

Consumption, Commercial or Mortgage Loans

Does it Matter for MFIs in Latin America?¹

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Introduction

Microfinance institutions (MFIs) are not all alike—they are different sizes, have different missions, serve different client groups, and can offer different products. And increased maturation and competition in many microfinance markets have only accelerated this last distinction regarding product type. The product spectrum at the end of the market has moved beyond the quintessential microenterprise loan to a wider variety of products. Previous research on this area has already shown that MFIs from Latin American and the Caribbean (LAC) are very diverse in terms of the credit products that they offer, and that these differences are often country specific.²

Different credit types are based on different lending technologies and different ways to measure repayment capacity, ability of a client to repay, and different repayment incentive mechanisms. Therefore, it is expected that different credit types have different cost structures, interest rates, and probably, different levels of portfolio quality and profitability.³ The main question explored in this paper is whether and how MFIs with different combinations of loan products achieve different levels of performance?

The following analysis shows that product composition does matter for MFI performance. In particular:

1. The author appreciates the comments and suggestions from Jake Kendall, Christoph Kneiding, Richard Meyer, and Blaine Stephens. All errors and omissions remain my own responsibility.

2. Gehrke, Matthew and Renso Martínez (2007), "First Look: The Diverse Latin American Microfinance Market", *MicroBanking Bulletin* No. 15, Autumn 2007, pp. 20-26.

3. Navajas, Sergio, Enrique Navarrete, Lilian Simbaqueba, Mario Cuevas and Gehiner Salamanca (2006), "Indicadores de Microfinanzas en América Latina: Rentabilidad, Riesgo y Regulación", *Serie de Informes de Buenas Prácticas del Departamento de Desarrollo Sostenible, Banco Interamericano de Desarrollo*.

- More participation of mortgages is associated with smaller MFIs in terms of borrowers, lower operating expenses as percentage of average gross loan portfolio (GLP) and lower yields, higher arrears, and no difference in defaults and profitability levels.

- In comparison with microenterprise loans, higher shares of commercial loans are associated with larger aggregate average loan sizes as percentage of Gross National Income per capita (GNI) and larger MFIs by GLP, higher cost per borrower, lower yields and lower portfolio quality.⁴

- These findings are relevant for different countries because, as discussed in the following section, many LAC microcredit markets have diversified product offerings, with commercial, consumption and mortgages playing relevant roles. However, the structure of LAC microcredit markets in the 2006-2008 period that we analyze is very stable, with the exception of some large licensed MFIs and cooperatives that are downscaling by increasing their involvement in microcredit loans.

At the heart of this analysis is an effort to classify the credit products offered by MFIs. Credit products may be classified based on who the recipient is of credit, as well as the main sources for repayment and collateral used. Users of credit from microfinance providers range from microenterprises and households to formal legal entities. Also, depending on both the type of collateral and main source for repayment, loans may be based on real estate, salaries, business profits and microenterprise profits.

4. Some of the effects of commercial loans on performance are expected and may not be surprising to many. However, their statistical significance suggests that the data quality and methodology used are useful in capturing the general patterns of the data.

Table 1

Median Loan Size as % of GNI per Capita, 2008

Product Type	NGOs	CU	Licensed	All
Median Loan Size % of GNI per Capita				
Commercial	1,011.5	426.7	621.1	721.9
Consumption	34.1	47.6	40.2	39.6
Microenterprise	18.7	59.6	35.2	25.4
Mortgage	94.3	164.1	445.4	189.2
Aggregate	18.5	55.8	43.5	25.7
Number of MFIs by Product Type and MFI Type				
Commercial	12	7	33	52
Consumption	51	20	48	119
Microenterprise	103	20	61	184
Mortgage	22	14	35	71
Aggregate	104	20	62	186

Medians were calculated after removing observations where loan size was zero.

This paper adapts the Microfinance Information Exchange's (MIX) credit product classification to analyze regional trends in LAC microfinance, as constrained by data availability on MFI portfolios. These categories include commercial, consumption, mortgage, and microenterprise loans. Median loan size by credit type and MFI type are presented in **Table 1**, only for those MFIs that actually offered each credit type in 2008:⁵

Commercial loans include all loans to formal legal entities that are not otherwise classified as microenterprises (regular microenterprises, other financial institutions, etc.), regardless of the type of collateral provided. These loans are grouped together under the assumption that formal legal entities can provide traditional collateral and that traditional lending technologies, like those used by traditional commercial banks, can be used to evaluate these loans.

Consumption loans are based largely on salaries since the main source of repayment is income from stable employment, and employees usually repay in order to avoid the garnishment of their wages by the lender.

5. See Gehrke and Martínez (2007) for more details.

For **mortgages**, the main collateral is real estate and the repayment capacity is based on a combination of business profits, salaries and other household revenues.

Microenterprise loans are what many people usually refer to as microcredit. The main source of repayment for this type is microenterprise profits, and the main incentive to repay is continued access to new and larger loans, not fear of losing collateral. Village banks, solidarity groups and individual loans are the traditional lending technologies used by MFIs to determine ability and capacity to repay, and to design the contract mechanism for microenterprise loans.

In practice there are divergences between the data actually collected and the definitions previously discussed. This may reduce the comparability of data between countries, but does not have an impact on intertemporal comparisons, as the same definitions have been used in the 2006-2008 period.

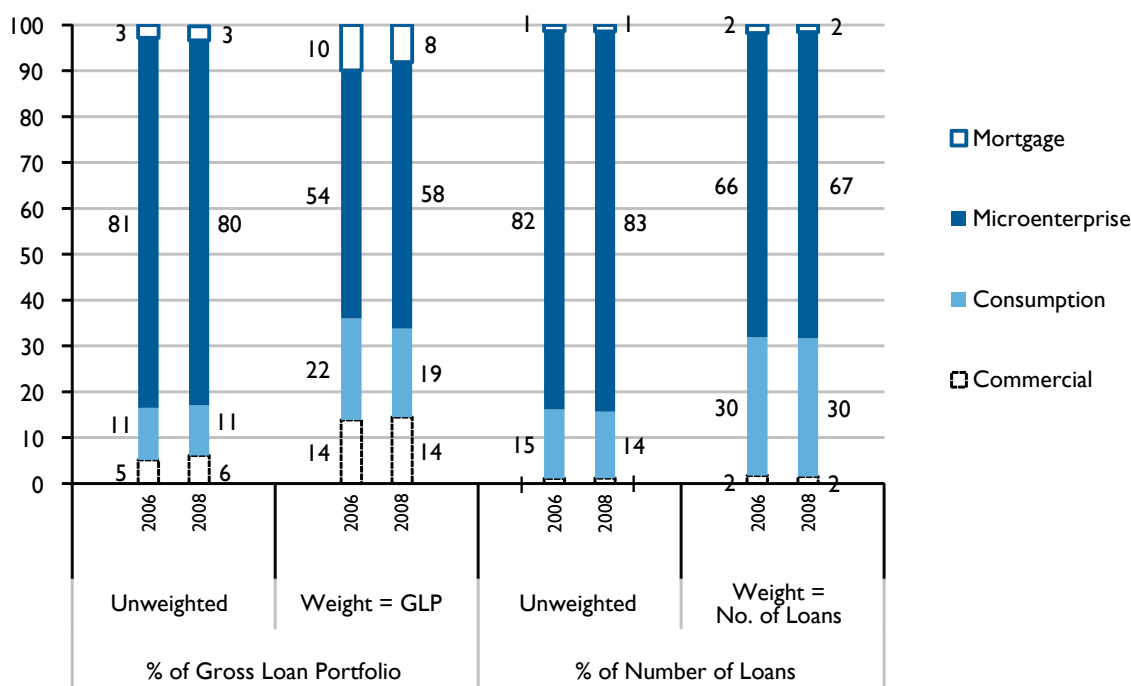
Microfinance Information Exchange, Inc. (MIX) started collecting the data on MFI credit types for LAC MFIs in fiscal year (FY) 2006, including information on both the volume and number of loans outstanding in each category. MIX expanded coverage to all regions for 2008 data. This report focuses on the period 2006-2008 and it is based on preliminary information for 2008. This report analyzes credit type data for 322 MFIs with an average of 2.5 years of data per MFI in the 2006-2008 period.

Three main sections lay out the findings of the paper. The first section presents historical trends and portfolio composition numbers by legal status and country. The second analyzes the clustering of MFIs around specific credit type combinations and their stability over time. The last section discusses the main interactions between the changes in the shares of credit products with profitability, portfolio quality, cost structures, size, and growth. The summary of main findings and discussion of future steps for research are at the end.

Historical Trends and Portfolio Composition

This section looks at the general product landscape of MFIs in LAC and its evolution in the 2006-2008 period. One of the main findings in this section is that some microcredit markets in LAC are more diversified than others, but still

Figure 1
Credit Type Shares, Unweighted and Weighted, 2006-2008



Based on 201 LAC MFIs reporting data for both years.

microenterprise loans are the most important credit types in terms of both GLP and number of loans. However, the degree of diversification is country specific, and in general, the second and third most important credit types after microenterprise loans are consumption and commercial loans. Moreover, the microfinance industry in LAC is very stable in the 2006-2008 period, as the shares of credit types do not change significantly. A discussion of the main results follows.

Microenterprise lending is still the most important activity for most MFIs in LAC: On average, microenterprise loans represent 80 percent of the total gross loan portfolio (GLP) and 83 percent of the total number of loans disbursed (Figure 1). Consumption is the second most important activity, representing 11 percent of GLP and 14 percent of the number of loans outstanding. However, some of the largest MFIs by either number of borrowers or GLP have a stronger concentration on consumption loans in comparison with smaller MFIs, explaining that weighted by GLP the shares of GLP for microenterprise and consumption loans are 55 percent and 21 percent respectively,

and weighted by number of loans the shares as percentage of total number of loans are 67 percent and 30 percent respectively. For the other two credit types and without weighting, the share of commercial loans is twice that of mortgages as percentage of GLP, and they are almost the same as percentage of number of loans.

The unweighted shares of product lines are very stable in the 2006-2008 period, both as percentage of GLP and in number of loans, but some large licensed MFIs and cooperatives are downscaling: Weighted shares exhibit larger changes than unweighted shares, namely an increase of microenterprise and a reduction in consumption (Figure 2 and Figure 3). In particular, the weighted increase in the share of microenterprise loans as percentage of GLP is driven by licensed MFIs, from 49 percent to 54 percent of GLP in the 2006-2008 period. The increase in the shares as percentage of the total number of loans is driven by cooperatives (credit unions and cooperatives) with their share of microenterprise loans increasing from 53 percent to 62 percent of the total number of

Figure 2
Unweighted Shares of Gross Loan Portfolio and Number of Loans by Legal Status

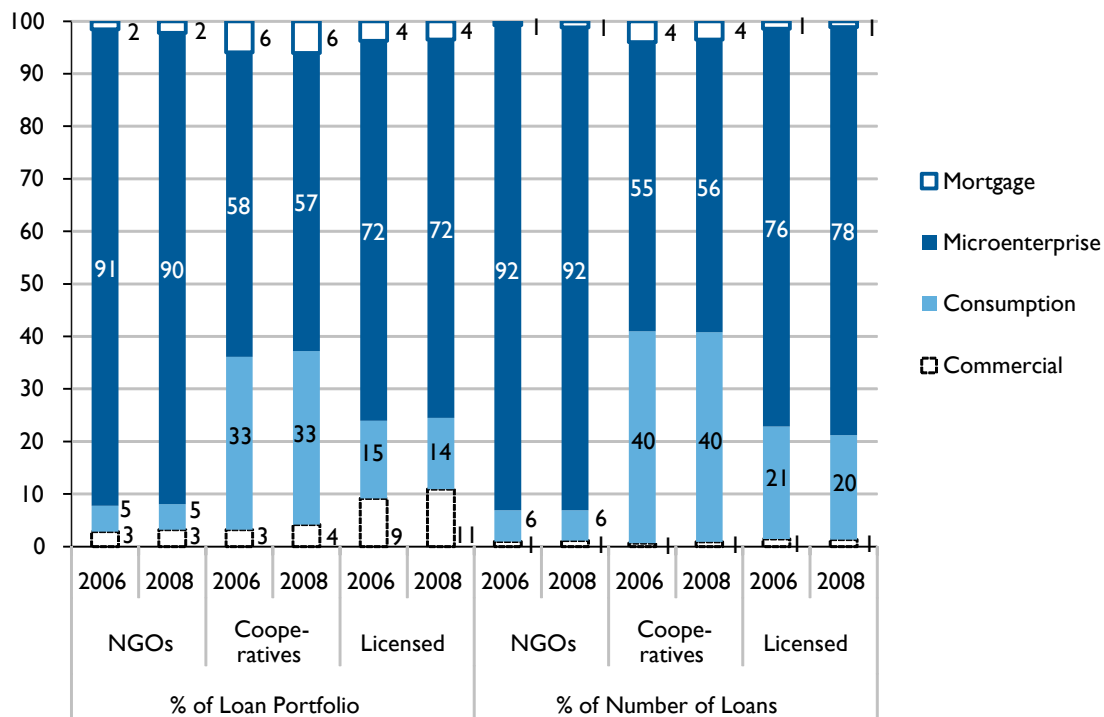
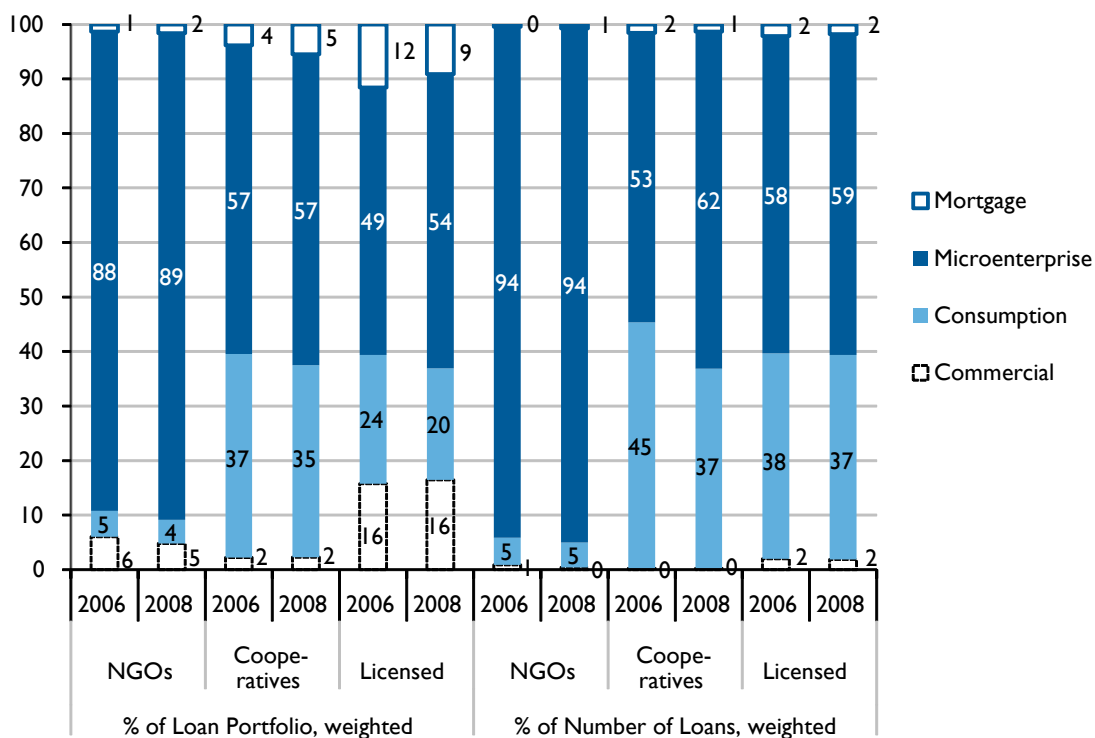


Figure 3
Weighted Shares of Gross Loan Portfolio and Number of Loans by Legal Status



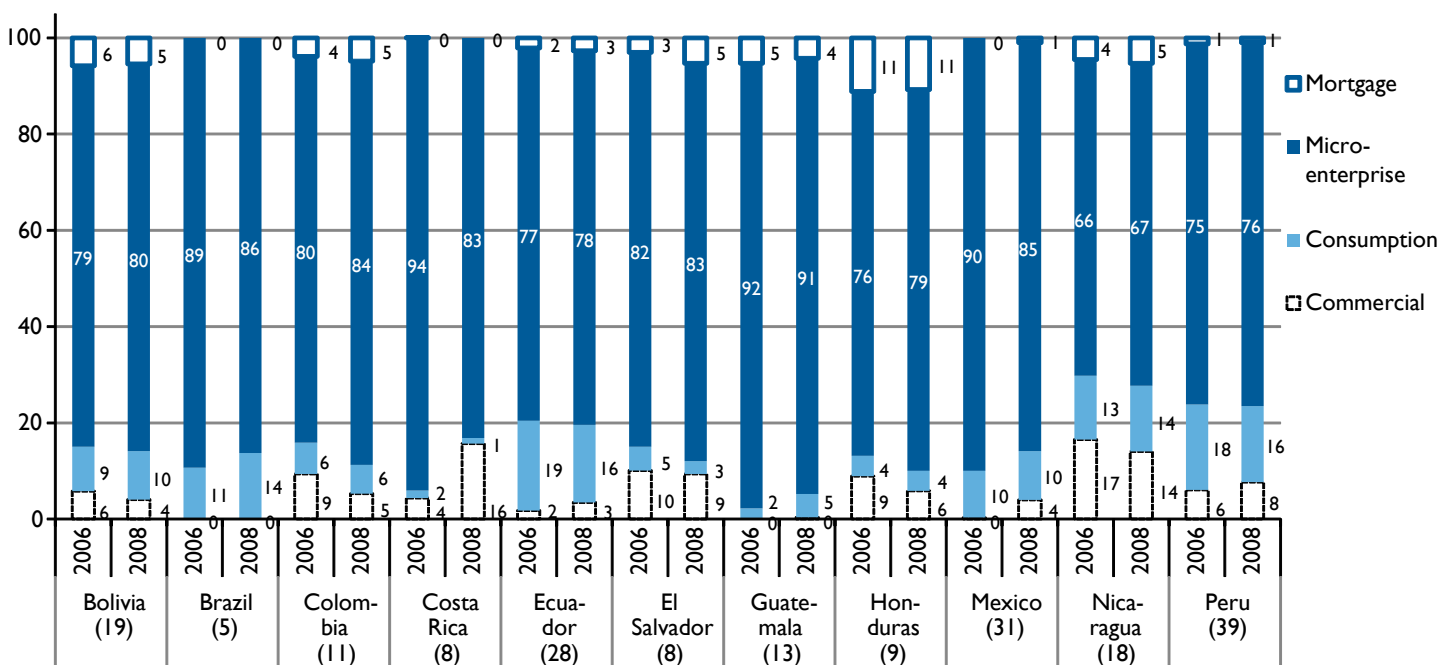
loans in the 2006-2008 period. The increase in the weighted shares of microenterprise loans over consumption loans suggests that some larger licensed MFIs and cooperatives are downscaling by incorporating microenterprise loans as one of their main credit products.

Non-Government Organizations (NGOs) are the least diversified MFIs, with 91 percent of their GLP and 92 percent of their loans concentrated in microenterprises (Figure 2). After NGOs, licensed MFIs are the second least diversified—whether they are banks or non bank financial institutions—with 72 percent of their GLP and 77 percent of their loans concentrated in microenterprises. The second most important component for licensed MFIs is consumption, representing 25 percent of their portfolios and 21 percent of their loans. The most diversified MFI types are cooperatives, with microenterprise loans representing 57 percent of their portfolios and 56 percent of their loans. The second most important credit type for cooperatives is also consumption loans, representing 33 percent of their GLP and 40 percent of their loans.

Nicaragua, Peru, and Ecuador are the most diversified countries: In these three countries, microenterprise loans represent between 67 and 78 percent of their GLP in 2008. **Guatemala, Brazil, and Mexico are the least diversified countries** with microenterprise loans representing between 85 and 92 percent of their GLP in 2008 (Figure 4). In terms of commercial loans, the more developed markets are Costa Rica, Nicaragua and El Salvador, with commercial loans representing between 9 and 16 percent of GLP. The country with the most developed consumption market is Ecuador with 16 percent of GLP on average, followed closely by Brazil, Nicaragua and Peru (each with 14 percent of GLP). Mortgages have the largest penetration in Honduras, Bolivia, El Salvador and Nicaragua, representing between 5-11 percent of GLP.

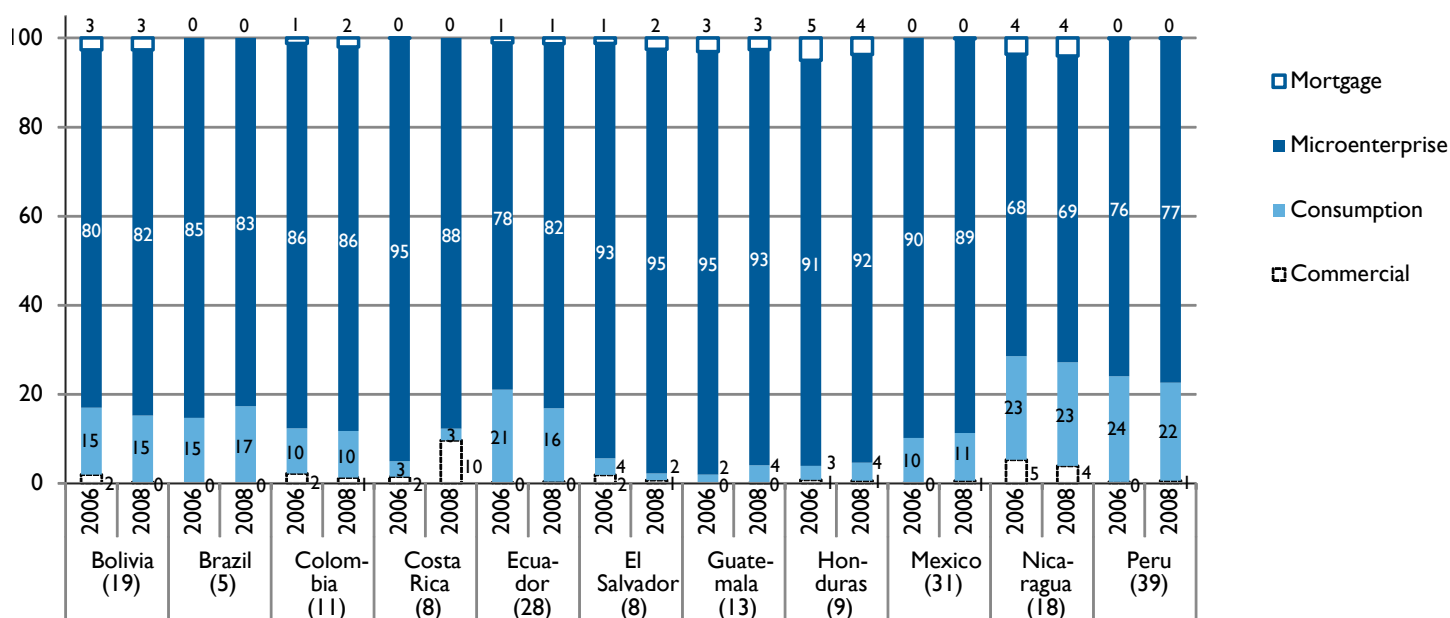
The shares of product types were very stable in most countries in the 2006-2008 period. Costa Rica had the most dynamic market, with microenterprise loans dropping from 94 percent to 83 percent of GLP and commercial loans jumping from 4 percent to 16 percent of GLP.

Figure 4
Credit Type as % of Gross Loan Portfolio, 2006-2008



Based on countries with at least 5 MFIs reporting data for both years. Number of MFIs in parenthesis.

Figure 5
Credit Type as % of Number of Loans, 2006-2008



Based on countries with at least 5 MFIs reporting data for both years. Number of MFIs in parenthesis.

Mexico and Colombia are second in terms of dynamism, where the shares of microenterprise loans experienced a decrease of 5 percentage points (pp.) and an increase of 4 pp. as percentage of GLP respectively. For the other countries, most of the changes in shares of credit types as percentage of GLP are around 2 pp. Costa Rica was also the most dynamic country when changes are measured for shares as percentage of total number of loans (**Figure 5**). In terms of shares as percentage of loans, the other two most dynamic countries are Ecuador and Brazil, but the absolute changes are smaller than those observed for Mexico and Colombia regarding shares as percentages of GLP.

Stable MFI Clusters in 2006-2008

The previous aggregate analysis of the data by charter type, country and year overlooks important MFI clustering around specific combinations of credit products. One option for classifying MFIs by credit types is to group them by the dominant product, but this assumes that the dominance (or specific combination) of the other credit types is irrelevant or neutral, implying that only the

dominant product has an influence on the performance of the MFI. For instance, MFI A with 75 percent microenterprise and 25 percent consumption will be in the same category as MFI B with 75 percent microenterprise and 25 percent mortgages. The challenge is to capture some of the richness and variability in the data while keeping the analysis simple.

For the results discussed in this section, commercial loans and mortgages were combined under the same category, CoMo, in order to simplify the analysis, and because for most MFIs their shares are the lowest.⁶ This aggregation results in only three credit type categories: CoMo, consumption, and microenterprise loans. The combined category is composed mostly by commercial loans for shares as percentage of GLP, and equally by both commercial and mortgages for shares as percentage of number of loans. By combining the distribution of each product types, MFIs were classified in seven categories; their average compositions by credit types

6. And coincidentally, they have quite similar effects on the performance of MFIs as discussed in the following section.

Table 2
Clustering of MFIs and Average Credit Product

Categories	Percentages of GLP				Categories	Percentages of Number of Loans			
	Commercial & Mortgages (CoMo)	Consumption (Con)	Microenterprise (Mic)	# MFIs		Commercial & Mortgages (CoMo)	Consumption (Con)	Microenterprise (Mic)	# MFIs
i) 100% Mic	0	0	100	146	i) 100% Mic	0	0	100	146
ii) 95% Mic, 3% Con	2	3	95	74	ii) 95% Mic, 3% Con	0	4	96	77
iii) 86% Mic, 14% Con	1	14	86	36	iii) 86% Mic, 14% Con	0	14	86	10
iv) 83% Mic, 16% CoMo	16	1	83	12	iv) 92% Mic, 6% CoMo	6	2	92	35
v) 50% Mic, 50% Con	3	51	46	45	v) 50% Mic, 50% Con	0	48	52	68
vi) 50% Mic, 50% CoMo	45	3	52	36	vi) 72% Mic, 22% CoMo	22	7	72	10
vii) 50% Mic, 25% Con, 25% CoMo	25	27	49	53	vii) 52% MIC, 38% Con, 9% CoMo	9	38	52	56
Total	9	11	80	402	Total	3	15	83	402

See footnote 7 for details on the methodology used to define the clusters.

are presented in **Table 2**.⁷ For share as percentage of GLP these categories are: i) Only Microenterprise, ii) Mostly Microenterprise, iii) Mostly Microenterprise with Consumption, iv) Mostly Microenterprise with CoMo, v) Microenterprise/Consumption (50/50), vi) Microenterprise/CoMo (50/50), and vii) Most Diversified MFIs (50/25/25). The same names can be used to describe the categories based on shares as percentage of loans, with the exception of the last two categories: vi) Mostly Microenterprise with CoMo, but

with more CoMo than category iv), and vii) Most Diversified MFIs (52/38/9).

There is a large overlap when classifying MFIs using the categories defined by shares as percentage of GLP and shares as percentage of the number of loans, with 292 observations out of the 402 in the sample being in equivalent categories (73 percent of the sample). Note that this doesn't have to necessarily be the case, because there is not a perfect correspondence between shares as percentage of GLP with shares as percentage of number of loans, and between the percentages of the main categories in the top of **Table 2** with respect to those at the bottom. In addition, most MFIs did not noticeably change their credit type combination in the 2006-2008 period, since 132 MFIs out of 201 (66 percent) stayed in the same category for both years, and for the categories defined by both GLP and number of loans (**Table 3**).

While one-third of MFIs did change portfolio composition, in terms of the dynamism of the market, moving from groups i) with 100 percent microenterprise loans to group

7. The general rule used for classifying MFIs according to each credit type share was that all MFIs with the same shares should be in the same subgroups (i.e. all the 0 percent should be in the same subgroup, same for all the 100 percent), but subgroups could contain MFIs with different share values. For instance, for the CoMo category, the 66 percent and 75 percent percentiles are 4.6 percent and 11.4 percent of GLP, and lower percentiles including median are 0 percent. Based on any of these thresholds it is possible to define two subgroups, but regardless of which percentile is used as threshold, one of the subgroups will contain a lot of zeros. In this case, using the 66 percentile results in 8 global categories but using the 75 percentile results in only 7 global categories. By the same principle, consumption shares were divided in two subgroups using the 66 percentile (8.4 percent) because lower percentiles were 0 percent, and microenterprise loans were divided in 3 groups using the 33 and 66 percentiles of 76.3 percent and 100 percent. The combination of all subgroups resulted in the 7 global categories presented here.

Table 3
Changes in Credit Type Category in the 2006-2008 Period

Based on % of GLP in 2006	Based on % of GLP in 2008							Total
	100% Mic	95% Mic, 3% Con	86% Mic, 14% Con	83% Mic, 16% CoMo	50% Mic, 50% Con	50% Mic, 50% CoMo	50% Mic, 25% Con, 25% CoMo	
i) 100% Mic	58	17	1	2	2	3	0	83
ii) 95% Mic, 3% Con	2	18	6	2	1	1	1	31
iii) 86% Mic, 14% Con	1	5	7	1	2	1	1	18
iv) 83% Mic, 16% CoMo	1	1	0	1	0	0	0	3
v) 50% Mic, 50% Con	1	0	2	0	15	0	3	21
vi) 50% Mic, 50% CoMo	0	2	0	2	0	13	0	17
vii) 50% Mic, 25% Con, 25% CoMo	0	0	2	1	4	1	20	28
Total	63	43	18	9	24	19	25	201

Based on % of Loans in 2006	Based on % of Loans in 2006							Total
	100% Mic	95% Mic, 3% Con	86% Mic, 14% Con	92% Mic, 6% CoMo	50% Mic, 50% Con	72% Mic, 22% CoMo	52% Mic, 38% Con, 9% CoMo	
i) 100% Mic	58	17	1	4	2	1	0	83
ii) 95% Mic, 3% Con	2	22	0	3	3	0	0	30
iii) 86% Mic, 14% Con	1	0	1	0	2	1	0	5
iv) 92% Mic, 6% CoMo	1	3	0	10	0	2	1	17
v) 50% Mic, 50% Con	1	3	2	0	20	0	13	39
vi) 72% Mic, 22% CoMo	0	1	0	1	0	2	0	4
vii) 52% MIC, 38% Con, 9% CoMo	0	1	1	0	2	0	19	23
Total	63	47	5	18	29	6	33	201

See footnote 7 for details on the methodology used to define the clusters.

ii) with 95 percent microenterprise loans is not as important as moving to groups v), vi) or vii) with only 50 percent of microenterprise loans, or vice versa (from 50 percent microenterprise loans to close to 100 percent microenterprise loans). Only 12 MFIs (6 percent of the total) with close to 100 percent of their loan portfolio in microenterprises (groups i) and ii) reduce that share to over 50 percent of their loan portfolio (groups v), vi) and vii) in the 2006-2008 period. And only 10 MFIs (5 percent of the total) for which microenterprise loans were over 50 percent of their loan portfolio double their share of microenterprise loans in the 2006-2008 period.

Regression Analysis

The main question explored in this paper is whether differences in the shares of credit types offered by MFIs are associated with differences in their performance, as previously discussed. In this section the focus is on the significant results from regression analysis between the shares of each credit type, both as percentage of GLP and number of loans, and MFI performance, including outreach, growth, profitability, efficiency and portfolio quality. The particular set of performance indicators analyzed includes size of the MFI (both in term of number of borrowers and GLP in US dollars), growth rates for both indicators of size, average loan size per

Table 4
Shares as Percentage of GLP: Significant Regression Coefficients and Simulations for a 5 pp. Change in Shares

Regression Coefficients	Borrowers (million)		GLP (billion USD)		Borrowers (growth rates %)		GLP (growth rates %)		Loan Size		OER	
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
Commercial	Com	0.7	Com	0.6	0.3	Com		Com	0.3	0.3	Com	
Consumption	Con	0.6	Con	-0.6	Con	Con	-0.2	Con	-0.3	Con	Con	
Microenterprise	Mic	0.7	Mic	-0.3	Mic	Mic	0.2	Mic	-0.3	Mic	Mic	0.2
Mortgage	Mor	-0.7	Mor		Mor	Mor		Mor		Mor	Mor	-0.2
Regression Coefficients	Cost Borrower		Yield			PAR30		WOR		ROA		ROE
	FE		FE			FE		FE		FE		FE
Commercial	0.1	0.0	Com	-0.3	-0.1	Com		Com		Com		-0.9
Consumption	Con	-0.1	Con	0.3	0.2	Con	0.0	Con	0.0	Con	0.9	0.8
Microenterprise	Mic	0.0	Mic	0.1	-0.2	Mic	0.1	Mic	0.0	Mic	-0.8	Mic
Mortgage	Mor		Mor	-0.5	-0.3	Mor	0.1	Mor		Mor	-0.7	Mor
Simulation for a 5 pp. change	Borrowers (million)		GLP (billion USD)			Borrowers (growth rates %)		GLP (growth rates %)		Loan Size		OER
	FE		FE			FE		FE		FE		FE
Commercial	-	3.5	Com	3.0	1.5	Com		Com	1.5	1.6	Com	
Consumption	Con	-2.8	Con	(3.0)	Con	Con	(1.1)	Con	(1.5)	Con	Con	
Microenterprise	Mic	3.4	Mic	(1.5)	Mic	Mic	1.1	Mic	(1.6)	Mic	Mic	1.0
Mortgage	Mor	(3.5)	Mor	(3.4)	Mor	Mor		Mor		Mor	Mor	(1.0)
Simulation for a 5 pp. change	Cost Borrower		Yield			PAR30		WOR		ROA		ROE
	FE		FE			FE		FE		FE		FE
Commercial	0.3	0.2	Com	(1.7)	(0.5)	Com		Com		Com		(4.3)
Consumption	Con	-1.7	Con	1.2	2.6	Con	0.1	Con		Con	4.3	4.1
Microenterprise	Mic	0.2	Mic	(1.2)	Mic	Mic	(0.1)	Mic		Mic		(4.1)
Mortgage	Mor		Mor	(2.6)	(1.4)	Mor	0.4	Mor		Mor		(3.7)

FE: Fixed Effects, RE: Random Effects. See footnote 5 for details. No statistical significant effect was found for Growth Rates of Number of Borrowers and ROA.

Light Blue Cells represent the reference (omitted) category. For example, the first column under yields means that a 5 pp. reduction in the share of commercial loans is associated with a 0.5 pp difference or 1.7 pp. for microenterprise and consumption loans respectively, depending on how the change in shares is compensated so that the total still add up to 100%. For the second column, all the changes are vis-a-vis a change in the share of consumption loans, and so on.

Table 5
Shares as Percentage of Number of Loans:
Significant Regression Coefficients and Simulations for a 5 pp. Change in Shares

Regression Coefficients	Borrowers (million)		GLP (billion USD)		Borrowers (growth rates %)		GLP (growth rates %)		Loan Size		OER		
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
Commercial	Com	Com	Com	Com	Com	Com	Com	Com	Com	1.0	1.1	1.4	Com
Consumption	Con	Con	Con	-0.3	Con	-0.2	Con	-0.2	Con	-1.0	Con	Con	Con
Microenterprise	Mic	Mic	Mic	0.3	Mic	0.2	Mic	0.2	Mic	-1.1	Mic	Mic	Mic
Mortgage	Mor	Mor	Mor	Mor	Mor	Mor	Mor	Mor	Mor	-1.4	Mor	Mor	Mor
Regression Coefficients	Cost Borrower		Yield		PAR30		WOR		ROA		ROE		
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
Commercial	Com	0.2	0.1	Com	-0.3	Com	Com	Com	Com	Com	Com	-0.7	
Consumption	Con	-0.2	Con	0.3	Con	0.2	Con	0.0	Con	Con	Con	0.7	
Microenterprise	Mic	-0.2	Mic	-0.2	Mic	-0.2	Mic	0.0	Mic	Mic	Mic	-0.7	
Mortgage	Mor	-0.1	Mor	-0.5	Mor	Mor	Mor	Mor	Mor	Mor	Mor	Mor	
Simulation for a 5 pp. change	Borrowers (million)		GLP (billion USD)		Borrowers (growth rates %)		GLP (growth rates %)		Loan Size		OER		
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
Commercial	Com	-	-	Com	-	-	Com	-	Com	5.2	5.5	6.9	Com
Consumption	Con	-	-	Con	(1.6)	-	Con	(1.1)	Con	(5.2)	Con	Con	Con
Microenterprise	Mic	-	Mic	1.6	Mic	-	Mic	1.1	Mic	(5.5)	Mic	Mic	Mic
Mortgage	Mor	-	Mor	-	Mor	-	Mor	-	Mor	(6.9)	Mor	Mor	Mor
Simulation for a 5 pp. change	Cost Borrower		Yield		PAR30		WOR		ROA		ROE		
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
Commercial	Com	0.8	0.7	Com	(1.3)	-	Com	-	Com	Com	-	Com	(3.6)
Consumption	Con	-	-	Con	1.3	Con	1.0	2.5	Con	0.2	Con	Con	3.6
Microenterprise	Mic	-	Mic	-	(1.0)	Mic	-	(0.2)	Mic	(0.2)	Mic	Mic	(3.5)
Mortgage	Mor	-	Mor	-	(2.5)	Mor	-	Mor	Mor	-	Mor	Mor	-

FE: Fixed Effects, RE: Random Effects. See footnote 5 for details. No statistical significant effect was found for OER and ROA.

Light Blue Cells represent the reference (omitted) category. For example, the first column under yields in Table 4 means that a 5 pp. reduction in the share of commercial loans is associated with a 0.5 pp difference or 1.7 pp. for microenterprise and consumption loans respectively, depending on how the change in shares is compensated so that the total still add up to 100%. For the second column, all the changes are vis-a-vis a change in the share of consumption loans, and so on.

borrower as percentage of Gross National Income (GNI) per capita, operating expense as percentage of average GLP (OER), cost per borrower as percentage of GNI per capita, yield from loan portfolio as percentage of average GLP, portfolio at risk over 30 days (PAR30), write-off ratio (WOR), and profitability measured by both return over average assets (ROA) and return over average equity (ROE).⁸ In order to simplify the analysis of the regression results, only significant coefficients will be discussed (**Table 4 and Table 5**).

By definition credit type shares add up to 100 percent. This implies that a 5 percentage point (pp.) increase in one credit type needs to be compensated by a total 5 pp. decrease in the other credit types. One possibility is that the substitution effects between one particular credit type (i.e. microenterprise) and any of the other three credit types (commercial, consumption and mortgages) are the same, meaning that it doesn't matter what credit type is compensating for the changes in microenterprise loans, the effects will be the same. In this case, commercial, consumption and mortgages are neutral to each other with respect to the substitution effect with microenterprise. Another possibility is that there is only a trade-off between two of the credit types (i.e. microenterprise versus consumption loans), but that changes in the market shares of any of these two that are compensated by changes in any of the products outside those two does not have an impact on the performance of the MFI.

A higher share of mortgages as percentage of GLP is related with smaller MFIs in terms of borrowers, vis-à-vis all other credit type shares. In particular, a difference of 5 pp. in the share of mortgages is associated with

8. All regressions were estimated using the full sample of 309 MFIs, with an average of 2.5 observations per MFI, and after removing the top 5 and low 5 outliers. For every dependent variable, a regression was estimated using credit type shares as percentage of GLP and another one using shares as percentage of number of loans as main explanatory variables. The controls used on all regression include legal status (cooperatives and licensed, with NGOs being the omitted one), and dummies for those countries with more than 14 observations in the sample (Bolivia, Brazil, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Paraguay and Peru). Since it is impossible to estimate the regression coefficients for each of the four credit types share due to perfect multicollinearity, each regression was estimated four times by omitting a different share each time. Also, each regression was estimated under the fixed effects (FE) and random effects (RE) assumptions, and the best model was selected based on the Hausman test. Only significant coefficients for credit type shares are reported.

an average difference of 3,000 borrowers, both in either direction. This change represents 9 percent of the mean number of borrowers and more than 27 percent of the median number of borrowers in the sample. The effect on number of borrowers is only for the share of mortgages versus the shares of all the other three credit types (i.e. mortgage versus commercial shares, mortgage versus consumption shares, and mortgage versus microenterprise shares). This means that higher shares of any of the other credit types (commercial, consumption, and microenterprise) and a lower share of mortgages are associated with larger MFIs in terms of borrowers. This also means that for number of borrowers, commercial, consumption and microenterprise loans are neutral to each other because an increase in the share as percentage of GLP of any of these that is associated with a decrease in shares of either of the other two is not an important factor explaining differences in sizes between MFIs.

From the policy perspective, this result is important for countries where MFIs are already venturing into mortgage lending (Honduras and Bolivia are clear examples) or are planning to incorporate mortgages as a new product. This result suggests that there is an important trade-off in terms of outreach depending on whether mortgages are offered or not.⁹ However, the results are not clear in suggesting why this is the case. One hypothesis is that the amount of average mortgages is larger than other loans, and given a fixed loan portfolio, larger loans will imply fewer borrowers, but there are no significant results between the share of mortgages and average loan sizes so that we can rule out this hypothesis. An alternative explanation that it is not possible to test with the data available is that the mortgage assessments process is less standardized and more laborious compared with other credit types.

A higher share of microenterprise loans as percentage of the total number of loans vis-à-vis the share of consumption loans is associated with larger MFIs in terms of GLP, but no effect is found for the other credit type shares as percentage of total number of loans.

9. Following the strict interpretation of the econometric model, this result implies that given a fixed GLP to be allocated into different credit types, the less the percentage allocated to mortgages, the larger the number of borrowers that will be served.

The trade-off between microenterprise and consumption loans as percentage of total number of loans (\$1.6 million difference in GLP for a 5 pp. difference in the shares of microenterprise/consumption) has a similar effect on MFI size measured by GLP than the one generated by the trade-off between commercial and microenterprise loans as percentage of GLP. The mechanism behind this result is not clear through the data. One hypothesis is that the potential market for microenterprise loans is larger than the potential market for consumption loans (given relative supply and demand for each product type), and that MFIs with a larger focus on microenterprise loans instead of on consumption loans have been able to take advantage of this opportunity. However, there are no significant effects for the same shares and both size measured by number of borrowers and aggregate average loan size per borrower as percentage of GNI per capita.

Credit type shares do not play a relevant role explaining the differences between growth rates of MFIs size, both in terms of number of borrowers and GLP. A 5 pp. difference in the share of microenterprise loans vis-à-vis the share of consumption loans explains only 1.1 pp. and 1.2 pp. of the differences in growth rates of number of borrowers and GLP respectively. These are small effects since the average growth rates are 29 percent and 37 percent respectively. This is an important result because it suggests that product diversification does not enhance an MFI's growth prospects considerably.

Larger yields as percentage of average GLP are associated primarily with larger shares of consumption and secondary with larger shares of microenterprise loans, both as percentage of GLP, in comparison with the shares of commercial loans and mortgages; and vice versa for the last two credit types. For instance, a 5 pp. difference in the share of microenterprise or consumption loans, both with respect to the share of mortgages, is associated with differences in yield of 1.4 and 2.6 pp. respectively. In addition, a larger share in consumption with respect to the share of microenterprise loans is also associated with larger yields (1.2 pp. of yield for a 5pp. share difference).

Compared to average and median yields, a 2 pp. difference in yields is just 5 percent of the average and 6 percent of

the median yield on the sample. However, understanding how different product types could have a different yield is very important for the debate about the level and variability of interest rates among MFIs.¹⁰ From the cost perspective, higher yields are mostly associated with higher OER and smaller loans sizes as percentage of GNI per capita. Therefore, given that consumption and microenterprise loans are associated with larger yields, it will be expected as well that they are associated with larger OER and smaller loan sizes as percentage of GNI per capita. However, the only significant effects for OER suggest a very small trade-off between microenterprise and consumption loans (not between both microenterprise and consumption versus the other credit types consistent with the result for yields), but it accounts for only 1 pp. difference of OER for a 5 pp. difference in their credit product share. The following discussion on profitability and portfolio quality suggest that these two factors are important in understanding why consumption loans are associated with higher yields.

Larger shares in consumption loans are associated with higher profitability vis-à-vis all the other credit types. According to the regression results, a 5pp. difference in the share of consumption loans is associated with a 4 pp. difference in the ROE of MFIs in the sample, this is 67 percent of the average ROE and 40 percent of the median ROE of all observations in the sample, and the results are consistent for both shares as percentage of GLP and number of loans. For profitability, the shares of commercial, microenterprise and mortgages are neutral, and the only relevant trade-off is between consumption loans versus any other credit product. A sign of the robustness of these results is that very similar coefficients are obtained regardless of the shares used. This result is consistent with the finding that more consumption is also associated with larger yields but similar levels of cost per dollar lent. However, credit type shares are not relevant explaining differences in ROAs, and this is not due to differences in their leverage ratios.¹¹

Credit type shares explain some of the differences in portfolio quality observed in the sample. For instance, **larger**

10. Rosenberg, Richard, Adrian Gonzalez, and Sushma Narain (2009), "The New Money Lenders: Are the Poor Being Exploited by High Micro-credit Interest Rates?" Occasional Paper No. 15, CGAP.

11. Similar regression models were estimated for leverage ratios, but the results are not presented in the tables.

shares of consumption loans and mortgages are associated with higher PAR, but only larger shares in consumption are associated with larger arrears as measure by WOR. At the same time, larger shares in microenterprise loans are associated with slightly better portfolio quality, both in terms of PAR and WOR. For a difference of 5 pp. in credit types the expected difference in portfolio quality indicators is 0.5 pp. and 0.15 pp. for PAR and WOR respectively, around 8 percent of their respective averages and 14 percent of their medians. This is a very important result for investors, regulators and any other player concerned about the portfolio quality of MFIs. There is already some research showing that the portfolio quality of most MFIs is excellent, and that is not highly correlated with local macroeconomic shocks.¹² But this result is valid for a sample of institutions that presumably are concentrated on microenterprise loans. It is still left to evaluate where microenterprise lenders and commercial lenders are affected different by domestic macroeconomic shocks.

Larger shares of commercial loans, both as percentage of GLP and total number of loans, are associated with larger aggregate average loan sizes as percentage of GNI per capita at the MFI level (and cost per borrowers, also as percentage of GNI per capita), vis-à-vis all the other three credit products. In particular, a difference of 5 pp. in the share of commercial loans as percentage of total number of loans explains a difference of 6 pp. in average loans sizes as percentage of GNI (0.75 pp for cost per borrower), and all the other three credit products are neutral. This means that among credit types, only changes in the share of commercial loans with respect to the other shares play a significant role explaining some of the differences in aggregate loan sizes of MFIs (and costs per borrower) in other words, the only significant trade-off is between commercial loans and any other credit type. A 6 pp. difference in loan sizes is 13 percent of the average loan size in the sample and 24 percent of the median loan size (For cost per borrower, these figures are 10 percent and 15 percent respectively).¹³ These results are relevant for

12. Gonzalez, Adrian (2007), "Resilience of Microfinance to National Macroeconomic Events: A look at MFI Asset Quality," *MicroBanking Bulletin*, No. 14, pp. 36-38.

instance, for the discussion of economies of scale (when size is measure by portfolio), and for the discussion of the relationship between aggregate average loan size and average cost per dollar lent.¹⁴ In particular, it is known that larger average loan sizes are associated with lower average cost per dollar lent, but we still need to identify how much of this reduction is due to MFIs with large parts of their portfolios concentrated with commercial loans, where cost structures per dollar are lower.

A higher share of commercial loans as percentage of GLP is related with larger MFIs in terms of GLP, but the effect is statistically significant only with respect to the shares of both consumption and microenterprise loans, but not versus mortgages. A 5 pp. difference in the share of commercial loans with respect to the share of both consumption loans and microenterprise loans is associated with an average difference of \$3 million and \$1.5 million in GLP respectively (\$3 million is 8 percent of the average GLP in the sample and 50 percent of the median). There is no effect for changes in the share of commercial loans that are accompanied with opposite changes in the shares of mortgages. Moreover, consumption, microenterprise and mortgages shares as percent of GLP are neutral to each other for the size of MFIs measured by GLP. These are not surprising results, especially because average commercial loans are larger than microenterprise and consumption loans as discussed below. One of the main contributions of these results related to commercial loans is to confirm that the data quality and statistical analysis are sound.

Conclusions

The specific combinations of credit types offered by MFIs (commercial, consumption, microenterprise and mortgages) plays an important role in determining their performance. In addition, the credit type combination matters not only from the financial perspective in terms of different levels

13. The effects associated with the shares as percentage of GLP are 1/4 of the effects associated with shares as percentage of number of loans. However, a 5pp. difference in the shares as percentage of GLP is not equivalent to a 5 pp. difference in the shares as percentage of number of loans, and it will be wrong to conclude that the first shares are more important than the second ones explaining differences in aggregate average loan size as percentage of GNI per capita.

14. Gonzalez, Adrian (2007), "Efficiency Drivers of Microfinance Institutions (MFIs): The Case of Operating Costs," *MicroBanking Bulletin*, No. 15, pp. 37-42.

of portfolio quality and profitability, but also in terms of different average loan balances per borrower and different degrees of depth of outreach for the MFIs.

The previous analysis shows that compared with micro-enterprise loans, higher shares of consumption loans are associated with higher yields, lower portfolio quality, and higher profitability. Also, in comparison with microenterprise loans, higher shares of commercial loans are associated with larger aggregate average loan sizes as percentage of GNI and larger MFIs by GLP, higher cost per borrower, lower yields and lower portfolio quality. And more participation of mortgages is associated with smaller MFIs in terms of borrowers, lower operating expenses as percentage of average GLP and lower yields, higher arrears but no difference in defaults and profitability.

Equally important as the previous findings, is the lack of statistical support for a strong relationship between product types and both growth rates of MFIs, and portfolio quality (in particular arrears). In particular, the previous analysis suggest that product type diversification is not an

important driver of growth, contrary to the common wisdom in the industry. Similarly, the previous analysis suggest that MFIs in LAC have been able to diversify their credit portfolios without giving up on their portfolio quality. Additional research is necessary to confirm the robustness of these results with a larger sample of MFIs, including other regions as well as more years of data.

These results are relevant for different countries because many LAC microcredit markets are highly diversified, with commercial, consumption and mortgages playing relevant roles. However, the structure of LAC microcredit markets in the 2006-2008 period is very stable, with the exception of some large licensed MFIs and cooperatives that are down-scaling by increasing their involvement in microcredit loans.

Additional research is necessary to understand the interaction between local conditions and an MFI's product offering. Future research may include environmental variables like local market conditions, competition and maturity. Still, the results presented illustrate the important trade-offs faced by MFIs when deciding on the combination of credit types to offer.