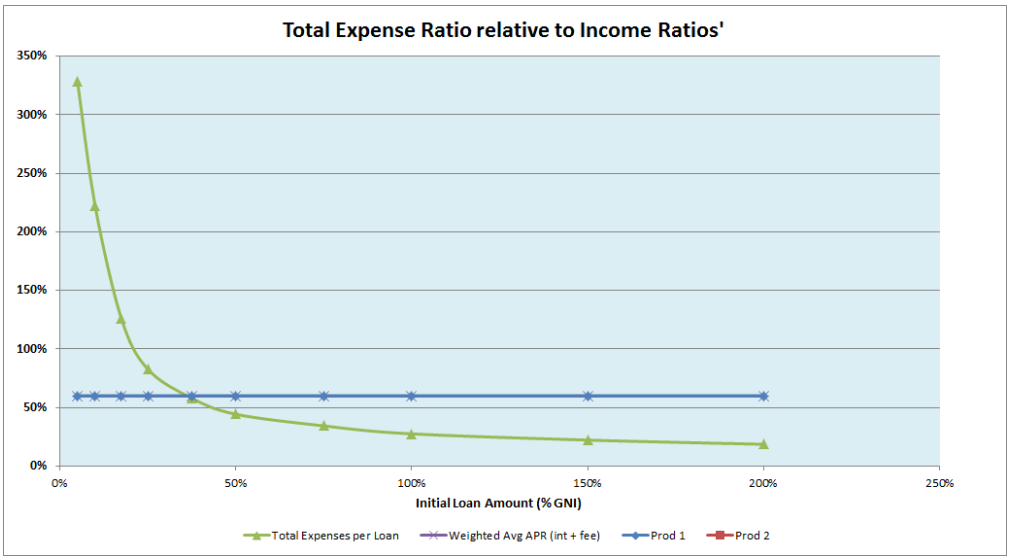
Everything we see in this analysis was generated by applying standard business logic, but the results surprise us because they don't reflect what we see in standard business. As we find so often in microfinance, we can use our *tools* from business school, but we need to look at the results with open eyes and not apply our *judgements* we learned in business school. Microfinance is a different world from traditional finance when you reach the steep portion of the curve.

Cross-subsidies make sense in business logic, but we don't generally see them so pronounced in traditional finance because nearly all of the activity is on the right side of these graphs, on the flat part of the curve. Credit card financing deals with smaller amounts, and that is one reason it is higher priced. Some of microfinance is on the flat part of the expense line, e.g., loans over 200% of GNI per capita (giving and average loan balance of 100% of GNI per capita). Some MFIs work in this area, as we saw in Bolivia, and some MFIs work exclusively in this area, such as ProCredit.

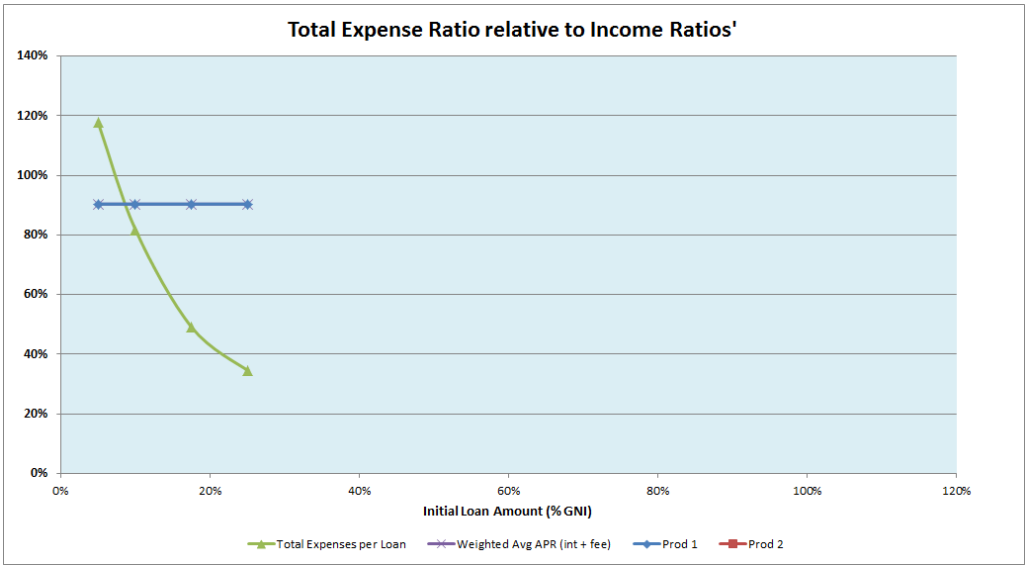
The graph below shows activity for MFIs like ProCredit, who work in the "safe area." Except for the smallest loans at 100% of GNI, every loan is profitable, and most of them are profitable to approximately the same degree – the results of a flat price line and flattish cost line. Although this MFI is still meeting a market need, it would likely receive criticism from others in the industry for not making small enough loans.



Thus, another strategy is to make the very small loans but to also cover a broad range of loan sizes, as do MFIs such as Banco Sol. The next graph shows how low prices can be charged to every client, and the losses coming from the very smallest loans are offset by moderate profit levels from the largest loans. Cross-subsidies enable this strategy of working with the poorest, offering them low, affordable prices, and still being profitable.

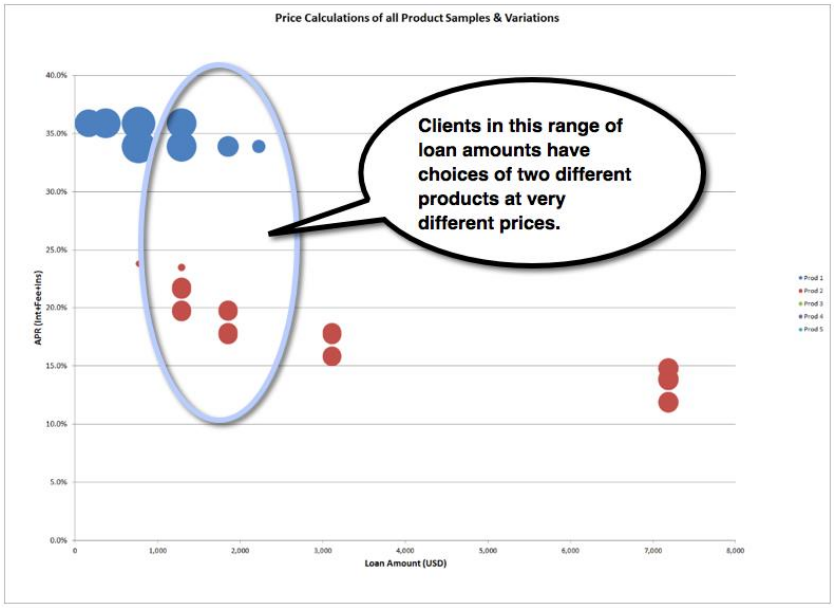


The last graph shows the approach of MFIs such as Banco Compartamos, or many of the MFIs in Mexico and Philippines. In these two countries, MFIs offer *only* extremely small loans, with the largest loan size being on the order of 30% of GNI per capita. All of their activity is on the steepest part of the curve. Even with well-designed structures and staff working efficiently, the operating cost ratios are extremely high. Even when charging high prices, the smallest loans still lose money. As there is not a lot of portfolio in larger loan sizes, the MFI has no place to generate profits to offset the losses than to continue to charge the very high prices on the somewhat larger loans.



Looking again at the pricing scatterplot for the MFI with two products. One product is targeted to smaller loan sizes and is higher priced. The other product is larger loan amounts at a much lower price. However, there is a significant overlap of identical loan amounts for the two products, at very different prices. Consider a loan of $2,000, available in both products; it has a price of 34% for Product 1 and 20% for Product 2. Product 1 is a group product and should therefore arguably have lower costs than Product 2, which is an individual product, but it has a much higher price. There appears to be some cross-subsidization, and the

Balanced Pricing calculations we generated indicate the same. Enabled by this analysis, management could revise the coverage and prices of the two loan products to achieve better balance.



CONCLUSION

Cross-subsidies do take place in microfinance, and very often to a significant degree. We haven't recognized that reality, we haven't had a means to measure that reality, and we haven't have criteria to judge that reality. Is it responsible practice to subsidize $200 loans with profits from the larger $2,000 loans? If so, to what degree? Perhaps more troubling, is it responsible practice to subsidize $2,000 loans with profits made from the smaller $200 loans? Should the poor subsidize the less poor? Or is all subsidy to be avoided? If so, should responsible MFIs charge 300% on their $100 loans, 100% on the $200 loans, and 20% on the $2,000 loans?

The approach presented in this paper can help us advance discussion on these issues. By improving our understanding of how expenses and prices form a curve, we can improve our definitions of responsible practice and managers can make wiser decisions that achieve more balance in what may currently be a chaotic situation hiding behind an overall RoA figure. Financial institutions working near the edges of financial inclusion operate in an environment where different interpretations of financial ratios apply and where benchmarks shift quickly. There is a reason why conventional finance chose not to extend this deeply, and microfinance needs to be fully cognizant of this different environment.

Being a Balanced Business goes beyond the obligation "don't break any laws". A balanced business respects its clients and doesn't take advantage of them. A balanced business strives to balance its own needs with the needs of its client base. A balanced business that respects its clients will find the approach presented in this paper to be intellectually stimulating and provide a useful new perspective to use as it makes decisions about who it works with, the design of its products, and the prices of those products. As Kant said, "Always recognize that human individuals are ends, and do not use them as means to your end."