Factors Influencing Poverty Outreach Among Microfinance Institutions in Latin America

A report by Grameen Foundation and the International Finance Corporation

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Executive Summary

This report investigates the poverty outreach of 14 microfinance institutions (MFI) across six Latin American countries: Peru, Colombia, Bolivia, Ecuador, Guatemala, and Nicaragua. It uses information that these MFIs have collected in terms of poverty likelihood using the Progress Out of Poverty® Index (a.k.a. Simple Poverty Scorecard) supplemented by in-depth interviews with industry experts. The following is a summary of the report findings.

Those who reach the highest percentage of poorer clients are the ones that focus on clients in regions with higher percentages of poor people. At the time data was collected, only a couple of MFIs had quantitative poverty-outreach targets. When the MFIs have quantitative poverty-outreach targets, they are either part of their commercial strategy (e.g., MFI C in Bolivia, MFI G in Guatemala), or a requirement from a parent organization (e.g., MFI A of Bolivia, MFI R in Ecuador—both part of VisionFund International). The MFIs that focus on regions with higher percentages of poorer households tend to have a higher percentage of poorer clients in their portfolio. Moreover, a number of MFIs mentioned that product design (e.g., loan size and compulsory monthly educational training) leads to self-selection by poorer clients. The switch of the industry from MFIs being typically NGOs to for-profit institutions seems to lead to more emphasis on measuring success in terms of profitability (rather than poverty outreach).

The report also surfaced two interlinked factors driving poverty outreach across some Latin American markets: competition and over-indebtedness. MFIs seem to be reaching more poor clients in regions with higher banking saturation, even though their mission statements are not about reaching the poor. Indeed, in regions where wealthier clients are already served by commercial banks, MFIs service poorer clients (e.g., urban areas). However, they service relatively wealthier clients in regions where they are unbanked (e.g., rural areas). This was often cited as a factor driving the higher percentage of poorer MFI clients in urban areas relative to rural areas, a corollary of high over-indebtedness in high competition areas. Increased banking competition is also leading MFIs to shift their operations into more suburban and rural areas in search for the unbanked. Thus, impact investors and development institutions could look into ways to foster greater competition amongst banking institutions as a path to serving more of the less wealthy clients[1] and the unbanked.

Increased banking saturation is changing the landscape of microfinance, pushing MFIs who do not explicitly target the poor to provide loans to poorer individuals. In their in-depth interviews, industry experts and MFIs discussed the implications of high banking saturation on their outreach. The change has come about because MFIs generally cannot compete with the interest rates offered by commercial banks, in addition the MFIs' social missions discourage aggressive lending. Thus, they are moving operations to suburban and rural areas in search of the unbanked. Most of the MFIs included in this study cited banking saturation as a factor when deciding which regions to enter.

[1] This is because the MFIs offered interest rates cannot compete with commercial banks, and their commercial strategies discourage them to service individuals with three outstanding loans.

The wealthier the client of an MFI the larger the average loan size and number of loans that they receive, which is consistent with the MFIs' financial sustainability. However, this tendency is muted amongst MFIs that explicitly target areas based on poverty rates, focusing on regions with a higher percentage of less wealthy households. Though women tend to receive smaller loans than men, once they receive one loan from an institution, thereafter they tend to receive loans more frequently. Because women have fewer opportunities to receive a loan, their opportunity cost of defaulting is probably higher. Women tend to receive lower pay than men, and generally the women who apply for loans are heads of household.

Across countries, MFIs reach the lowest percentages of poorer households in regions with lower population density and challenging geographies. Forests, highlands and mountains were all factors explaining lower percentages of poorer clients in the MFIs portfolios. Given that these areas are often the poorest, the MFIs are focusing their commercial strategies on the relatively wealthier, but unbanked, in these geographically challenged regions of widespread poverty. Moreover, they are generally the only financial institutions providing access to credit in these circumstances.

The report also found significant correlations between the number of previous loans and the size of subsequent loans, but non-significant correlations between the percentage of poorer MFI clients in a region and the loan size. In terms of subsequent loan size, they increase in Peru and Guatemala (seemingly rewarding good behavior), but they decrease in Ecuador and Colombia where MFIs prioritize concerns of over-indebtedness. In terms of regions and loan size, a lack of significant correlation may be due to commercial strategies seeking diversification across regions.

In summary, a number of recurring themes emerged throughout the country analyses in terms of poverty outreach among the MFIs:

- The MFIs that focus their commercial strategies in regions with higher percentage of poor reach more poor people.
- The report also surfaced two interlinked factors driving poverty outreach across some Latin American markets: competition and over-indebtedness.
- Regions with the highest banking saturations experience the highest MFI poverty outreach. The search for less competitive market segments seems to be driving greater poverty outreach, rather than principled mission statements.
- Relatively wealthier individuals receive larger loans than less wealthy ones; however, the latter tend to receive loans more frequently. In particular, women receive smaller size loans than men, but they receive them more frequently (even when controlling for the effect of VisionFund MFIs)[2].
- Financial sustainability is a concern for all MFIs and informs the choice of which markets to enter. The largest operations tend to be in areas of poverty rates on both sides of the spectrum.

[2] They prioritize female clients and disburse loans to women with high frequency.

Introduction

Latin America has become a bustling hub of microfinance in recent years—a result of economic growth coupled with persistent inequality across both urban/rural divides and socio-economic strata. Financial institutions that aim to provide credit to the poor and financially marginalized have received considerable international aid over the past few decades. A report by the Consultative Group to Assist the Poor (CGAP) on its survey of cross-border funders reported that international funding for microfinance reached US $25 billion in 2011 ("Current Trends in Cross-Border Funding for Microfinance," CGAP, 2012)). The Inter-American Development Bank (IDB) reports the portfolio of Latin American and Caribbean (LAC) grew to more than US$40 billion in 2013, provided by over 1,000 institutions and reaching more than 22 million clients.

However, in recent years, concern has arisen over growing levels of indebtedness within LAC through both formal and informal lenders. In 2014, for the second year in a row, the Microfinance Banana Skins survey conducted by the Center for the Study of Financial Innovation found that the greatest perceived risk to the microfinance industry was over-indebtedness (CSFI, 2014).

Recent data from the JP Morgan-Global Impact Investing Network survey noted that it is not the case that the majority of investors are demanding superior financial returns. Indeed, of the 125 impact investors surveyed, 54% expected "competitive market rate" financial returns, 23% target below but near market returns, and another 23% require capital preservation. Those 46% which are willing to forego additional returns to have an impact on the lives of the poor are increasingly demanding to see quantitative results of poverty outreach.

This report investigates the poverty outreach of microfinance organizations using micro-level data of client bases. We stratify the behavior of MFIs based upon poverty, the percentage of poorer households in regions, and the associated client profiles. The report explores the different percentages of poorer clients in the MFIs portfolios across regions and contrasts them with their mission statements. The report also triangulates information gleaned from MFI interviews to shed light on their behavior, such as the commercial strategies of these MFIs. Micro-level data was also used to understand the MFIs' client profiles in terms of loan size and the frequency with which they receive loans.

The tool we used to measure poverty outreach is the Progress out of Poverty Index® (PPI®), developed by Mark Schreiner of Microfinance Risk Management, L.L.C., and managed by Grameen Foundation. The PPI is a simple, easy-to-use, transparent, and low-cost tool with proven accuracy. It is created through regression analysis of each country's national census data. This measurement yields a probability that a household lives below a certain income level (national or international poverty line). When those likelihoods are averaged for a representative sample of a group of households, the result provides the proportion of the households in that group that live under the poverty line (poverty rate). With a representative sample alongside the total number of clients, we were able to estimate the total number of people reached by the MFI who live under the poverty line.

To provide context, we also report on qualitative interviews with MFI managers in which they discussed the varied, complex factors they see driving their business and poverty outreach.

This report begins with an introduction to the PPI, then defines the measures of poverty outreach. The main body of the report looks into poverty outreach by each country within the scope of this report: Peru, Colombia, Bolivia, Ecuador, Guatemala, and Nicaragua. Finally, the report looks into recommendations for future research.

Scope of the Report

1. Study Objectives

This study is a joint product of the Grameen Foundation and the International Finance Corporation (IFC). It was also funded by the Cisco Foundation. It seeks to research to what extent some MFIs across Latin America are reaching the poor.

Many MFIs in LAC now have years' worth of PPI poverty data on their clients. The variation in MFI poverty outreach is often attributed to differences in their mission statements, divided mainly between those that focus on the poor and those who focus on the unbanked. The following are the main questions that this report seeks to answer:

1. What is the poverty profile of those reached by MFIs?
2. What does MFI poverty outreach look like in participating LAC countries?
3. How do mission principles correlate with the poverty outreach of MFIs?
4. What are the challenges and channels used by MFIs to reach the poor and the unbanked?

The overall objectives of this study are to:

1. Establish a baseline poverty profile of the portfolio of the participating MFIs in LAC.
2. Provide evidence to impact investors and development institutions that will help refine their strategies in the sector.
3. Illustrate the usefulness of poverty measurement and the potential client-level insights of the PPI data collected by the participant MFIs.

2. Methodology and Data Coverage

The report seeks to show the most accurate and up-to-date picture possible of poverty outreach of each MFI based on the data that they collect in the course of their operations.

Collection of the PPI data

Grameen Foundation extended an invitation to participate in the study to all Latin American MFIs known to be using the PPI in May 2014. Microfinance networks were asked to urge their members to participate. Initial emails were sent to 59 MFIs. The emails were then followed up with telephone calls in an attempt to answer any questions the MFIs had regarding their participation and ensure the broadest representation possible.

Editing rights were given to all participating MFIs prior to publication and a paper copy of the final report is being provided to each.

Role of Participating Institutions

MFIs that committed to participate were expected to:

- Provide Grameen Foundation with databases of information collected from clients and associated PPI scores to date;
- Authorize the use of the information provided and indicate whether the name of the entity could be disclosed;
- Facilitate consolidation of information and analysis, resolving any concerns that may arise during the process by the Grameen Foundation team; and
- Participate in interviews.

Data Requirements

PPI databases (with PPI scores) of all the clients were associated with a unique customer identification code to ensure a precise correspondence between customer data and PPI data.

There were no limits on the amount of PPI data provided and therefore the information provided may correspond to samples or censuses of different time periods. The database was specified to contain at minimum the following fields:

- Customer ID
- Gender
- Urban and Rural
- Date PPI data collected
- Loan issue
- Number of loans
- Economic activity
- State of the loan
- Customer location (Country, Province, Department, City, County)
- PPI score
- Economic activity
- Household size
- Answer to each PPI question
- Loan amount
- Use of credit
- Group vs. individual lending methodology

Table i: Selected variables provided by each MFI

Country	MFI	Observations	Time period	Loan Amount	No. of Loans	Use of credit	National ID	Gender	Economic Activity	Rural/Urban	Household size	Education Level	Client Age	State of loan
Peru	MFI A	142,048	2014	x				x	x	x		x		
Peru	MFI B	28,455	2009–2014	x	x		x	x	x	x	x	x	x	x
Peru	MFI C	12,888	2014	x	x	x		x		x			x	
Peru	MFI D	1,703	2014				x	x	x	x				
Peru	MFI E	609	2013	x			x	x	x		x		x	
Colombia	MFI A	6,506	2011	x	x	x	x	x	x	x	x		x	
Colombia	MFI A	38,584	2012	x	x	x	x	x	x	x	x		x	
Colombia	MFI A	77,099	2013	x	x	x	x	x	x	x	x		x	
Colombia	MFI B	2,153	2011		x	x		x		x	x			
Colombia	MFI B	1,537	2012		x	x		x		x	x			
Colombia	MFI C	380	2011	x	x	x		x	x	x		x	x	x
Bolivia	MFI A	8,352	2013		x	x		x	x	x			x	x
Bolivia	MFI B	2,085	2007–2014		x	x		x	x	x	x		x	x
Bolivia	MFI C	898	2005–2013		x			x	x	x			x	x
Ecuador	MFI R	44,889	2014	x	x		x	x	x	x	x		x	
Guatemala	MFI G	10,843	2013	x	x				x				x	x
Nicaragua	MFI N	704	2013					x						

Analytical Framework

Definitions of Poverty

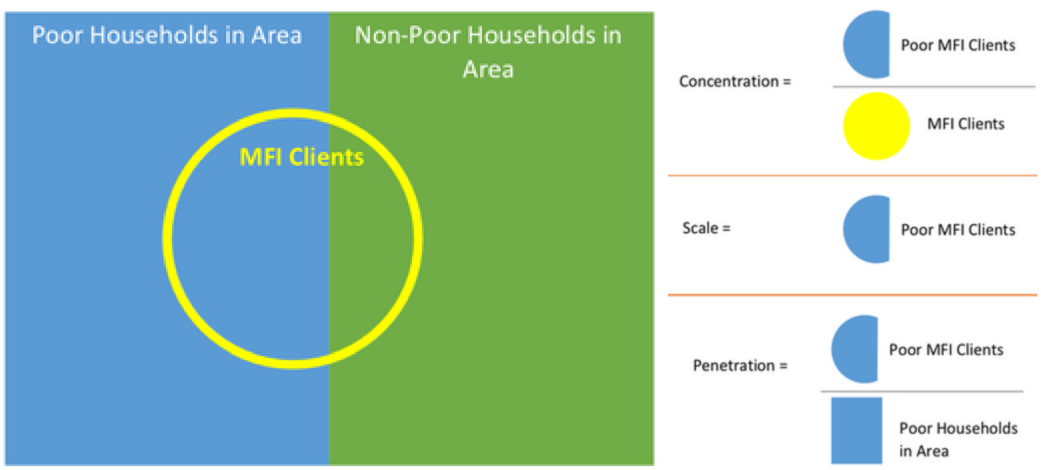
The international poverty lines (IPL) were created by the World Bank in 1990. They define poverty as "the inability to reach a minimum standard of living" (World Bank, 1990). The $1.25 IPL is constructed using the mean of the national poverty lines for the poorest 15 countries. The $2.50 IPL is the average of national poverty lines across all developing countries. National poverty lines are specific to each country and reflect the minimum level of income deemed adequate to live in the country. The estimate is generally based on population-weighted subgroup estimates from household surveys.

Definitions Related to Poverty Outreach

Poverty outreach in this paper is measured in the following terms, three of which are illustrated in Figure 1:

- ***Poverty incidence***: the percentage of households within an area who are poor.
- ***Poverty magnitude***: the number of poor people in an area.
- ***Poverty concentration***: the percentage of MFI clients who are living under the poverty line.
- ***Poverty scale***: the number of poor clients or households who are being served.
- ***Poverty penetration***: the share of poor households in an area that is reached by the MFI.

Figure 1: Definitions of Poverty Outreach



Data sampling framework

Each MFI provided PPI data collected using different methodologies, ranging from a complete sample of all new clients in a given year to a random sample of both new and existing clients, to non-random sub-samples. Some MFIs collect PPI information from their clients in a non-random way (i.e. data from individual clients with loan amounts above a certain threshold). Other MFIs simply collected data from clients based on convenience – that is to say, clients in the easiest to reach areas (mainly urban and suburban areas).

We extrapolated poverty outreach of the MFIs that provided us with a representative sample or census data in order to discuss the number of people reached who live below the national poverty line. They are: MFI A and B in Peru; MFI A and MFI C in Colombia; MFI C in Bolivia and the MFI from Ecuador. The report does not look into such level of granularity as the branch level, because the MFIs did not provide data discriminated in the necessary way (Tables ii and iii).

Table ii – Concentration and scale of participating MFIs*

Country	MFI	Time period	MFI scale	Sample size	Sample strategy (client base)	Scale of poverty outreach	% Concentration	Lending Methodology
Peru	**MFI A**	**2014**	**142,048**	**142,048**	**Total**	**36,932**	**26**	**Both (mainly individual)**
Peru	**MFI B**	**2009**	**5376**	**5376**	**Total**	**1989**	**37**	**Group**
Peru	**MFI B**	**2010**	**5008**	**5008**	**Total**	**2,103**	**42**	**Group**
Peru	**MFI B**	**2011**	**5384**	**5384**	**Total**	**2,154**	**40**	**Group**
Peru	**MFI B**	**2012**	**5607**	**5607**	**Total**	**2,019**	**36**	**Group**
Peru	**MFI B**	**2013**	**5920**	**5920**	**Total**	**1894**	**32**	**Group**
Peru	MFI C	2014	49,000	12,888	26% total	1,289	10	Individual
Peru	MFI D	2014	-	1,703	-		13	Group
Peru	MFI E	2013	609	609	New clients	43	7	Group
Colombia	**MFI A**	**2013**	**-**	**77,099**	**-**		**34**	**Both (mainly individual)**
Colombia	**MFI A**	**2012**	**-**	**38,584**	**-**		**36**	**Both (mainly individual)**
Colombia	**MFI A**	**2011**	**45,441**	**6,506**	**Random, New clients**	**17,268**	**38**	**Both (mainly individual)**
Colombia	MFI B	2011-2012	-	3,690	-		18	Individual
Colombia	**MFI C**	**2011**	**33,034**	**380**	**Random, Total**	**10,241**	**31**	**Individual**
Bolivia	MFI A	2013	36,313	8,352	23% total (non- random)		42	Both
Bolivia	MFI B	2007–2014	5,487	2,085	38% total (non- random)		39	Individual
Bolivia	**MFI C**	**2005**	**-**	**110**	**Random, Total**	**-**	**38**	**Group**
Bolivia	**MFI C**	**2006**	**-**	**60**	**Random, Total**	**-**	**40**	**Group**
Bolivia	**MFI C**	**2007**	**-**	**42**	**Random, Total**	**-**	**35**	**Group**
Bolivia	**MFI C**	**2008**	**-**	**48**	**Random, Total**	**-**	**39**	**Group**
Bolivia	**MFI C**	**2009**	**-**	**67**	**Random, Total**	**-**	**35**	**Group**

Bolivia	**MFI C**	**2010**	**-**	**85**	**Random, Total**	**-**	**37**	**Group**
Bolivia	**MFI C**	**2011**	**160,587**	**95**	**Random, Total**	**59,417**	**37**	**Group**
Bolivia	**MFI C**	**2012**	**168,712**	**132**	**Random, Total**	**65,798**	**39**	**Group**
Bolivia	**MFI C**	**2013**	**187,651**	**153**	**Random, Total**	**69,431**	**37**	**Group**
Ecuador	**MFI R**	**2014**	**47,889**	**47,889**	**Random, Total**	**13,409**	**28**	**Both (mainly group)**
Guatemala	MFI G	2013	21,686	9,963	Random, Total	8,674	40	Group
Nicaragua	**MFI N**	**2013**	**54,000**	**704**	**1.3% total (non-random)**		**15**	**Both (mainly individual)**

*rows in bold are MFIs for which we have representative client data

Table iii -Financials of MFIs[3]

Country	MFI	Time period	Gross Loan Portfolio (million USD, 2013)	Assets (million USD, 2013)
Peru	MFI A	2014	474	639
Peru	MFI B	2013	8.8	9.3
Peru	MFI C	2014	95.1	121.7
Peru	MFI D	2014	6.2	8.2
Peru	MFI E	2013	Not available	Not available
Colombia	MFI A	2013	61	63.8
Colombia	MFI B	2011-2012	0.054	0.065
Colombia	MFI C	2011	64700	75000
Bolivia	MFI A	2007–2014	29	32.8
Bolivia	MFI B	2013	25	29.2
Bolivia	MFI C	2013	161	184.6
Ecuador	MFI R	2014	32.7	35.3
Guatemala	MFI G	2013	4.9	6.5
Nicaragua	MFI N	2013	64.8	76.8

[3] Source: MixMarket.org

Aspects of Poverty Outreach

The report presents poverty outreach of 14 MFIs in Peru, Colombia, Bolivia, Ecuador, Guatemala, and Nicaragua. It includes poverty incidence and magnitude, as well as concentration, scale, and penetration of the participating MFIs, disaggregating by urban and rural where possible.

Comparisons of outreach across countries should be viewed keeping in mind the main differences among the countries such as economic and political factors, commercial strategies of the individual MFIs, varying definitions of urban and rural areas, and the composition of national poverty lines. Moreover, this study does not analyze all microfinance institutions in each country, so strict comparisons of outreach by country could be misleading.

Benchmarking Poverty Outreach of MFIs by Country

Peru

The analysis begins with Peru since it is the country for which we have the largest number of participating MFIs and the largest overall sample sizes.

Hailed as the “Andean miracle,” Peru has been one of the fastest growing and most stable economies in Latin America (‘IMF Survey: Peru: Latin America’s Economic Performer’ 2013). Over the period 2002–2012, the Peruvian economy almost doubled in size, real GDP grew at an average annual rate of 6.3%, and the average annual inflation rate fell to 2.8%, the lowest in Andean countries. The Peruvian economy relies heavily on its natural resources. It exports copper, gold, silver, zinc, lead, iron ore, fish, petroleum, natural gas, and lumber. During the 2008–2009 global financial crisis, Peru’s annual economic growth slowed to 0.9% but was one of the few in Latin America to maintain positive growth. The low and constant inflation rate has enabled the country to promote foreign investment and the development of a bustling financial sector. We will argue in this report that general financial sector development by non-MFIs has had a large impact on improving financial inclusion, even without explicit targeting of the poor.

Poverty incidences in rural areas of the country are high, at more than 60%. Peru's economic future is promising given its recent economic growth and its low inflation rate. However, Peru has the challenge of coordinating economic policy with social issues: unequal income distribution, rural poverty, the environmental impact on rural communities by mining, a large informal sector, and a lack of social services in rural areas. The Peruvian government has implemented policies to promote a range of social programs, such as the cash-transfer program *Juntos*. Impact evaluations have demonstrated that these policies have been influential in reducing poverty incidences (Perova and Vakis, 2009).

Peru has held the top position in the *Global Microscope*, a microfinance industry report published by the Economist Intelligence Unit, for the past seven years. The report assesses the regulatory ecosystem for financial inclusion across 55 countries. The Superintendencia de Banca y Seguros (SBS) has been working to develop a regulatory framework to supervise and promote financial services to the poor since 1997. Nonetheless, financial inclusion is relatively low. According to the World Bank’s Global Financial Inclusion Index (Global Findex), only 20% of adults held an account at a formal financial institution in 2011 (World Bank, Financial Inclusion data, 2014).

In 2013, Peru became the first country in LAC to pass a law on electronic money, the intent of which is to promote financial inclusion amongst the unbanked in remote areas. However, over-indebtedness in the microfinance sector is a growing concern. In 2013, Standard & Poor's issued a warning on the credit quality of loan portfolios due to growing delinquency and decreasing returns on assets and equity (Economist Intelligence Unit, 2014). The report uncovers that over-indebtedness has led most MFIs to incorporate internal policies to refuse service to individuals with three or more outstanding loans. Coupled with the high banking saturation in Peru, this has led MFIs who would have provided loans to the more affluent unbanked to broaden their outreach to poorer clients.

Peru is a country with a varied geographical landscape, defined by forest, highland, mountains, and a long coastline. This geospatial variation is a key factor in poverty outreach. The map in Figure 1 shows poverty incidence by region. Rural areas of Peru have much higher incidences of poverty than urban areas (38% versus 16%). The north of the country tends to see a higher incidence of poverty. Huanuco and Huancavelica experience the highest rural poverty incidences at 61.6% and 63.4%, respectively.

Figure 1: Choropleth of poverty incidences in regions served by participating MFIs

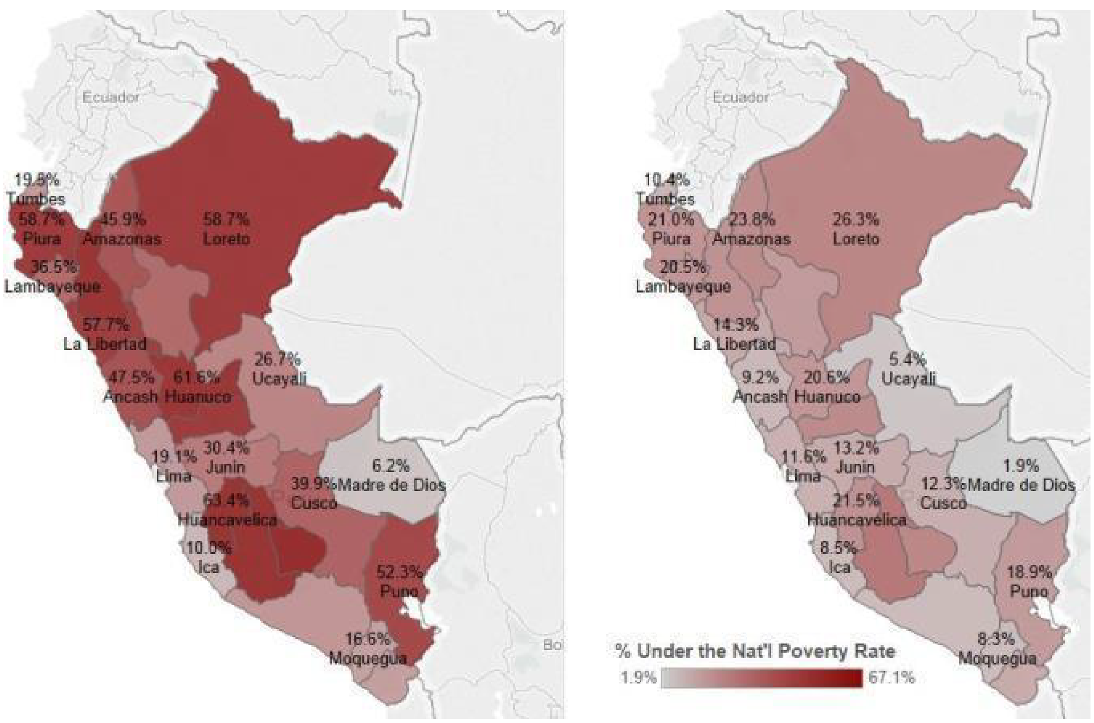
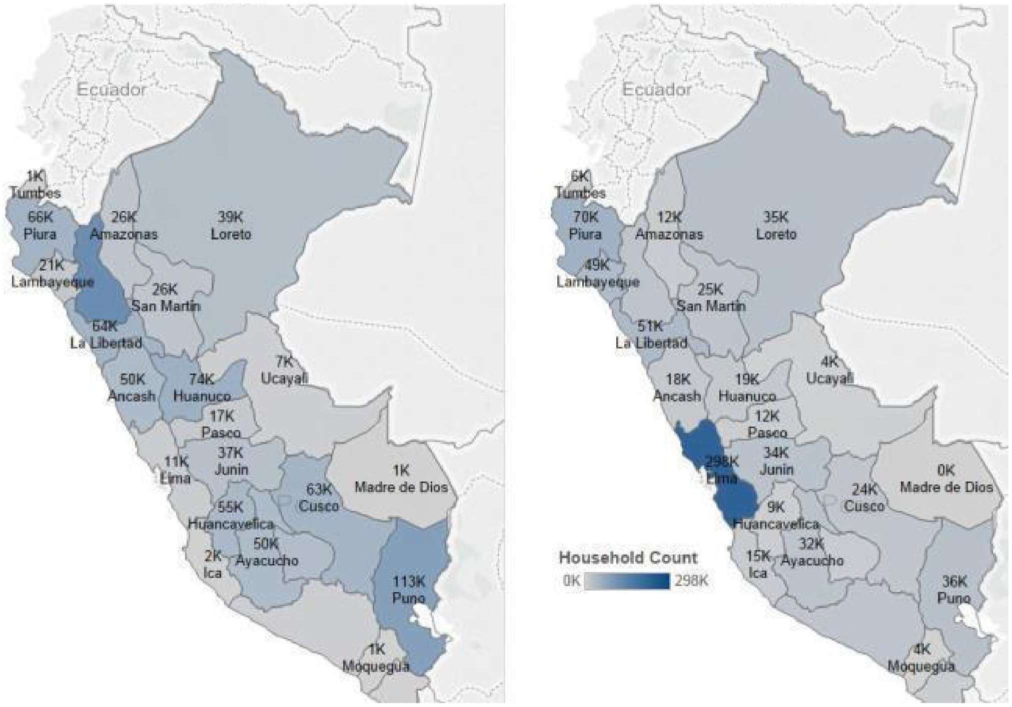


Figure 2 shows the magnitude of poverty in each region. Compared to the incidence of poverty, we see that areas with the highest magnitude of poverty are not necessarily those with the highest poverty incidences. In rural areas, Loreto has one of the highest poverty incidences at 58.7% but a magnitude of only 39,000 people, whereas Puno has 52.3% and a poverty magnitude of 113,000 people.

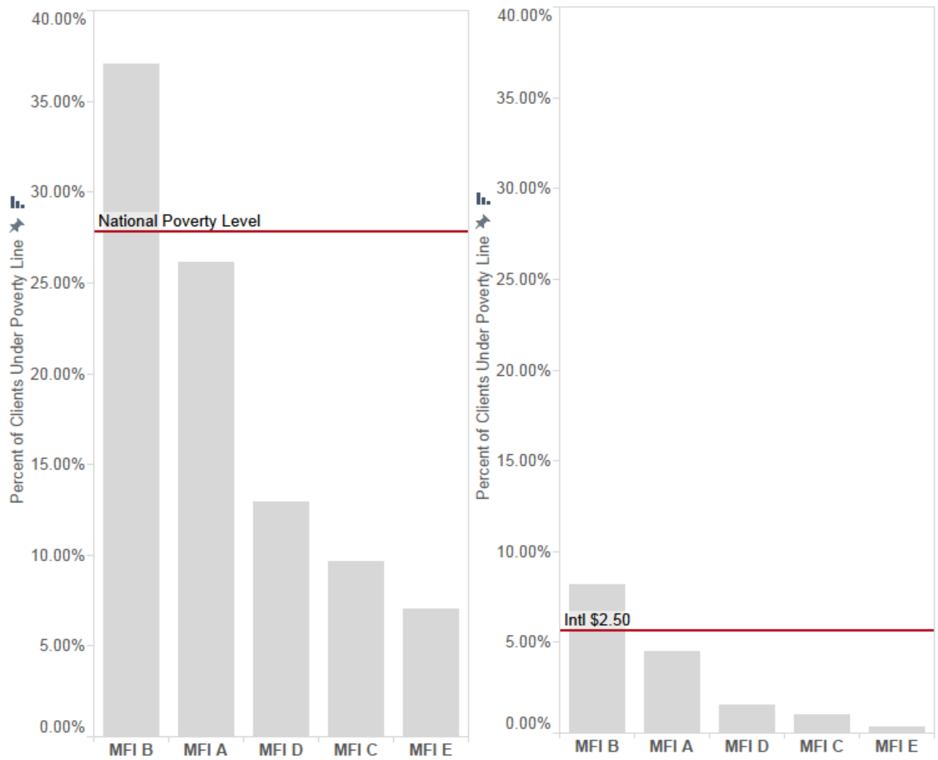
Figure 2: Choropleth of poverty magnitudes in regions served by participating MFIs



1. Concentration of Poverty Outreach

Figure 3 illustrates the poverty concentration of each of our five MFIs based on two poverty lines; the national line and the $2.50-a-day PPP international poverty line. Irrespective of which poverty line, MFI B has the greatest poverty concentration of clients.

Figure 3: Concentration of Poverty across MFIs, National Average



However, the MFIs in this study do not operate in every region of Peru, and as we saw from the maps (Figures 1–2), there is a lot of variation of poverty incidences across regions. In order to provide a more accurate overview of poverty outreach, we undertake subsequent analysis using regional poverty incidences.

2. Poverty Concentration versus Poverty Incidence, by Region

This section seeks to shed light on how mission statements correlate with the poverty incidences of markets in which an MFI chooses to operate. Do poverty-focused MFIs operate in poorer areas? Due to small sample sizes, we do not conduct in-depth analysis of MFIs D and E in this section.

Comparison against the national poverty line in Figure 3 made it seem that MFI A achieves low poverty concentrations given incidences. However, Figure 4 shows that it often achieves higher poverty concentrations than the incidences of the regions in which it operates. Thus the area an MFI opens a branch greatly influences the poverty penetration and concentration it can achieve. It is interesting to know what each MFI takes into account when deciding where to open new branches. Out of concern for over-indebtedness, MFI A seeks to find new clients far from commercial banks which provide consumption loans. It has begun moving outside of large cities, to smaller areas close to existing branches. Its decision is influenced by the ease of access of the area, namely in terms of monitoring and collection, among other variables pertaining to financial sustainability. MFI B requires that its new branches be close to a current one of similar average socioeconomic status. MFI C began its operations in Lima and has been moving further east, with location decisions based on existing banking saturation in the area. All MFIs explained that decisions about locations are constrained by existing infrastructure in the area. This sheds some light on why certain MFIs reach more or less rural areas than others and gives an indication of why we may see clusters of MFI-specific concentration in particular regions, particularly for MFI B, which requires geographical links between branches. Thus, investors may want to ask MFIs how they decide which regions to enter, what empirical data informs the decision and what weight they place on entering poorer areas in the decision-making process. In conjunction with this, investors should ask how the MFI ensures they reach poor individuals and how they are measuring this, if that is an aim of their mission statement.

Figure 4 plots poverty incidence at the regional level against poverty concentration of the individual MFI in the region. The black line is the weighted slope of the data points and the dotted grey line has a 45-degree angle. Points above the grey line imply the MFI has a higher concentration than that of the region, suggesting stronger poverty outreach. The red line represents the national poverty incidence. The sizes of the circles represent the number of clients.

Figure 4: MFI concentration across regional poverty incidences based upon the national poverty line

MFI A achieves higher client poverty concentrations in regions with a poverty incidence below the national incidence. While this almost entirely reverses in regions with a poverty incidence above the national poverty line the size of circles demonstrates that most of MFI A’s clients are located in regions with incidences below the national poverty line implying that MFIA reaches higher concentrations than incidence in the majority of regions. **According to MFI A, the unbanked population reached in areas of high banking saturation tended to be poorer than in regions in which they did not have to compete with the interest rates of commercial banks.** This is an example of how competition can drive non-mission-focused entities to have greater poverty outreach as they search for unserved or underserved segments.

MFI B is an NGO which concentrates its operations in regions with poverty incidences close to the national poverty line. MFI B reaches a higher percentage of poor people than the regional incidence in almost every region it has entered. Given their mission to serve poor and vulnerable women, Figure 6 suggests MFI B successfully reaches its target clients.

MFI C operates on the extreme sides of the regional poverty incidence spectrum. The largest numbers of clients are found in regions with very low poverty incidences, from 6% to 18%. However they also achieve a higher client poverty concentration in areas with very high regional poverty incidence, near the 70% regional poverty incidence, as depicted by the circle at the top right hand corner of Figure 5. According to the MFI, this is the result of a new strategy in place since 2012 which seeks to aggressively expand operations to more rural areas. The regions further along the x-axis are more recent branches which offer different products, adapted to the poorer rural population. Similar to that of MFI A, the mission statement of MFI C does not explicitly target poor clients but instead seeks to cater to the financially excluded.

3. Scale of Poverty Outreach

The scale of poverty outreach refers to the number of poor households reached by MFIs. In order to provide an unbiased overview of the scale of participating MFIs we only discuss the scale of MFIs which provided information on either a random sample or on their entire client base.

As Table 1 illustrates, MFI A provided its entire client base for the year 2013-2014. Of the 142,048 clients, the average client had a 26% likelihood of living below the national poverty line. This equates to the MFI serving 36,932 clients who likely live below the national poverty line.

MFI B provided its entire client base for the years 2009-2013. As the table below illustrates the average client of the MFI had approximately a 40% likelihood of living under the poverty line, apart from in 2013 where the percentage falls to 32%. Each year between 2009 and 2013 this MFI reached an overage of 2,000 clients living under the national poverty line.

Thus, MFI B reaches a greater proportion of clients below the poverty line than MFI A. However, due to the large scale of its operations MFI A is serving a larger number of poor people. This demonstrates how a non-poverty-focused lender like MFI A can achieve the greatest poverty scale even though its poverty concentration is lower. Equivalently, a smaller, poverty-focused lender such as MFI B could have a higher poverty concentration but reach fewer poor people, in absolute terms.

Table 1 – Scale of poverty outreach of MFI A and MFI B

Country	MFI	Time period	MFI scale	Sample size	Sample strategy	Scale of poverty	% Concentrati
Peru	MFI A	2013-2014	142,048	142,048	Total client base	36,932	26
Peru	MFI B	2009	5376	5376	Total client base	1989	37
Peru	MFI B	2010	5008	5008	Total client base	2,103	42
Peru	MFI B	2011	5384	5384	Total client base	2,154	40
Peru	MFI B	2012	5607	5607	Total client base	2,019	36
Peru	MFI B	2013	5920	5920	Total client base	1894	32

As Table 2 illustrates MFI A serves a similar number of regions in urban and rural areas but reaches almost four times more clients in urban areas. This is a reflection of the density of population in urban areas relative to rural ones. MFI B paints a similar picture, reaching a proportionately larger number of clients in urban areas given the number of regions served.

Table 2: Overview of data provided by participating Peruvian MFIs

	Rural Regions represented	Rural Clients represented	Urban Regions represented	Urban Clients represented	Total Clients represented
MFI A	25	32,295	26	109,753	142,048
MFI B	12	8,712	15	19,653	28,365
MFI C	8	4,258	4	8,630	12,888
MFI D	7	296	8	1,373	1,669
MFI E	0	0	2	609	609

4. Penetration of Poverty Outreach

This section investigates the penetration of three MFIs, or the share of poor people reached by these MFIs in a region. We disaggregate by MFI to enable a more thorough understanding of the penetration of each.

MFIs in the study consistently have a higher penetration in urban areas than rural ones. In urban areas there tend to be higher levels of banking saturation than in rural areas. As such, in urban areas the wealthier strata of the population are more likely to be catered to by other financial institutions. Thus, MFIs who target the financially excluded are much more likely to reach the poorest in urban areas, as the poor represent a larger proportion of the financially excluded. In contrast, in rural areas where there is low banking saturation, MFIs who seek to serve the financially excluded are more likely to serve the more affluent population. These people are not necessarily excluded due to poverty and lack of capital, but often due to the lack of other proximate financial institutions. This makes them relatively more desirable from a commercial viability standpoint. Thus, the way to promote higher poverty outreach in remote, rural areas could be to foster greater competition amongst banking institutions.

This incentive structure set up by high banking saturation, such that MFIs will reach poorer individuals in urban areas, is enhanced by internal regulation. Most participating MFIs refuse loans to any individual who has more than three outstanding debts, out of concern for a growing problem of over-indebtedness across Peru. As such, these MFIs are moving outside of big cities to small areas surrounding existing subsidiaries, to suburban areas.

Only two of the Peruvian MFIs included in this study explicitly write in their mission statement that they aim to serve the poor. Instead, MFI A and C aim to promote access to credit among financially excluded potential entrepreneurs, with an aim to improve their livelihoods. This does not necessarily imply that most of the unbanked are not poor; it simply means these MFIs are less likely to have measures in place to target based upon income levels. MFI B and E target which regions they enter based upon local poverty incidences, unlike MFI A and C.

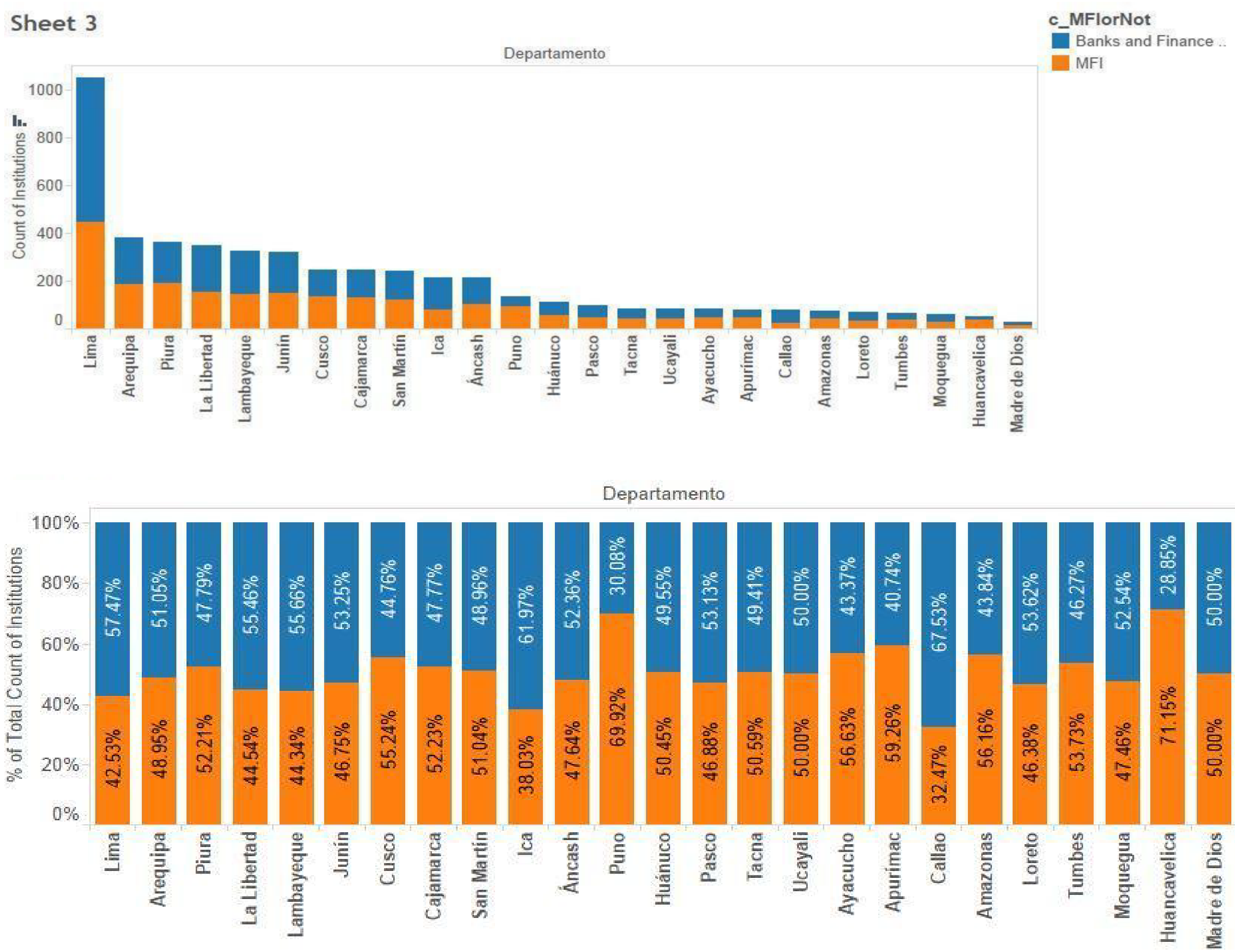
A number of obstacles emerged from our interviews regarding MFIs entering rural markets. Infrastructures such as internet access or a functioning transport system are often required. MFIs need sufficient viable client demand in order to open a sustainable branch, yet in rural areas most individuals are employed as agricultural workers. Indeed the most recent data from the Food and Agriculture Organization (FAO) states the Gini concentration of holdings in Peru is 0.86, where a Gini ranges 0–1 and 0 denotes equal distribution (FAO, 2014). The fact that most people working in the agricultural sector do not own their land makes them more precarious. During the interviews, a number of MFI managers mentioned difficulties finding local loan officers who satisfied their employee profile in the most remote and poor areas. They also talk about the challenges of finding loan officers who are willing to relocate to rural areas or the fact that the cost of travel for loan officers to rural areas is often prohibitive. These are some of the reasons MFIs may have lower penetration in rural areas.

There are certain reasons which counter the above obstacles to operating in rural areas. MFIs stated that rural clients tend to diversify their income-generating activities due to the seasonality of agriculture and the potential for unplanned shocks, such as drought or crop failure. This risk mitigation behavior in clients is a desirable trait to

MFIs. The higher cost of delinquency related to lower credit supply in rural areas incentivizes clients to pay. Fewer avenues to obtain credit also make rural clients more loyal relative to urban clients, thus creating a situation where MFIs can build a solid credit history of its clients. This ability is a benefit in a context where not all MFIs actually report to a credit bureau.

We attempted to investigate the hypothesis—that in areas of high banking saturation MFIs achieve greater poverty concentrations amongst their clients—by measuring regional banking saturation using data provided by the Superintendencia de Banca (SBS). Figure 6 provides us with the raw count of institutions by region, where the blue bars represent banks and financial institutions, and the orange bars represent MFIs. Figure 6 also provides us with the proportional total count of institutions by region. Lima, which has by far the highest proportional banking saturation, generally sees higher poverty penetration across the board of MFIs included in this study.

Figure 6: Banking saturation in Peru by region



Given that not all MFIs operate in all regions, and the disproportionate strength of MFI A in our dataset, we have broken the penetration graphs up by each MFI.

Figure 7: Rural Penetration of MFI A

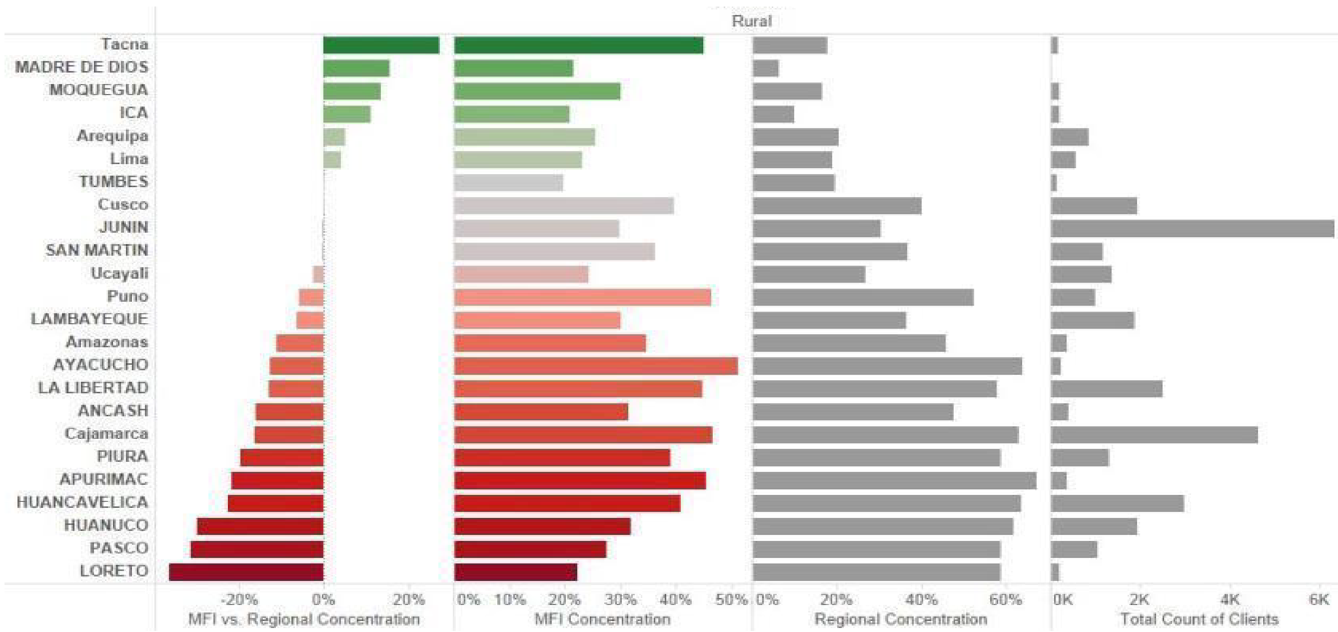
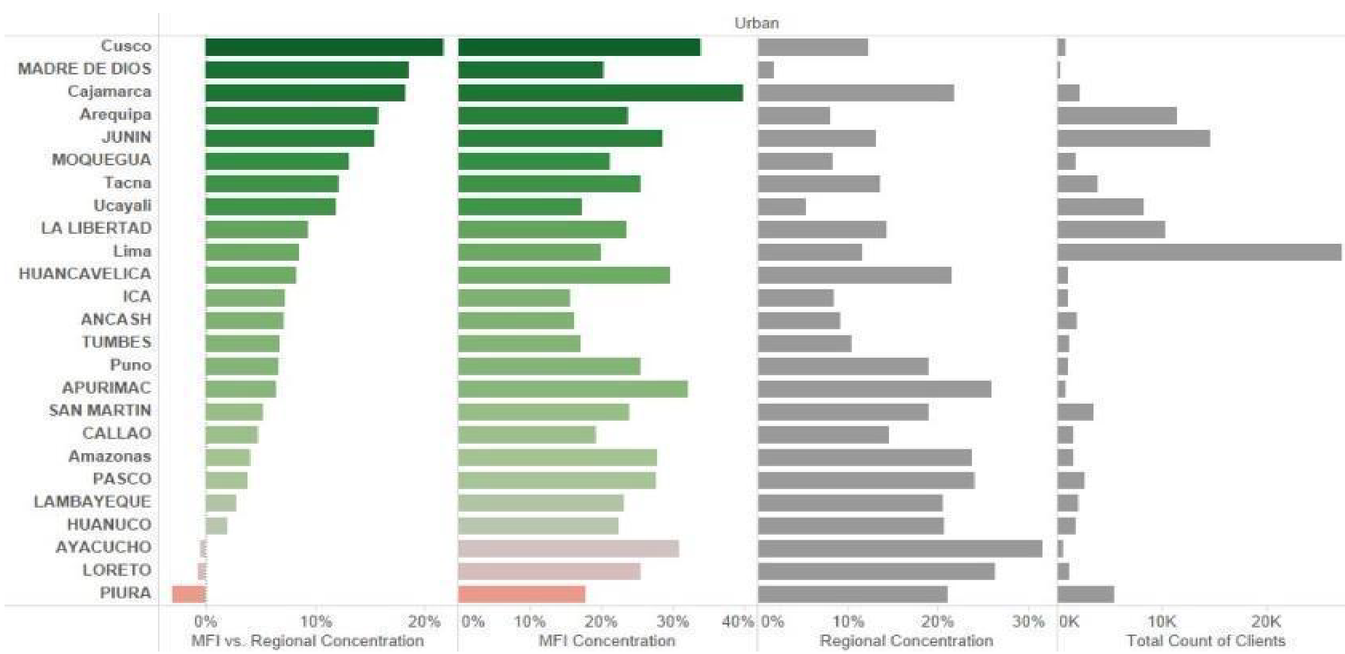


Figure 8: Urban Penetration of MFI A



These graphs of MFI A—the MFI for which we hold the largest number of observations—illustrate that in urban areas it reaches a higher concentration of poor than the incidence of the respective regions. However, we note that as the regional poverty concentration increases, the penetration of the MFI falls, on average. The MFI mentioned in their interview that the areas with low penetration may be due to particularly challenging geography. Indeed, the region of Loreto—which is by far the lowest achiever in rural areas—is deeply submerged in dense vegetation and has a low population density. The low population density is an important factor, since in the forest there is increased average opportunity cost of reaching a new client, as compared to less-challenging regions. Huancavelica and Ayacucho, are also situated in highland regions. Upon discussion with the MFI, another reason for low penetration emerged. Even if certain regions have high population densities, the MFI may not have many branches and thus the transaction cost of taking out and disbursing a loan can be high. Such is said to be the case in Puno. The branches themselves are often not in the poorer areas and so they cater mostly to the relatively wealthier people in the surrounding area. The SBS data in Figure 6 supports our hypothesis that banking saturation affects the poverty outreach of MFIs without a stated mission to serve the poor. We find that, indeed, the five lowest penetration regions in rural areas have some of the lowest numbers of banking services in the country. The data shows that the areas are underserved by both MFIs and more traditional banking services, apart from Huancavelica in which 71% of its financial services are administered by MFIs.

Figure 9: Rural Penetration of MFI B

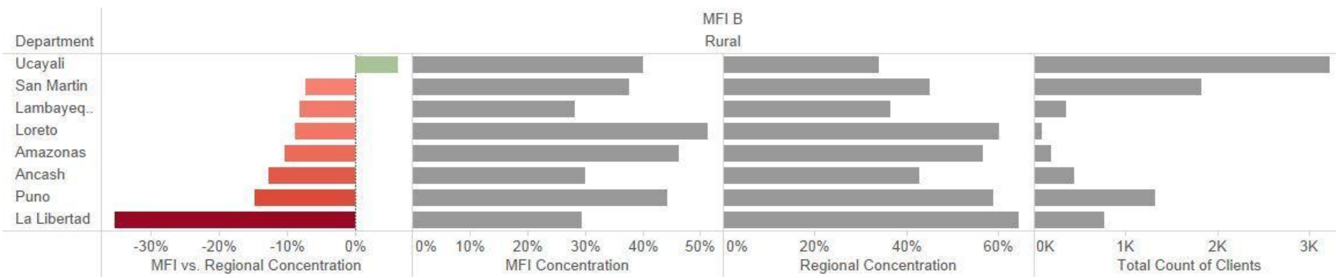


Figure 10: Urban Penetration of MFI B

MFI B has the highest poverty concentration of the Peruvian MFIs in our study, with one of the highest penetrations across the board in urban areas. Despite their impressive performance relative to other participating Peruvian MFIs, MFI B does not perform well in rural regions.

However, there is value in comparing rates over time which have been calculated with the PPI. Any bias would be eliminated or largely reduced when taking differences over time. Therefore, percentage change estimates provide useful data to MFIs trying to understand the change in poverty of clients over time.

Similar to the impediments to penetration for MFI A, geography is a key reason MFI B has difficulty reaching the poor in certain regions. Indeed La Libertad is divided into areas at sea level and highlands but most of MFI B´s branches are located on the coast and it is difficult for their loan officers to reach the poor across the highlands.

The forest regions of San Martin and Loreto once again have some of the lowest penetrations, as does Puno which is situated in the highlands of the Andes.

MFI B experiences similar obstacles to entering rural areas as MFI A. The challenges include population dispersion, lack of physical infrastructure (roads), as well as communication infrastructure (internet connection lines) and commercial infrastructure (bank branches which avoid the need to transport large sums of money). Moreover, MFI B struggles to find adequate employees in rural areas, citing the lack of available talent in the area and the challenge in moving capable individuals into the most remote areas.

Figure 11: Urban Penetration of MFI C

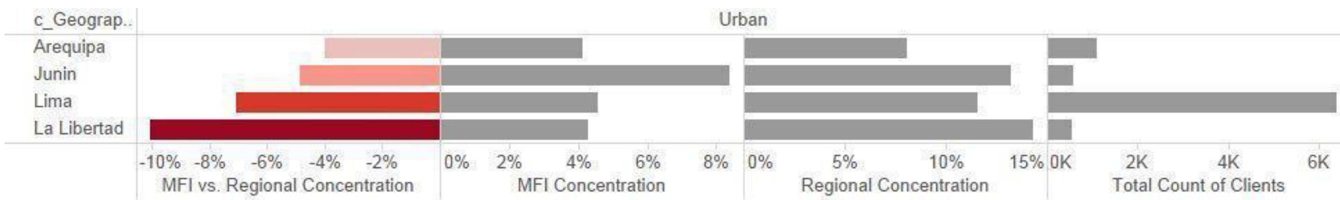
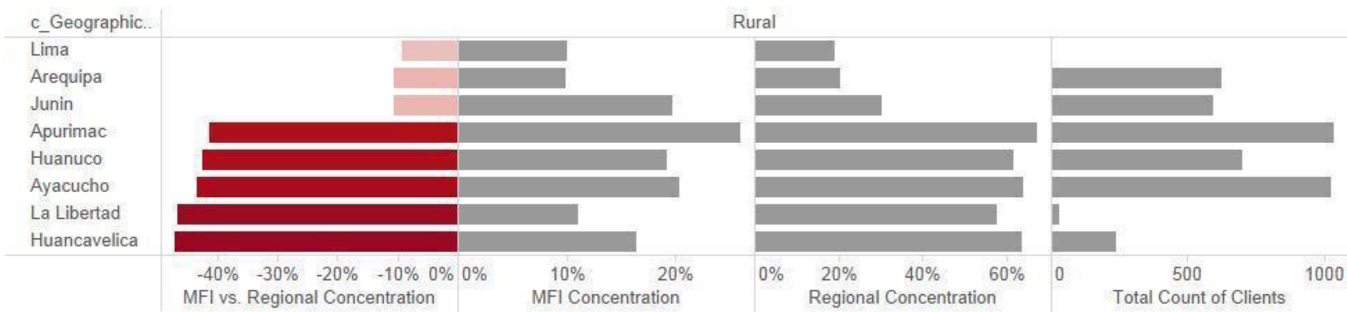


Figure 12: Rural Penetration of MFI C



The strategy of MFI C over the past two years has been to enter rural areas and these graphs corroborate this, as it operates in seven rural regions versus four urban ones.

Figures 11 and 12 show that in no region does MFI C achieve a poverty penetration equal to or above the regional incidence. It is important to recall that MFI C does not have a specific poverty target. Therefore, the products offered by this MFI and their associated eligibility criteria and terms may not cater to the needs of the (very) poor. For example, their products include SME loans and microcredit for agriculture and housing.

5. Poverty Likelihoods and the Incentive Structures of Loan Officers

Figure 13 depicts the dispersion of poverty likelihoods amongst each of the Peruvian MFIs. The histogram titled “MFI B – Legacy” is distinct from the one entitled “MFI B” because the PPI data for the former was collected prior to 2010. The PPI look-up tables were updated with more recent survey data in 2010. Legacy PPI lookup tables were used to calculate the poverty likelihoods for “MFI B – Legacy” and the current table was used for “MFI B.” The other MFIs all provided client data after 2010 and thus used the most current poverty likelihood look-up table.

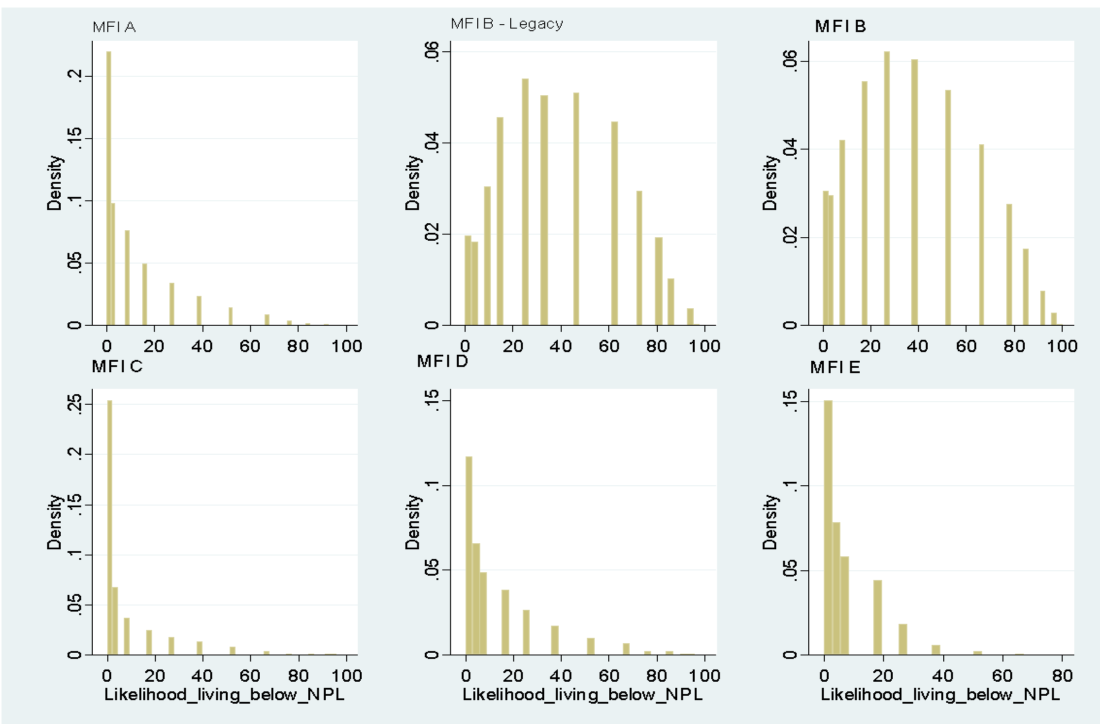
These histograms demonstrate that MFI B has the largest client base with high likelihoods of living in poverty—a finding consistent across both legacy and current clients. The average client of MFI B prior to 2010 had a 37% likelihood of living under the national poverty line, after 2010 this stood at 36%. In contrast, the average client of MFI D had a 12% likelihood of living below the national poverty line, that of MFI A had an 11% likelihood, and the average client of both MFI E and C had a 7% likelihood.

These histograms are particularly interesting in light of the different mission statements of each MFI. Although all three are NGOs, MFI D and E have explicit in their mission that they seek to target the poor, whereas MFI B has in its mission statement to empower financially excluded women. MFI B has a much poorer average client base than MFI D or E and this may reflect the fact that women tend to be disadvantaged in general.

MFI A and C on the other hand have as a mission to provide credit to the financially excluded. This difference in mission is perceptible through the differences in loan sizes—MFI A and MFI C disburse the largest loans at, on average, PEN 6,152 and PEN 4,979, respectively. This compares to average loan sizes of PEN 366 for MFI B and PEN 467 for MFI E (MFI D did not provide loan amount data).

These histograms imply that MFI B reaches more poor people, whereas the other MFIs may be catering simply to a more financially excluded base.

Figure 13: Histograms of poverty likelihoods across MFIs



Perhaps the most interesting question at this point is why the MFIs differ on this metric. We investigate the policies and decision structures which follow from their mission statement other than through their mission statement. One might argue that the answer can be found in the incentive structure of the loan officers. Loan officers are the most able to identify poor people who would be able to repay a loan. Indeed, as mentioned previously, the qualitative knowledge that loan officers have of potential clients is one of the most valued elements of how microfinance organizations operate. This is what sets them apart from commercial banks. Given that the business model was set up to meet the needs of the financially excluded and poor, there was by definition no credit bureau to measure the financial viability of a new client. As such, loan officers have been given a wide remit of subjective decision-making in the process of who to disburse loans to. The value of this method is undisputable. However, perverse incentives may arise, dependent on the loan officer's pay structure. Indeed if the officer is paid mainly based on indicators of loan size and default rate then they may have an incentive to seek individuals who are better off, and those whom the loan officer perceives can more safely absorb a larger loan with lower risk of default than poorer clients. In the interviews, the MFIs acknowledged this possibility, and some of the participating MFIs are looking into incorporating a poverty metric in the incentive structure of their loan officers.

The majority of loan officer incentives in our study somewhat mitigate this risk by considering number of loans issued, as well as loan amount and default rate. This study is unable to determine any correlation between loan incentive structures and poverty outreach because the participating MFIs did not have sufficient variation in incentive structures. However, MFI A is currently changing its loan officer incentive structure to incorporate both long and short term incentives which encourage officers to reach more poor individuals. The short term structure includes whether the client has previously had access to credit. The long term structure includes a social development index comprised of the number of first time clients, retention rate of clients, number of rural clients, number of poor people receiving a loan for the first time, and number of clients which have been written off. These incentives come into effect in 2015 and have been chosen to mitigate perverse incentives and encourage loan officers to search for marginal clients. As such, it will be interesting to view poverty outreach of this MFI over the coming years.

6. Client Profiles

In this section we exploit the micro-level data from each of the three MFIs which provided sufficient samples to profile the characteristics of clients who receive smaller and larger loans, and those clients who receive more loans on average. Where data availability permits, we also run regressions including information on a range of relevant demographics including client age, exposure, economic activity, loan usage, and marriage status. We also control for the length of time the individual has been with the MFI, as omitting this could seriously bias our profiling. Controlling for this ensures that recent clients—who could go on to take out multiple loans—do not distort the profile of one-time borrowers.

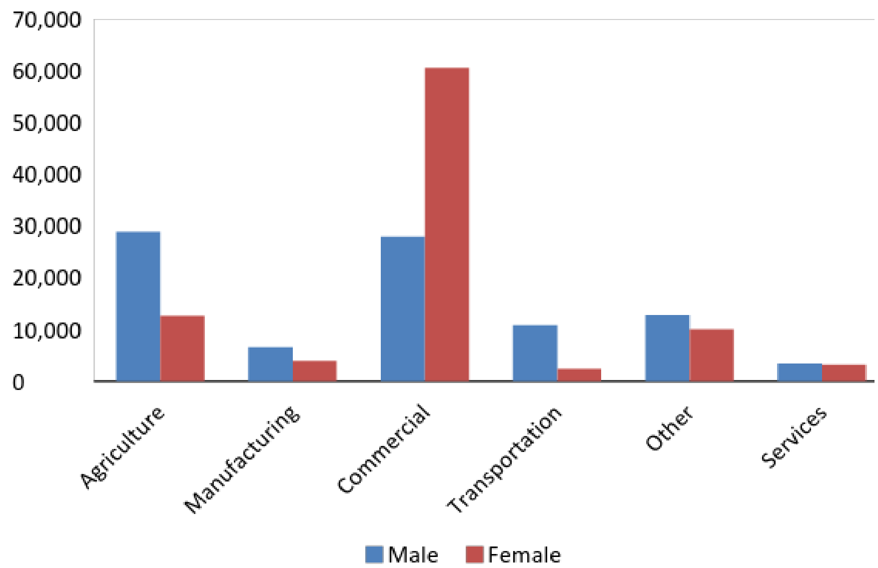
Figure 14 shows that women receive smaller loans than men. However, they also consistently receive loans more frequently. Relatively wealthier clients receive larger loans; however, the correlation is weak for the MFI which has poverty outreach in its mission statement, MFI B. Relatively less poor clients are also more likely to receive repeat loans more frequently. So MFIs serve relatively wealthier clients on average and when served, the poorer clients receive smaller loans on average.

Other key findings include that the areas which receive larger average loans reflect diversification of the portfolio—MFI B's top two regions (Tacna and Puno) have 18% poverty incidences and 59% poverty incidences; MFI C's top two regions (Apurimac and Arequipa) have 67% poverty incidences and 20% poverty incidences.

Determinants for Loan Amounts of MFI A

Our multivariate regression shows that with each additional loan an individual is offered, the loan amount increases by PEN 342 on average. Women on average receive loans PEN 1,432 smaller than men—this result controls for the specific product which MFI A has created, aimed at women of low economic status. The regression indicates that women receiving this particular product receive on average PEN 3,812 less. This significant coefficient for the dummy variable suggests that indeed the gender variable would have been biased had we not controlled for this specific product. With the data at our disposal it is not possible to determine whether women 'demand' smaller loans or whether they are held back in terms of loan size by the MFI.

Figure 14: Peru MFI A: Economic Activity and Gender Distribution by Loan Counts



Individuals receiving loans for working capital receive on average PEN 2,978 smaller than those declaring their loans are for fixed capital purposes. Those loans for consumption are PEN 6,612 smaller on average, whereas those receiving loans for home improvements are PEN 2,565 larger on average.

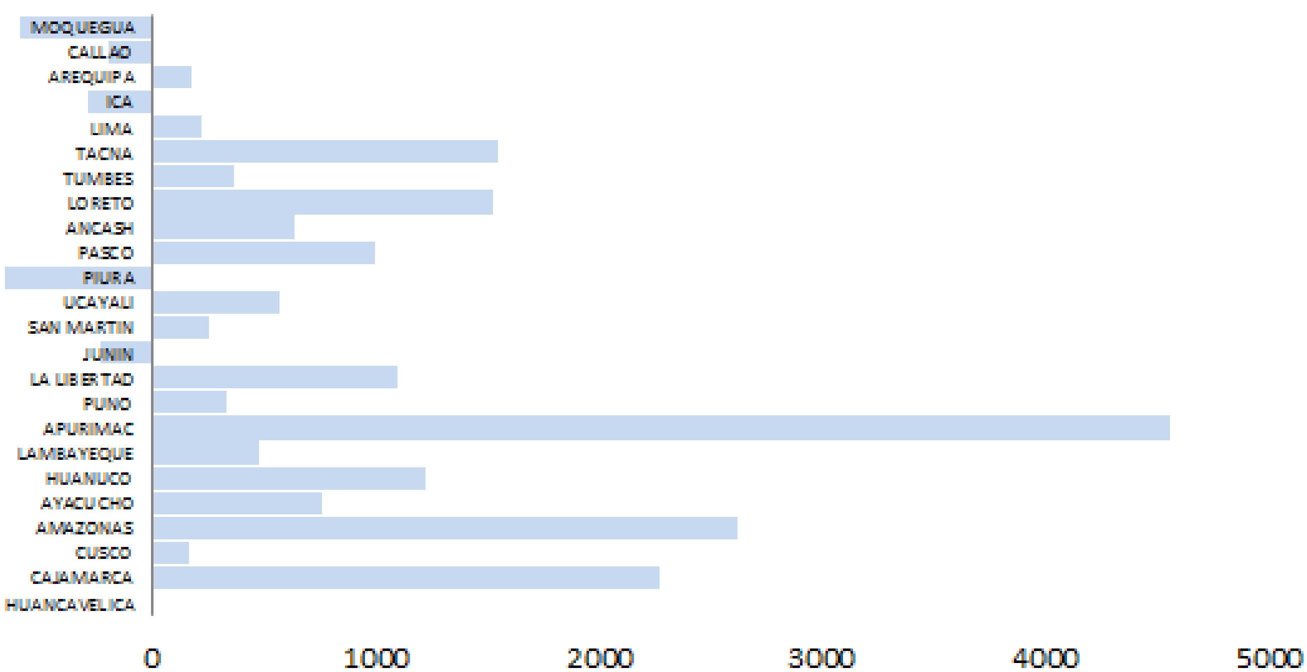
With every additional percentage point likelihood of living below the national poverty line, the loan amount decreases by PEN 47 on average. Thus larger loans are disbursed to relatively wealthier people. We find that individuals in urban areas receive on average PEN 558 larger loans than those in rural areas.

Using Huancavelica, the poorest region, as the baseline, we find that those receiving the largest loans are the departments of Apurimac (PEN 4,559), Amazonas (PEN 2,622) and Cajamarca (PEN 2270). Those receiving the smallest loans as compared to Huancavelica are the departments of Piura (PEN 658 smaller), Moquegua (PEN 590 smaller), and Ica (PEN 279 smaller). Figure 15 depicts these numbers—the regions on the y-axis are ordered from region with the highest poverty incidence (Huancavelica) to the lowest incidence (Moquegua). The loan sizes are relative to the loans disbursed in the poorest region. If certain regions disburse smaller loans than in the poorest region, they appear as a negative value in the figure. Apurimac and the Amazonas have relatively high poverty concentrations. Three of the four lowest concentration regions have smaller loans than the region with the largest number of poor. This implies two things; MFI A is operating in some of the poorest regions of Peru, and in these areas it is disbursing larger loans than in less poor regions.

It should be noted that we control for the time the individual joined the MFI in order to avoid a biased result driven not by characteristics of the client but by the length of the relationship with the MFI. We use the date of issue for the first loan an individual received and create a continuous variable which counts back from 01/11/14, the period of analysis.

In terms of economic activity we find that, using livestock farmers as the baseline, those who work in the services sector receive loans on average PEN 334 larger, manufacturing on average PEN 241 larger, commercial PEN 1,047 larger, and transport PEN 807 larger. The agricultural sector is the recipient of the largest number of loans. MFI A mentioned that this pattern could be due to the fact that these individuals tend to have multiple sources of income.

Figure 15: Average Loan Size Relative to the Poorest, Peru MFI-A



Determinants of Number of Loans Disbursed by MFI A

On average, women receive a larger number of loans than men. However, the higher the poverty likelihood of a client, the lower the number of loans they receive on average. This implies that not only are poorer clients less likely to be served but when they are they receive smaller loans and fewer loans. This is in line with the financial sustainability of an MFI and may also help to avoid contributing to client over-indebtedness. These findings are also in line with MFI A's mission statement to target financially excluded rather than poor individuals. It is very important to control for poverty likelihoods because poorer individuals are likely in more unstable sectors and situations. As a result, in relative terms they are more likely to default on their loan or change source of income, most likely leaving the MFI. The reason poorer people are not receiving as many repeat loans could also be supply driven. The loans may not be well tailored to the needs of the poor, particularly in MFIs who do not have a mission statement to serve the poor, such as MFI A.

Determinants for Loan Sizes of MFI B

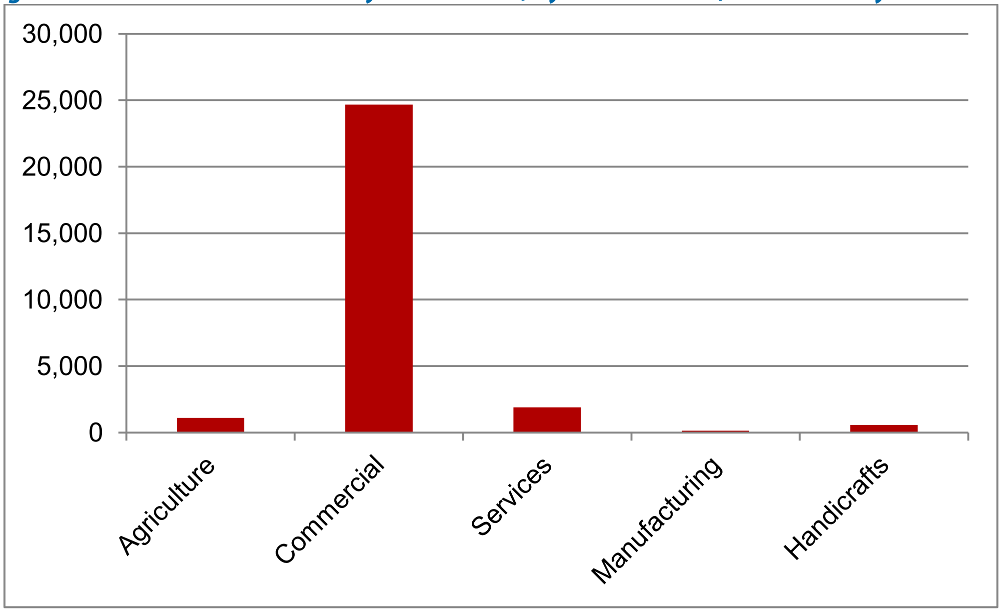
Gender is not included as a variable in our regression as all clients of MFI B are female.

We find that the loan amount decreases marginally with the poverty likelihood of clients; however, the effect size is much smaller than that in MFI A. A one percentage point increase in likelihood of living below the national poverty line is associated with less than PEN1 decrease in loan amount. This is in line with the fact that MFI B serves poorer individuals—the average client of MFI A has an 11% likelihood of living below the national poverty line, whereas the average client of MFI B has almost a 40% likelihood of living below the national poverty line.

We control for the number of days since the client joined the MFI and find a marginal and negative relationship. Thus, the length of time a client has been with the MFI does not appear to be a determinant of loan size.

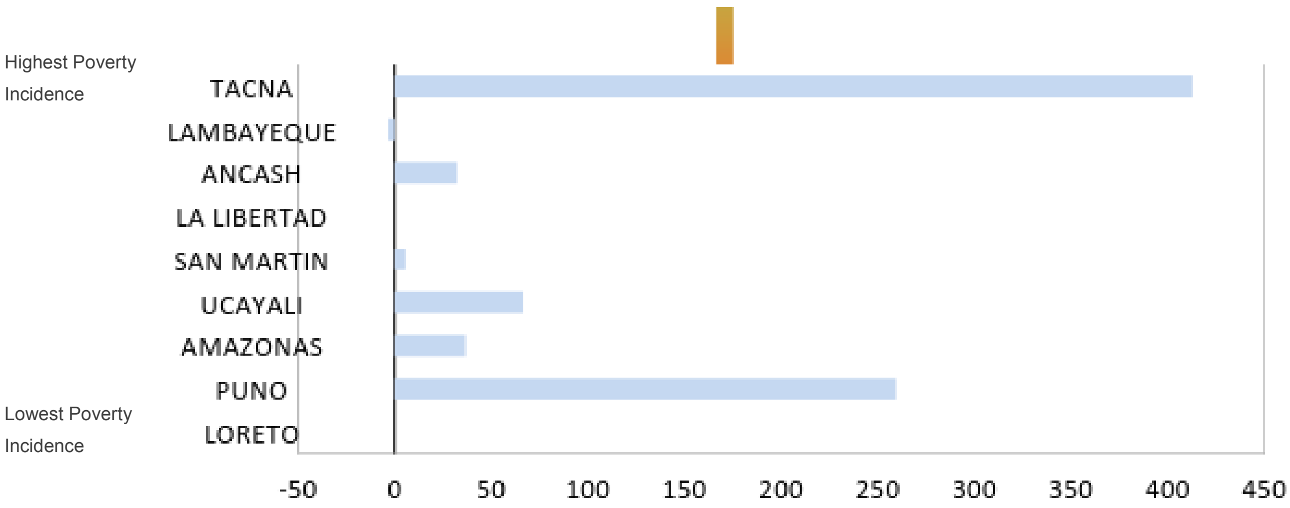
Clients who work in the commercial sector, the services sector, manufacturing, or handicrafts all receive significantly smaller loans than individuals in the agricultural sector—respectively, PEN 87, PEN 105, PEN 115 and PEN 177 smaller. As the average loan size is PEN 366, these amounts are non-negligible.

Figure 16: MFI B Economic Activity Distribution, by Loan Counts (MFI lends only to women)



As compared with clients in Loreto—the region with the poorest clients—clients in Tacna receive the largest loans (PEN 413) followed by Puno (PEN 260). Only Lambayeque receives smaller loan amounts (PEN 3). This is encouraging in terms of poverty outreach, as Puno has the third highest poverty incidence in Peru and an average poverty incidence of 37%—of which 52% is in rural areas. It also paints a picture of diversification of the portfolio, the two regions which receive the largest loan sizes, Tacna and Puno, have 18% and 59% regional poverty incidences, respectively.

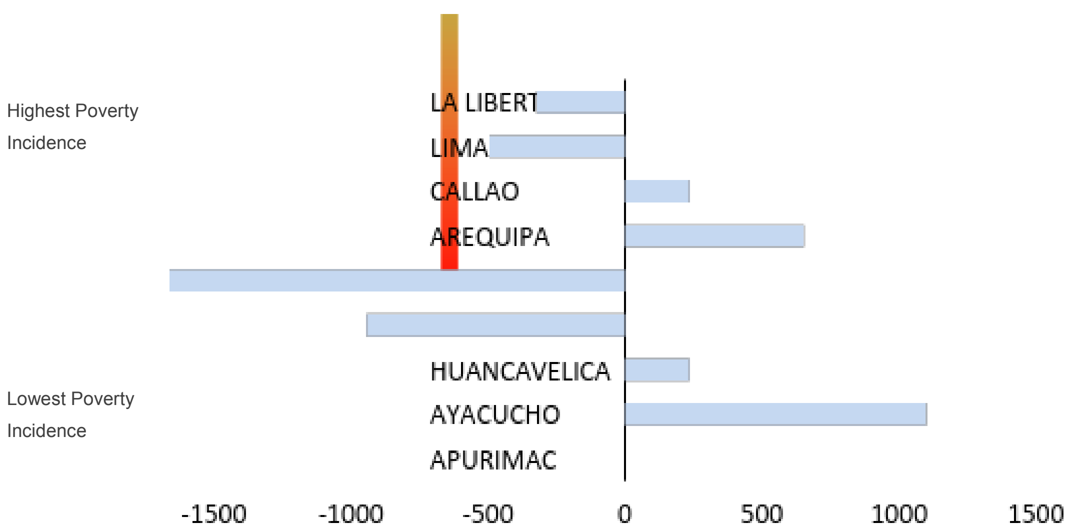
Figure 17: Average Loan Size Relative to the Poorest, Peru MFI B



Determinants for Loan Size of MFI C

All loans issued by MFI C are individual liability loans. Women on average receive loans of PEN 650 less than men. As compared to the base of the Apurimac region, Ayacucho and Arequipa receive on average larger loans (PEN 1100 and PEN 654, respectively). The regions of Junín, Huanuco, and Lima receive smaller loans (PEN 1661, PEN 945, and PEN 493, respectively) than the average client in Apurimac.

Figure 18: Average Loan Size Relative to the Poorest, MFI C

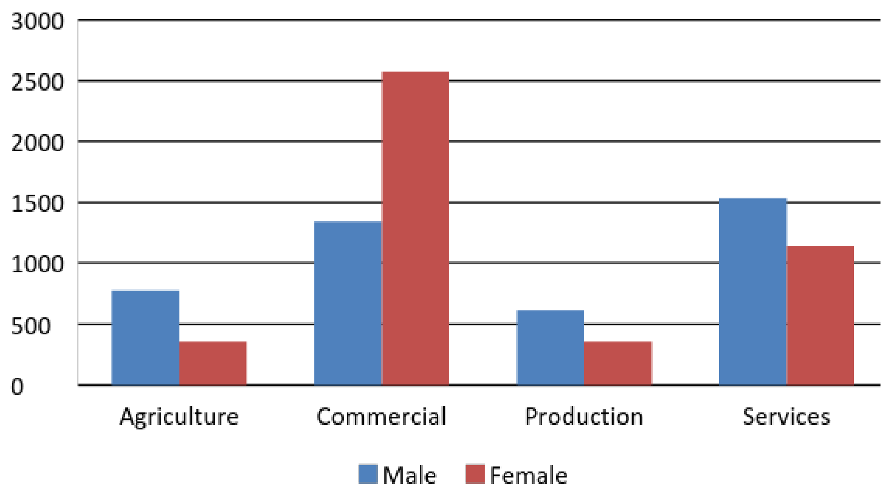


Thus clients in Ayacucho receive the largest loans and those in Junín receive by far the smallest loans on average. This is relatively encouraging, as the average poverty incidence in Apurimac is one of the highest at 52.5%, whereas the average in Junín is 19.5%.

As compared to the baseline of clients operating in the agricultural sector, we find that all holding all else equal, clients in all other sectors receive smaller loans—those in the commercial sector receive PEN 1,418 smaller loans, those in production receive PEN 2,098 smaller, and those in the services industry receive PEN 2,345 smaller.

Figure 19 shows that the majority of clients work in the commercial sector; women dominate in this sector, whereas men dominate in all three other sectors.

Figure 19: Gender and Economic Activity Distribution by Loan Counts, MFI C



On average, individuals with multiple loans receive larger loans. Each additional loan received is associated with PEN 79 more per loan, holding all else equal.

As compared to credit used for fixed assets, those clients who take loans for working capital and consumer credit receive PEN 2,804 smaller and PEN 2,212 smaller on average.

Each additional percentage point increase in likelihood of living under the national poverty line is associated with an average loan size diminishing by PEN 22. This is a highly statistically significant result and indicates that larger loans are being disbursed to less poor clients. The average loan size of MFI C is PEN 4,979. Only 7% of MFI C's clients live below the national poverty line. As such, they are reaching wealthier clients on average. The regression illustrates that within their client base the poorer clients receive smaller loans.

We also find a positive correlation between the length of time a client has been with the MFI and its loan size—each additional day is associated with PEN 8 more per loan.

Determinants of Multiple Loans in MFI C

There are a number of interesting differences between profiles of those who receive larger loans and those who receive multiple loans. The largest numbers of clients who receive multiple loans are in the Apurimac region followed swiftly by Arequipa. Once again this reflects portfolio diversification; Apurimac has poverty incidence of

53%, whereas Arequipa has a poverty incidence of 8%. The region in which MFI C disburses the least per client is Huanuco followed closely by Huancavelica, and La Libertad. The respective poverty incidences in these regions are 46%, 55%, and 24%.

Whereas loans for fixed assets were of larger sizes, clients who seek credit for working capital receive larger numbers of loans per capita. Those seeking consumer credit receive fewer loans per capita than both the others.

As compared to clients in the agriculture sector, those in commerce and manufacturing receive more loans per capita and those in the services receive fewer. On average women receive more loans per capita than men. Clients with a higher likelihood of living in poverty receive fewer loans.

7. Conclusion

A number of findings emerge from this country analysis.

- The consistently higher penetrations in urban areas supports our main hypothesis: poverty outreach is higher in areas with high banking sector competition and within MFIs with restrictions on outstanding debts of new clients.
- MFIs consistently have relatively low concentrations in rural areas, in particular in areas with geographical challenges such as the forest of Loreto and San Martin or the highlands of La Libertad and Puno.
- The regression analysis finds that women receive smaller loans than men; however, they also consistently receive larger numbers of loans. Less poor clients receive larger loans and are more likely to receive repeat loans. Given the concern for over-indebtedness in Peru, larger loans being disbursed to less poor clients appears to be an intuitive finding, particularly as less poor individuals are receiving more frequent loans, which may be more suited to the repayment abilities and needs of poorer individuals.
- Other key findings include that the areas which receive on average larger loans reflect diversification of the portfolio.

Colombia

Colombia's economic policies and its aggressive promotion of free trade agreements in recent years have strengthened its capacity to weather shocks, such as the global financial crisis. Since 2011, real GDP growth has averaged 4%, continuing nearly a decade of strong economic performance. This is reflected by all three main rating agencies raising Colombia's investment grade in 2011 (Bloomberg, 2011).

However, Colombia depends heavily on exports of energy and mining, so it is vulnerable to a fall in prices of commodities. Colombia is the fourth largest coal exporter in the world and the fourth largest oil producer in Latin America. Economic development is also hindered by inadequate infrastructure and an uncertain security situation. Its unemployment rate of 9.7% in 2013 remains one of the highest in Latin America.

The country has made significant progress in its fight against poverty, but the gap between conditions in urban and rural communities remains wide: 46.8% of the rural population is poor compared to 28.4% in urban areas. The same is also true in the case of extreme poverty: in rural areas 22.8% live in extreme poverty compared to 6.6% in urban areas. In June 2011, the government created the Department for Social Prosperity (DPS) to develop and enact all government policies to compensate victims of conflict and reduce poverty. They join the ranks of national organizations such as the National Agency for Overcoming Extreme Poverty (ANSPE) which attempt to lift the most vulnerable Colombians out of extreme poverty through a panoply of measures (ANSPE, 2015). Nonetheless, economic inequality—measured at a Gini score of 53.5 for 2012 (World Bank, Colombia country profile, 2014)—remains a major issue.

It is also relevant to our report to note that the Colombian government's methodology for measuring poverty changed in 2011. This change led to a reduction in the number of people classified as living in poverty (DANE, 2012). For example, using the old method, poverty incidence for 2010 appears as 44.2%. Following the new method, this figure falls to 37.2% for the same year. Also, the methodology to establish the poverty line and extreme poverty line changed at the end of 2011. The idea behind the change was to include a more holistic metric that would take into account access to services like health and education, as well as income.

The Colombian MFI sector has grown steadily in recent years. The Financial Inclusion Report created by the *Superintendencia Financiera of Colombia* and *Banca de las Oportunidades* reports a growth rate of 15% in 2013 of the credit portfolio (SFC, 2014). This growth is led by a rise in banking institutions (71%), followed by NGOs (17%) and cooperatives (8%) (Colombia | Portal de Microfinanzas – CGAP, 2014). The program *Banca de las Oportunidades* was created in September 2006 with the aim of promoting access to formal financial services amongst families living in poverty, unbanked households, and micro/small enterprises.

There are very few unregulated institutions in the microfinance sector. Most large MFIs have become banks or are being placed under the supervision of the *Superintendencia Financiera de Colombia*. Cooperatives are supervised by the Superintendency of Solidarity Economy (SES). Since 2011, Asomicrofinanzas, the national microfinance network, brings together all major players of the microfinance industry in the country, including banks, credit unions, and NGOs. This body collects, manages, and disseminates information on the sector, including social performance and poverty outreach information.

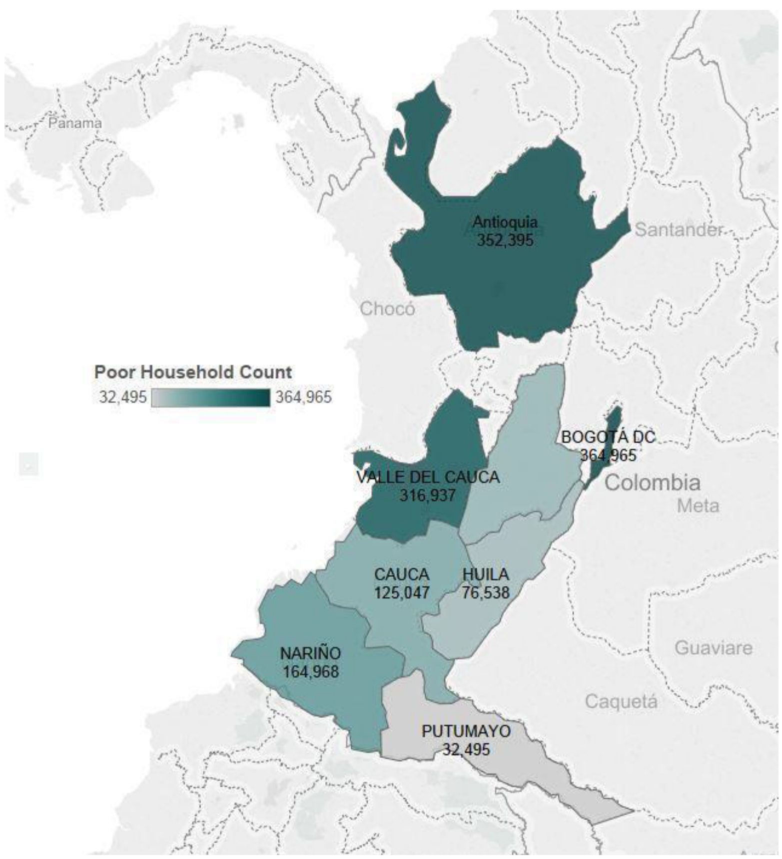
In September 2013, 71% of the population had at least one financial product, according to the Asobancaria (Asobancaria, 2014). The number of accounts grew by 7.4% in the last four years. However, in 2013, 51% of these accounts had been inactive for the previous six months, which indicates the need for innovative savings products or incentive structures which promote usage.

Currently, financial inclusion is a public policy priority in Colombia. The country is working on ways to expand access to financial services for all Colombians, using systems of modern, safe and affordable payments. Indeed, Colombia ranked second in the ranking of the Global Microscope 2014, prepared by The Economist Intelligence Unit (EIU, 2014), of the best environments for financial inclusion globally.

Figures 1 and 2 are choropleths of the regional poverty incidences and poverty magnitudes in Colombia for the regions in which the three participating MFIs have operations. With an average poverty incidence of 27%—a minimum of 15% and maximum of 37%—the poverty incidences across these regions are considerably lower than in any of the other five countries in this study. Interestingly, Bogotá and Antioquia are the two areas with the lowest poverty incidences but also with the largest magnitudes. Putumayo and Nariño have the highest poverty incidences, which is likely a reflection that they suffer from ongoing internal war between the state and the *Guerrillas*. People are being forced off their land; smuggling and violence plague the regions.

Figure 1: Choropleth of poverty incidences in regions served by participating MFIs

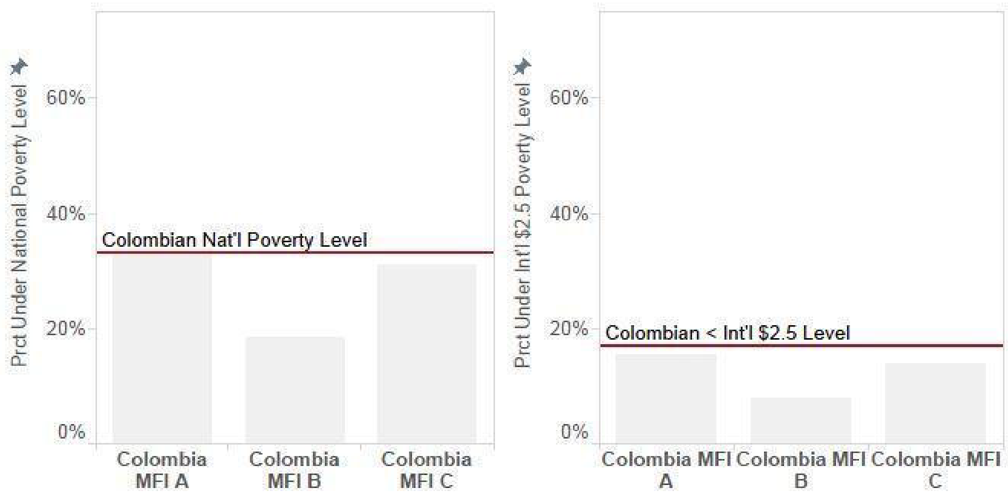
Figure 2: Choropleth of poverty magnitudes in regions served by participating MFIs



1. Concentration of Poverty Outreach

In this section, we investigate the concentration of poverty of the MFIs given the national and regional poverty incidence of Colombia. Figure 3 illustrates that MFI A and MFI C both achieve levels close to the national poverty level, whereas MFI B stands around 20 percentage points below the national poverty line.

Figure 3: Concentration of Poverty across MFIs, National Average



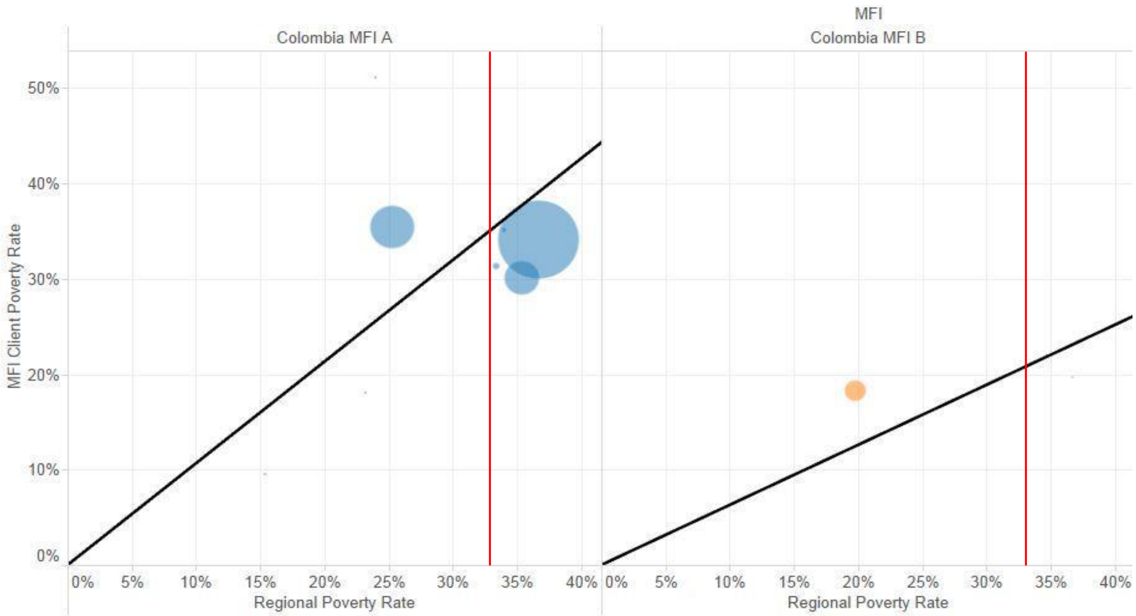
Given the regional variations in poverty incidences apparent from the maps viewed previously, and that MFI A only operates in three regions, and MFI B operates in one region, we undertake subsequent analysis using regional poverty incidences.

2. Concentration versus Incidence, by Region

This section investigates the depth and breadth of outreach of MFIs. We will investigate whether the institutions seem to concentrate their operations in regions with higher or lower poverty incidences and how they fare in matching these incidences—all while taking their mission statements into consideration.

Figure 4 plots average poverty incidence at the regional level against poverty incidence of the individual MFI in the region. MFI B has a concentration very close to the regional incidence of Antioquia. This MFI does not explicitly target the poor but instead seeks to provide services to financially excluded micro-entrepreneurs. There has been a switch in the past six years to reach more rural agricultural sectors. In their interview, MFI B noted that their strategy is to diversify their portfolio to ensure sustainability, allocating lower amounts to riskier individuals and larger amounts to those less-so. MFI A also targets the unbanked, rather than a particular economic stratum. The size of the circles reflects that they have 20 branches in Nariño, 10 in Huila and 5 in Putumayo.

Figure 4: MFI concentration and scale across regional poverty incidences based upon the national poverty line



3. Scale of Poverty Outreach

We delve into the scale of poverty outreach achieved by the participating MFIs which provided representative samples. MFI A provided a random sample of its new clients in 2011 in which the average client had 38% likelihood of living below the national poverty line. Given that in 2011 MFI A had 45,441 new clients, they were reaching 17,268 individuals living under the national poverty line, The World Bank estimates the national poverty rate of 2011 at 34.1%. The high concentration rate of MFI A is likely due to its mission statement to increase financial inclusion in rural areas, and indeed Table 1 shows that 80% of its clients are rural dwellers.

MFI C provided a random sample of all new and existing clients of 2011. In this year the average client had a 31% likelihood of living below the national poverty line, which equated to serving 10,241 individuals living below the national poverty line.

Table 1 shows that MFI A operates in three regions and mainly has a rural client base whereas MFI B only operates in Antioquia and has a mainly urban client base. However MFI B collected their data based on accessibility rather than representativeness so urban clients are over-represented. With a sample size of less than 400, and as they did not provide regional breakdowns for their clients, this MFI could not be analyzed at a more micro-level.

Table 1: Overview of data provided by participating Colombian MFIs

	Regions Served	Rural Clients	Urban Clients	Total Clients
MFI A	3	63,971	14,799	78,770
MFI B	1	234	3,450	3,684
MFI C	N/A	226	154	380

4. Penetration of Poverty Outreach

This section delves into the concentration by region and disaggregated by rural/urban dwellers.

MFI A is established in three regions in the South of Colombia—Huila, Nariño and Putumayo—and achieves a poverty concentration higher than the regional average in the first, and slightly lower than average in the remaining two, as shown in Figure 6. MFI A's scale is highest in Nariño where it reaches over 50,000 clients. It is relevant to recall Figure 1, in which we see that Nariño at 37% has the highest poverty incidence of the regions served, followed by Putumayo, at 35%. Outreach is highest in rural areas, mainly in Huila where on average 40% of their clients live below the national poverty line whereas the regional incidence is closer to 20%. The MFI noted that they diversify their portfolio for sustainability reasons, similar to MFI B.

Whereas MFI B stood 20 percentage points below the national poverty line, Figure 7 demonstrates that it matches the regional poverty of the one area in which it operates, Antioquia. The highest concentration is felt in rural areas, likely a reflection of the strategy change six years ago to pursue clients in rural areas.

Figure 6: Average penetration based upon the national poverty line for MFI A

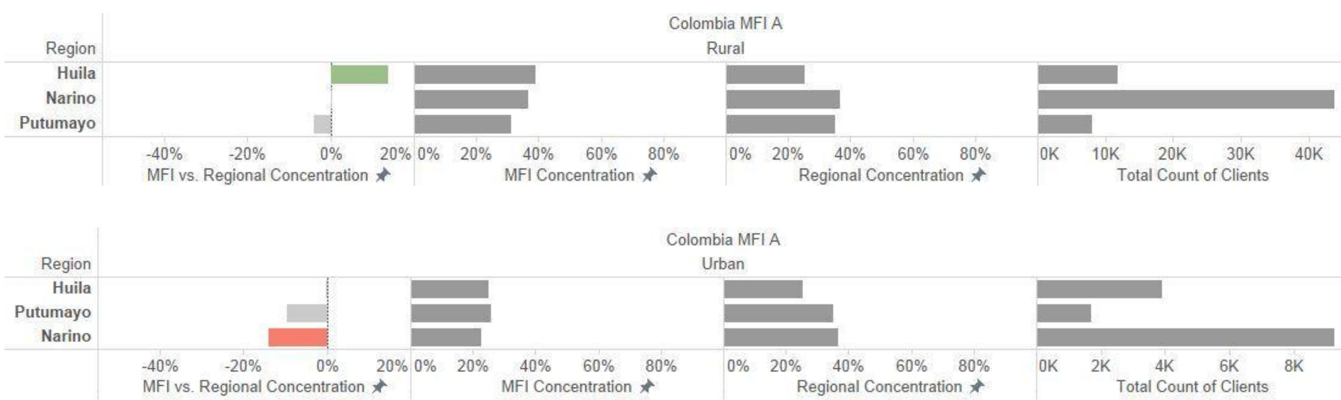
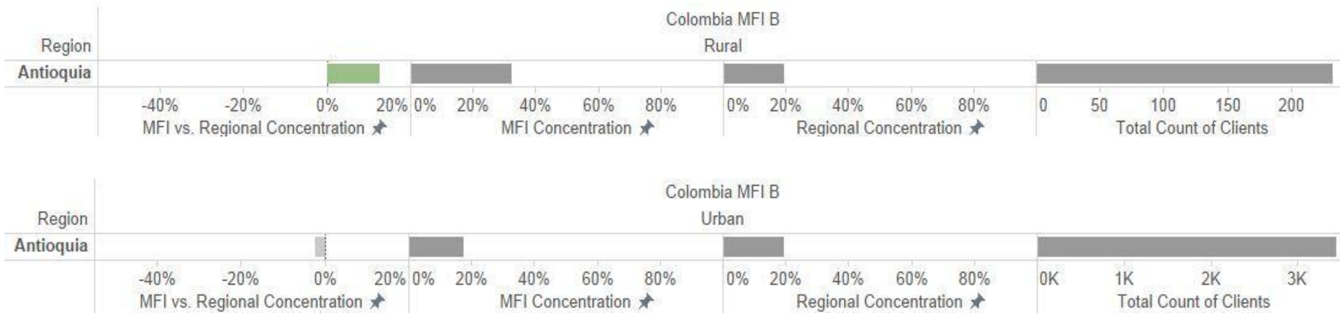


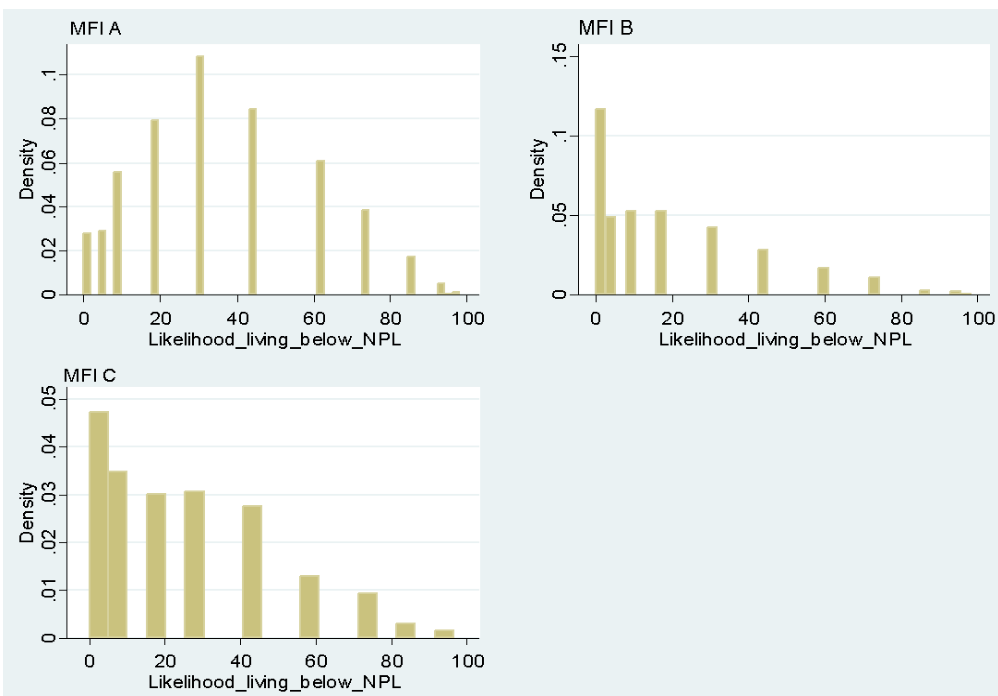
Figure 7: Average penetration based upon the national poverty line for MFI B



5. Poverty Likelihoods and the Incentive Structures of Loan Officers

The histograms in Figure 8 indicate a level of variation between client poverty concentrations of the different MFIs. MFI A has the poorest client base with the average client 34% likely to be living below the national poverty line. This falls to 18% among MFI B clients. However, the sample of this MFI was biased. It surveyed only those who were 'easy to access,' rather than their entire client base in rural and remote areas. The average client of MFI C has a 25% likelihood of living under the poverty line.

Figure 8: Histograms of poverty likelihoods across MFIs



The loan officer incentives of MFI A are based upon the number of new clients in the portfolio, number of renewing clients, aggregate amount of disbursed loans, and portfolio quality. The decision to allocate credit is taken by a credit committee and based upon the repayment capacity of the individual. They check for over-indebtedness with one of the Colombian credit bureaus, DataCredito, but do not have a policy of refusing loans to individuals who have a particular number of outstanding loans.

The annual incentive structure of the loan officers in MFI B is based on their number of new clients, the aggregate loan amount, the number of clients, and the portfolio quality. The decision to allocate a loan is determined based on the productive capacity and financial statements. They verify their data with the credit bureau and check for over-indebtedness with other institutions. They do not have a maximum number of outstanding loans allowed before an application is automatically rejected; however, it does act as a red flag to monitor an individual more closely. In terms of the group loans, the MFI studies the productive capacity of each group member, taking into account the diversification of risk from different economic activities.

The loan officer incentive structure of MFI C is slightly different from the above in so far as it does not include number of new clients, and they do not take into account over-indebtedness. Instead the incentive is constituted of number of credits issued, the amount of credits issued, and measures of the quality of the portfolio. However, the MFI recognizes the increased travel times and difficulty of access in rural areas, and so they place a higher weight on loans issued to agricultural workers.

This means that the loan officer incentive structure of MFIs A and B encourages loans to be offered to poorer clients in areas of high banking saturation through the inclusion of payment based upon number of new clients. Moreover, the fact that MFI A and B have ceilings on outstanding debts of new clients implies that loan officers will provide loans to poorer individuals in areas of higher banking saturations as the less poor are likely already served by commercial banks. This emphasis on reaching the unbanked poorer individuals is tempered by loan allocation decisions that must also take into account the productive capacity and financial statements of potential clients. As such, these MFIs seem to be simultaneously encouraging poverty outreach without advocating reckless lending that could be harmful to the borrower and financially damaging to the MFI. MFI C is also encouraging poverty outreach, although with more emphasis on the unbanked by placing a higher weight on individuals in rural and agricultural areas.

These loans incentive structures are reflected in the results of the two MFIs which provided random samples of their clients; the average client of MFI A had a 38% likelihood of living below the national poverty line in 2011, and it reached an average of 45,441 people living under the poverty line that year. Similarly the average client of MFI C had a 31% likelihood of living below the national poverty line in 2011, and it reached on average 33,034 individuals living below the poverty line. MFI B only has a poverty concentration of 18%, however, which is likely the reflection of their data being collected mainly in urban areas.

6. Client Profiles

We concentrated our analysis of Colombia on MFI A since it provided us with the largest sample size. We ran a multivariate regression using the amount of the loan as the dependent variable and a range of socio-demographic and geographic factors as independent variables. We only report results which were significant to the 1% level.

We only used individual loans in our analysis; for group lending, the MFI only provided the total amount given to the group, rather than the individual amounts per group member. This was not a large issue since 86% of the sample had been issued with an individual loan. In order to contextualize the coefficient, it is useful to know the average loan disbursed was of COP 2,669,246.

Profile of Clients Who Receive Largest Loans

We find that on average women receive COP 265,804 less than their counterparts. We also find that age is positively correlated with loan size disbursement until 47 years of age. On average, each additional percentage point increase in the likelihood of living below the national poverty line is associated with a loan COP 10,523 smaller.

Upon investigating the different credit types, we find that on average those who take out loans for fixed capital investments receive loans COP 675,365 larger than those taking out working capital loans, and that loans for home improvements are COP 332,926 larger. On the other hand, education loans and consumption loans are COP 497,265 and COP 643,219 smaller than working capital loans, respectively.

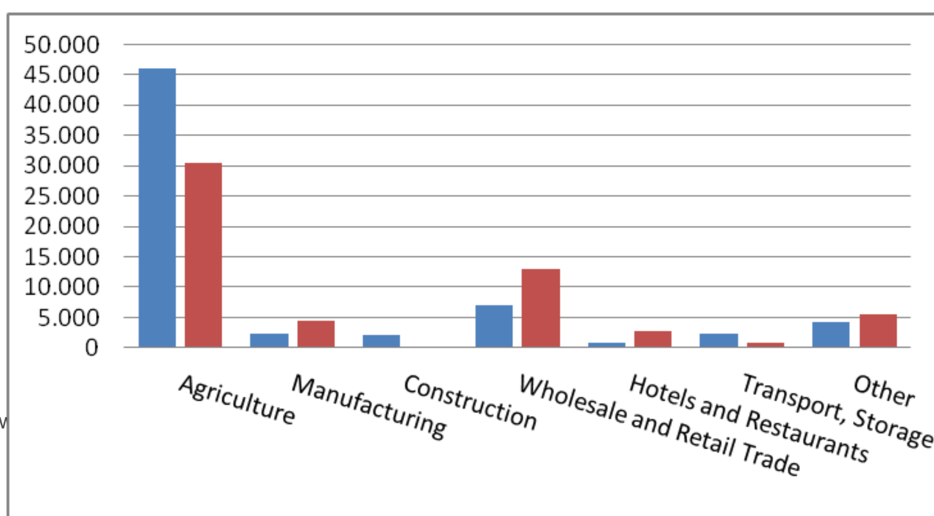
Clients in rural areas receive loans on average COP 284,390 smaller than clients in urban areas, controlling for economic activity, client age and education level, amongst other variables.

On average, single individuals receive COP 443,666 smaller loans than married people, and separated people receive COP 261,709 less than married people, holding all else equal.

In terms of economic activity of the individual, as compared to a base of those working in the agricultural industry, we find that clients working in manufacturing are issued loans COP 300,251 smaller on average. Those working in the construction industry receive on average COP 294,645 less; those in wholesale and retail trade receive COP 374,625 more and those working in hospitality receive COP 379,413 less. It may be useful to bear in mind that 63% of the sample works in the base category of agriculture, 16% in wholesale and trade, and 5% in manufacturing.

As shown in Figure 9, the majority of clients, both female and male, work in the agricultural sector. This is line with the mission statement of MFI A, which is to reach the rural unbanked.

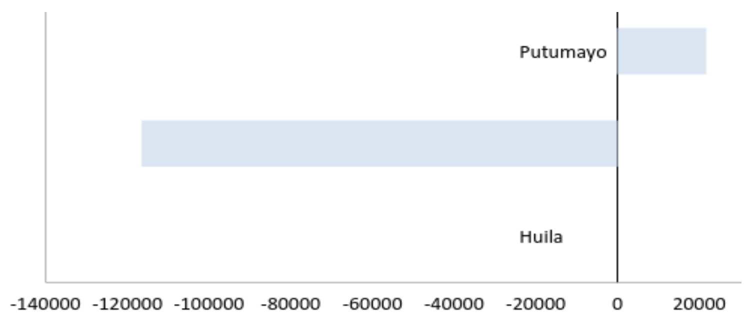
Figure 9: Economic Activity and Gender Distribution by Loan Counts, MFI A



Using illiterate clients as the baseline, we find that loan amount is an increasing function of education, as would be expected. Primary education yields a loan amount premium of COP 139,128, secondary education yields a premium of COP 224,947, a technical education yields a premium of COP 229,619, technological college is associated with premium of COP 319,405, and university yields a premium of COP 471,401. It is relevant to recall the profile of clients of MFI A: 62% have a primary education, 26% a secondary education, and 4% are illiterate. Thus the loan amounts at higher education levels are to be treated with caution.

As figure 10 depicts, the branch in Nariño disburses significantly smaller loans than in Huila (COP 116,485), whereas Putumayo disburses more (COP 21,674). Thus, they are disbursing smaller loans in the poorest region.

Figure 10: Average Loan Size Relative to the Poorest, MFI A



We control for length of time an individual has been with the MFI. As such, we used the date the loan was disbursed to create a continuous variable of the number of days since their loan was issued. On average, each additional day since the loan was disbursed is linked to a loan amount of COP 457 less.

Thus, the profile of clients who receive the largest loans corresponds to married urban-dwelling men, who are less poor, require a loan for fixed capital investments, and who work in the wholesale trade industry. However, 63% of MFI A's clients work in the agricultural industry and this is the dominant activity for clients of both genders.

Profile of Clients Who Receive Multiple Loans

In order to preserve sample size and the integrity of our results, we transform the dependent variable into a binary, where 0 denotes a single loan and 1 denotes two or more loans issued to the same individual. In accordance to a binary dependent variable, we run a logistic regression to describe those clients who receive multiple loans and those who receive no more than one loan:

- The typical characteristics associated with being a repeat customer are: woman, relatively older and wealthier, requesting either an education or a consumption loan, living in an urban area, married and having some formal education. Individuals who receive multiple loans also receive smaller loan amounts. The MFI explained that this is because they tend to have additional restrictions on multiple loans to prevent over-indebtedness and the amount is generally lower as a rule.
- The typical characteristics of a client receiving no more than one loan are: on average 41 years old, PPI score of 42, and loan amount of COP 2,013,765; the most common loan was for working capital, with the recipient more likely to live in rural areas, married, working in wholesale or retail trade, having a higher level of education than primary school, and being part of the lowest socioeconomic bracket; and on average loan issue 655 days before.

7. Conclusion

- The loan officer incentive structure of the MFIs in Colombia contains elements which encourage loan officers to reach poorer individuals in areas of higher banking saturation and clients in rural areas. MFI A and C achieve concentration rates close to the national poverty line.
- The client profile of MFI A is 80% rural with the majority of loans disbursed to individuals in the agricultural sector. Women receive smaller loans than men but more repeat loans. Less poor clients receive larger and more frequent loans.

Bolivia

Bolivia has had the highest growth rate in South America since the global recession. The GDP growth rate was 6.8% in 2013, the result of a combination of factors. The main commodities exported by Bolivia, such as hydrocarbons and minerals, increased in price, resulting in export revenue soaring from $2.2 billion in 2004 to $6.8 billion in 2008. At the same time Bolivia benefited from a reduction in public external debt. Under the G8 initiative, its debt owed to multilateral organizations was reduced by $2.9 billion, equivalent to 64% of the stock of public debt Bolivia owed to these organizations at the end of 2004 (Overseas Development Institute, 2010). This consolidation of the fiscal balance has paved the way for a multitude of social policies. Martinez (2004) used a regression discontinuity approach to evaluate the impact of the BONOSOL pension which consisted of an unconditional cash transfer of US$120 per year to all people aged 65 and over. This was a substantial amount, equivalent to 33% of annual rural per capita consumption. Indeed, the paper found positive impact of household consumption and children's human capital development, suggesting that cash transfers to poor and liquidity constrained households may facilitate productive investments which boost consumption through multipliers on the transfer. It is important to maintain a panoramic understanding of the factors at play which might affect poverty incidences, as this affects MFIs penetration, and poverty outreach. It is also important to understand the other variables at play in order to avoid misattributing the change.

The Global Microscope 2013 report placed Bolivia second in the ranking of best business environments to foster microfinance, after Peru, citing a strong and supportive regulatory framework. Over-indebtedness in the financial system is purportedly not a concern due to the strength of Bolivian credit bureaus, of which one specializes in microfinance—INFOCRED. The 2013 Law of Financial Services states that financial inclusion is a top priority of national policy. Regional data published by the financial regulator, the Autoridad de Supervisión del Sistema Financiero (ASFI), shows that as of March 2014, 46%–100% of localities with populations of over 2,000 had access to a point-of-service site—an ATM, an agent, or a branch (Economist Intelligence Unit, 2014). Under the 2013 legislation, interest rate restrictions are imposed on deposits and certain loans, and minimum levels of portfolio disbursements are established for production loans and loans for social housing. Banking institutions, including MFIs, have five years to ensure they keep an average 11.5% interest rate. 'Multiple banks' will have to disburse 60% of their portfolio to the productive sector and social housing credit, of which at least 25% is in the productive sector. SME banks must disburse 50% of their portfolio to small, medium, and micro enterprises in the productive sector. Financial institutions specialized in housing must disburse 50% of loans in social housing loans. The latter includes agriculture and livestock, hunting and forestry, extraction of oil and natural gas, metal and nonmetallic ores, manufacturing, production and distribution of electricity, and construction. MFIs are not mentioned in the regulation. It is clear though that these changes will increase the number of banks catering to poorer segments of the population. The resulting effects of competition between MFIs and formal banks are, as of yet, uncertain, but it is possible to imagine that MFIs may cater to increasingly poorer segments of the population. MFIs voluntarily subject themselves to transparency measures through the Asociación de Instituciones

Financieras de Desarrollo (FINRURAL). The three Bolivian MFIs considered in this report work with FINRURAL. MFI B is altering its commercial strategy to set a target of 25% of loans to be made to the agricultural sector.

Figures 1 and 2 show choropleths of poverty incidences and poverty magnitudes in Bolivia. We note that the poverty incidences are the highest of all the countries in our report, ranging from 51% to 89% in rural areas and 19% to 51% in urban areas. Southern Bolivia holds the highest rural poverty incidences, while the western side experiences the highest urban poverty incidences. La Paz and Santa Cruz hold the largest numbers of people living under the national poverty line, and as we shall see, the MFIs in our sample are concentrating their operations in the areas with the largest number of poor and the highest poverty incidences.

Figure 1: Choropleth of poverty incidences in regions served by participating MFIs

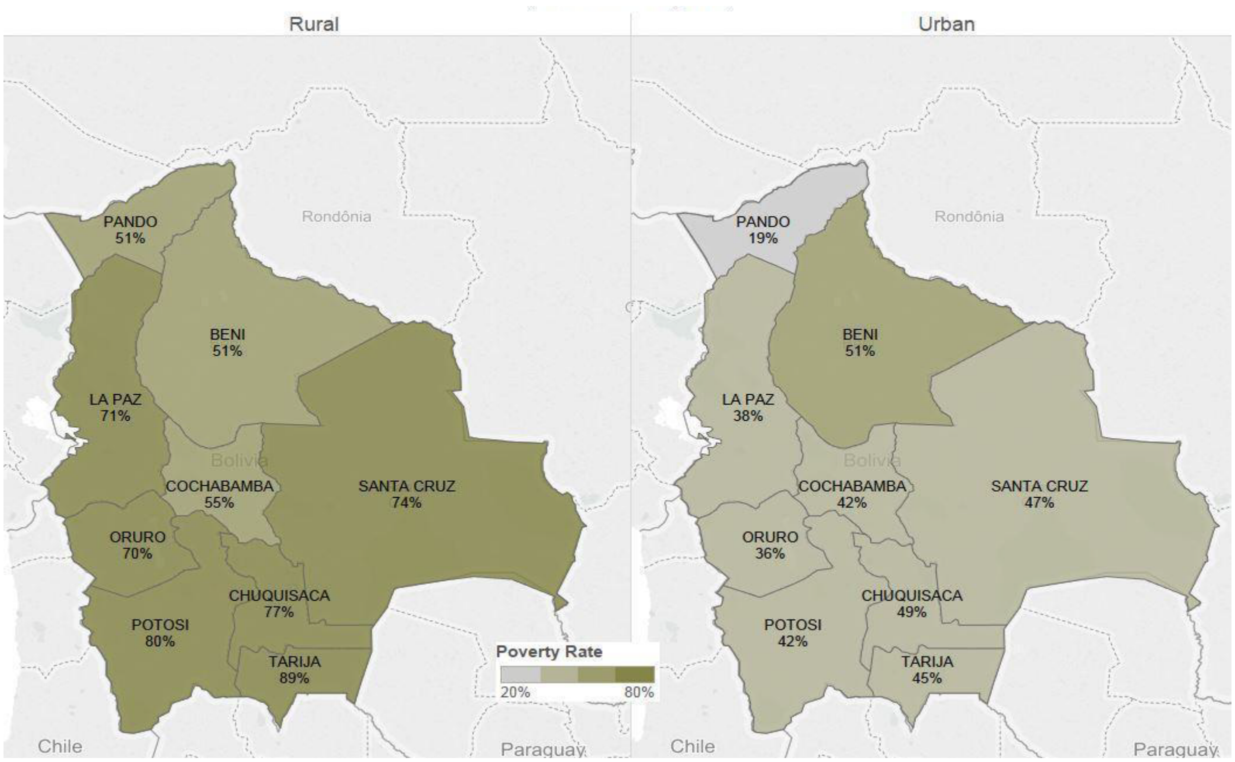
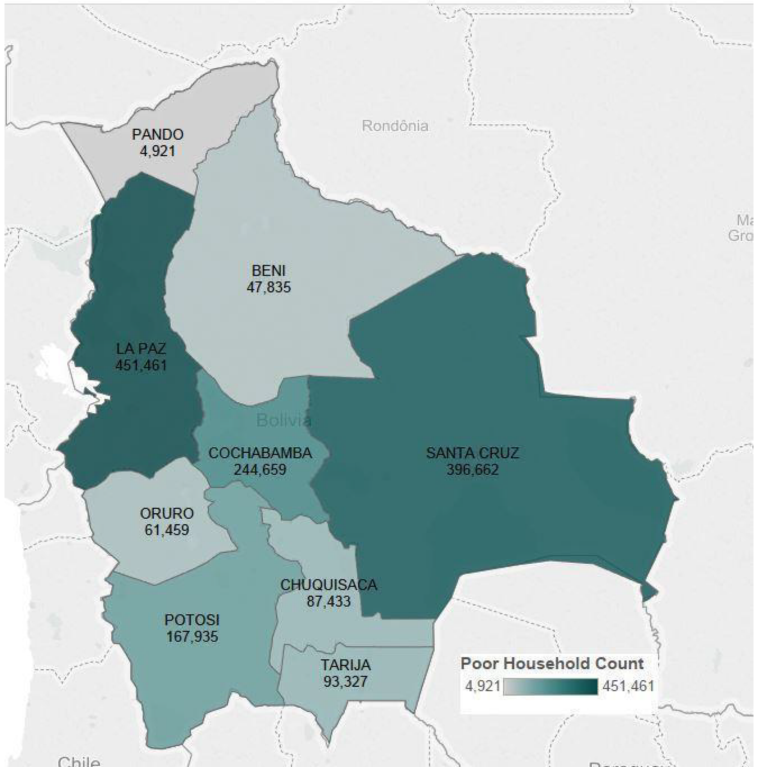


Figure 2: Choropleth of poverty magnitudes in regions served by participating MFIs



1. Concentration of Poverty Outreach

This section focuses on the percentage of clients of each MFI who are living under the poverty line. Figure 3 provides this statistic across two different poverty lines: the Bolivian national poverty line and $2.50 purchasing power parity line. We see that no Bolivian MFI in this study has a higher poverty concentration than the national average.

Figure 3: Concentration of Poverty across MFIs, National Average

Since these MFIs do not operate in all regions of Bolivia, our research will focus on conducting subsequent analysis based upon regional incidence.

2. Concentration versus Incidence, by Region

This section investigates whether client poverty concentrations of each MFI tend to exceed or fall short of the poverty incidences of their respective regions. Figure 4 plots average poverty incidence at the regional level against poverty concentration of the individual MFI in the region. The size of the circles is only representative of the size of the sample that was provided by the MFI.

The red line depicts the national poverty line. The grey line is a 45 degree angle such that all circles above the grey line connote poverty concentration of the MFI higher than the regional incidence level. From a side-by-side comparison we see that only MFI A reaches client poverty incidences which exceed that of the region. This happens only in regions where incidence is below the national level.

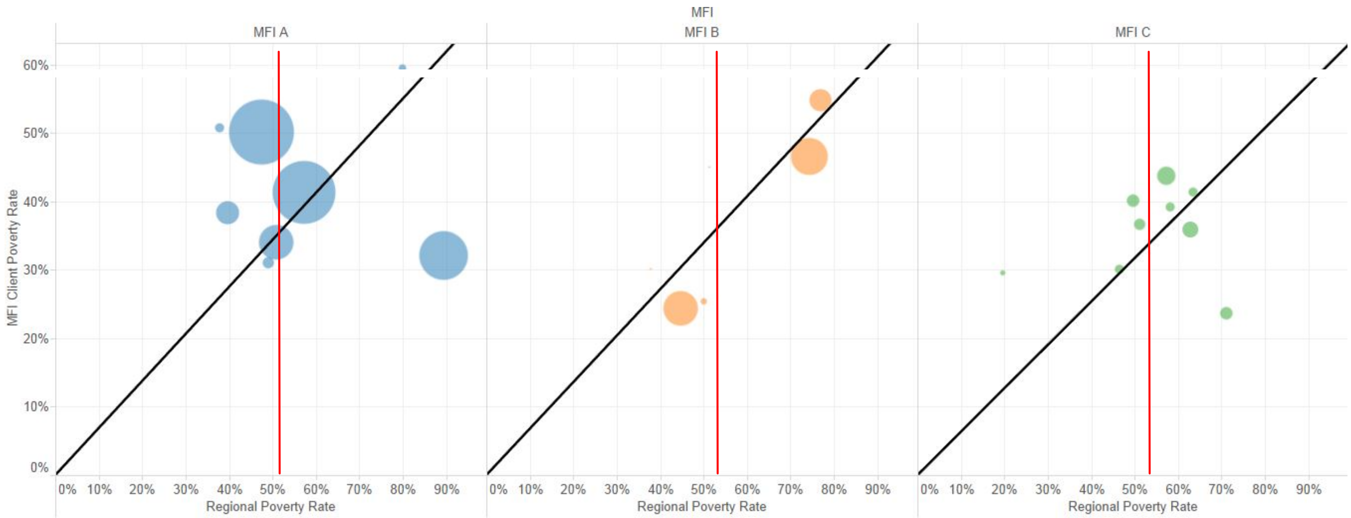
To a certain extent each of the three MFIs operate in regions which span the x-axis, however MFI A reaches regions with the highest regional incidence, as depicted by the circle situated on the 90% parallel. MFI A is part of VisionFund, an international microfinance network which requires its MFIs to target poorer rural communities, often in areas working alongside its parent NGO World Vision, which itself focuses its programming on the most vulnerable. This explains why MFI A focuses its operations around the national poverty line, denoted in Figure 4 as the diagonal line.

MFI B seems to operate in two distinct sets of regions. This is a reflection of their strategic decision to diversify their portfolio for sustainability purposes, as discussed in their interview. The distinct clusters represent two different products. In the regions with 70–80% incidence, they make group loans (“Banco Comunal”), whereas in the areas with 45% incidence they mainly make individual agricultural loans. Individuals who take out agricultural loans tend to be less poor and seeking to incorporate some technology into their activities. To be part of “Banco Comunal” loans, clients must be members of a group, commit in advance to the exact usages of the loan, and undergo random audits to ensure that the loans are used for the specific purpose claimed at the moment of the application. This particular strategy of providing loans which cater to individuals of differing financial capacity was motivated by the financial services law passed in July 2013, which caps average interest rates at 11.5%. The law also requires banking institutions to disburse 50–60% of their loans in certain sectors such as agriculture and low income housing. Therefore, competition is increasing in poorer areas and in agricultural areas. Though formal banks take deposits at 1–2%, MFIs generally can't take deposits from clients and or don't have access to sources of funds at such low rates. For example MFI B accesses funding at a cost of 8%. Thus, in order to keep average interest rates at 11.5% and remain financially viable on a thin margin, the MFIs consulted reported that they are diversifying their portfolio into relatively wealthier clients to reduce their interest rate and to poorer clients to meet the sectoral criteria. Consequently, this law is expected to increase financial inclusion in the rural areas of Bolivia.

The target clients of MFI B are individuals living on an income under 200% of the national poverty line; however, this is not made explicit in the decision criteria of loan officers. MFI B is focused on including the strata of population which is vulnerable to fall into poverty. They consider this to be a substantial danger when living between the 100% and 200% poverty line.

MFI C centers its operations on regions near the national poverty incidence. The decision of which regions to enter is based on the national poverty line and the human development index (HDI), with focus on rural areas and smallholder farmers. They focus on women—only 18% of their client base is male. As discussed with MFI C, it is their belief that women are poorer due to lack of access to education. They also believe that women applying for a loan are generally heads of households.

Figure 4: MFI concentration and scale across regional poverty incidences based upon the national poverty line



3. Scale of Poverty Outreach

The distribution of poverty incidences shown in Figure 1 (above) is associated in the western areas of Bolivia with issues of violent crime, less-fertile land, colder weather, and smaller farms. Indeed, as the magnitude map shows, in La Paz 451,461 people live under the national poverty line.

It is important to note that all three of these Bolivian MFIs belong to the same microfinance network, FINRURAL. As such, a similar set of rules regulate all three, which may be a reason for the similar poverty outreach patterns (42% for MFI A, 39% for MFI B and 37% for MFI C). A law passed in 2013 requires financial service institutions to reach the poorest, although as of yet the quantitative target has not been confirmed. Nonetheless, the law specifies that institutions must provide a metric of poverty outreach in their annual reports. FINRURAL has left the decision of which metric to use to the discretion of the institutions. However, FINRURAL assists its members exclusively with the implementation of the PPI.

MFI C provided a random sample of their client base between 2005 and 2013, achieving poverty concentrations of 38%, 40%, 35%, 39%, 35%, 37%, 37% and 39% in subsequent years until achieving 37% in 2013. This implies that MFI C served 59,417 clients who live below the national poverty line in 2011, 65,798 clients below the national poverty line in 2012 and 69,431 clients in 2013. To put these statistics into context, the latest World Bank statistic on poverty rates of Bolivia stands at 45% in 2011, so these concentrations are close to the percentage of people living below the national poverty line in Bolivia.

MFI B and C reach proportionately more individuals in rural areas than in urban areas, as Table 1 illustrates, consequently, servicing clients in areas where lack of access to finance is more acute.

Table 1: Overview of data provided by participating Bolivian MFIs

	Regions Served	Rural Clients	Urban Clients	Total Clients
MFI A	7	3,904	4,448	8,352
MFI B	4	1,261	824	2,085
MFI C	9	486	412	898

4. Penetration of Poverty Outreach

This section combines information on the regional incidence and regional concentration to provide a more granular insight into the outreach of the MFIs. We disaggregate penetration by urban and rural areas since there is such wide variation across the two areas, as the choropleths illustrated. To a lesser extent than in the Peruvian data, we see that penetration is greatest in urban areas. Figures 6 and 7 illustrate that MFI A has its highest penetration in La Paz, Cochabamba and Oruro. Neither of the other two MFIs achieves penetrations as high in other regions. Two out of the three MFIs show the lowest penetration in Tarija, the region with the highest rural poverty incidence (89%) and one of the highest urban poverty incidences (45%).

Figure 6: Rural penetration based upon the national poverty line for MFI A

Figure 7: Urban penetration based upon the national poverty line for MFI A

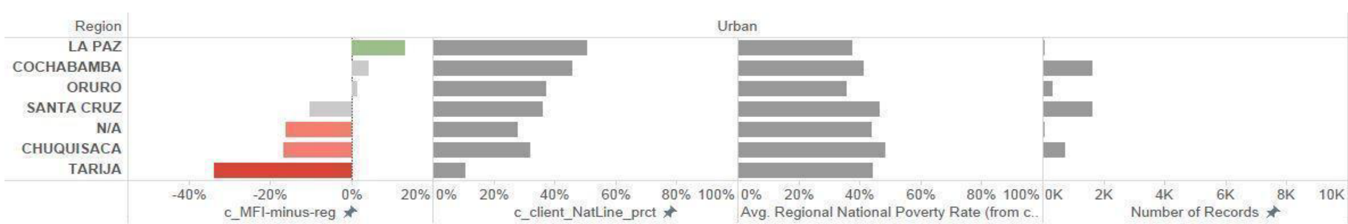


Figure 8: Rural penetration based upon the national poverty line for MFI B

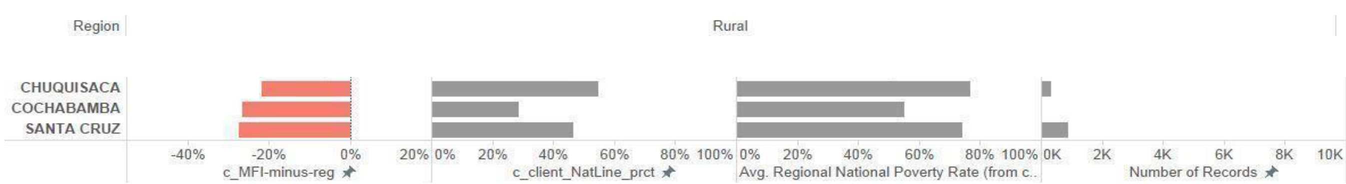


Figure 9: Urban penetration based upon the national poverty line for MFI B

Figure 10: Rural penetration based upon the national poverty line for MFI C

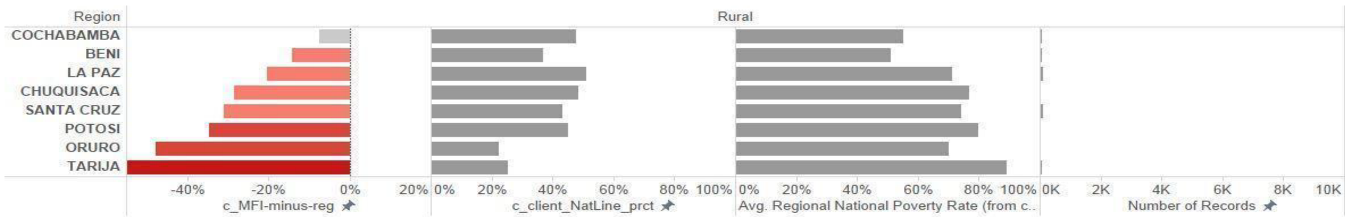
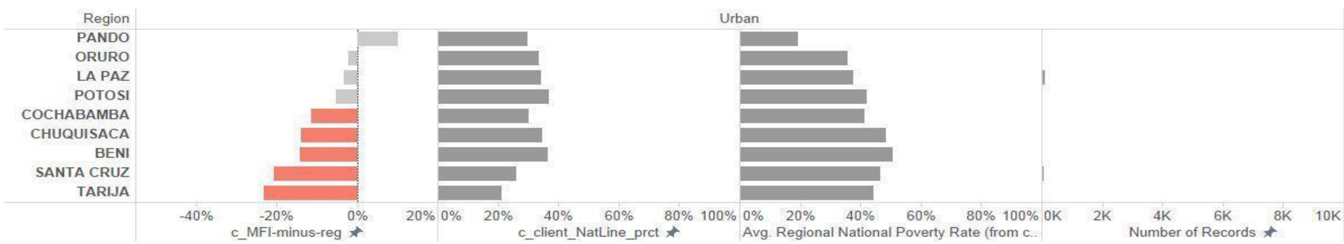


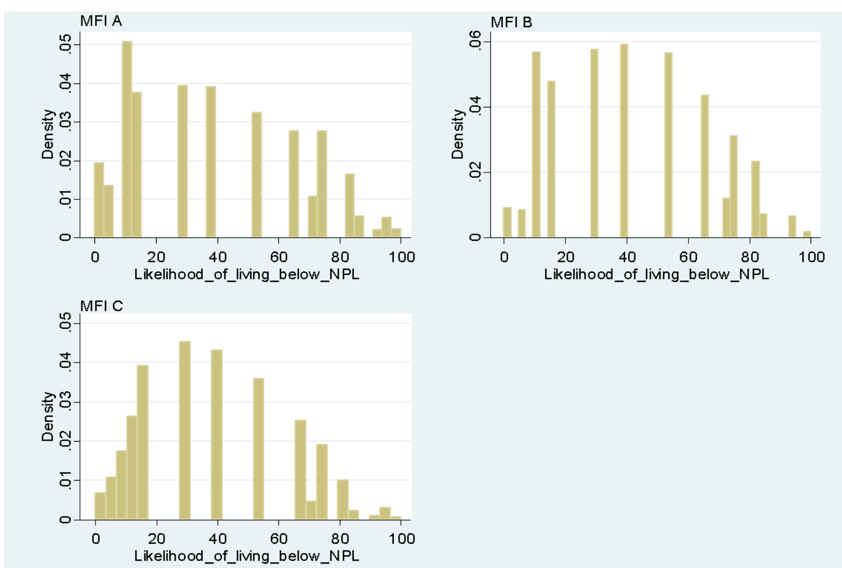
Figure 11: Urban penetration based upon the national poverty line for MFI C



5. Poverty Likelihoods and the Incentive Structures of Loan Officers

The histograms in Figure 12 demonstrate the variation in poverty likelihoods of the client bases for each MFI. They all have similar and high average likelihoods. The average client of MFI A has a 42% likelihood of living below the poverty line; those receiving loans from MFI B have on average a 39% likelihood of living below the poverty line. Finally, the average client of MFI C has a 37% likelihood of living below the poverty line.

Figure 12: Histograms of poverty likelihoods by MFI



The incentive structure of loan officers and the way credit disbursement decisions are made highly influence poverty outreach. Indeed, if set up incorrectly, the loan officer may find it beneficial to secure their salary by pursuing more affluent customers. This may be the case if incentives were based only on loan size and portfolio quality, for example. Conversely if the incentive structure includes a poverty target, such as x% of clients must have a PPI score below 40, the MFI would presumably achieve a higher poverty concentration in its clients.

The incentive structure of loan officers in MFI A is based upon the quality of the portfolio, the number of loans disbursed, and the amount of loans. The credit allocation decision is taken by a credit committee which discusses the report provided by the loan officer and bases the final decision on repayment capacity. They check for over-indebtedness with (Infocredit), the Bolivian credit bureau.

MFI B loan officers have a fixed salary in addition to a variable one. The variable element differs from urban to rural areas, and it is a function of the number of clients, amount of loans disbursed, and the quality of the portfolio. It also includes an additional bonus based upon contribution to the strategic plan for the given year. During the year the data was collected, the strategic plan of MFI B was based around client protection and avoidance of over-indebtedness. Thus, in order to receive the additional bonus loan officers were incentivized to take steps to prevent over-indebtedness in their clients.

The credit allocation decision in MFI B is made based upon a study of repayment capacity that takes into account outstanding loans and economic activity and assets. MFI B’s policy does not allow disbursements to individuals with more than three outstanding loans and more than 35,000 Bolivian Pesos aggregated outstanding debt (including all other financial institutions).

The credit committee of MFI C makes the credit allocation decision based on the information of the potential client available in the credit bureau (Infocredit) and on his/her repayment capacity discussed. It should be noted that it does not automatically exclude clients who have over three loans; instead, this is only a red flag to keep a closer eye on the client.

Though the MFIs in Bolivia do not generally include an explicit poverty target in their loan officers’ incentive structure, a number of elements encourage poverty outreach. MFI B offers loan officers a fixed salary alongside a variable component. This facilitates loan officers focusing on the mission of the MFI rather than behavior guided by their salary being measured solely against number of loans disbursed or portfolio size. This is even more powerful because the variable element weights loans disbursed in rural regions highest. They also check for over-indebtedness in their clients and do not allow individuals to take out loans larger than any outstanding one they may have (to avoid taking a loan to repay another one). All three MFIs seem to strike a balance between incentives that encourage the inclusion of marginal clients while limiting exposure to client over-indebtedness.

6. Client Profiles

The data provided by the Bolivian MFIs did not include loan amounts. They did include the state of the loan, but only whether they were fully repaid or active[4]. This precludes any regression analysis of characteristics of individuals who are more or less likely to be delinquent. MFI B provides individual loans only. MFI A provides both individual and group loans but did not provide the micro-level liability type of each loan in the dataset. As such, the regression for MFI A does not differentiate between loan liability type.

Determinants of Multiple Loans in MFI A

The report finds that female clients of MFI A receive on average more loans than male clients—a result significant at the one percent level and in keeping with the findings of previous sections. On average, older clients receive more loans than younger ones, as do those with lower likelihoods of living below the national poverty line.

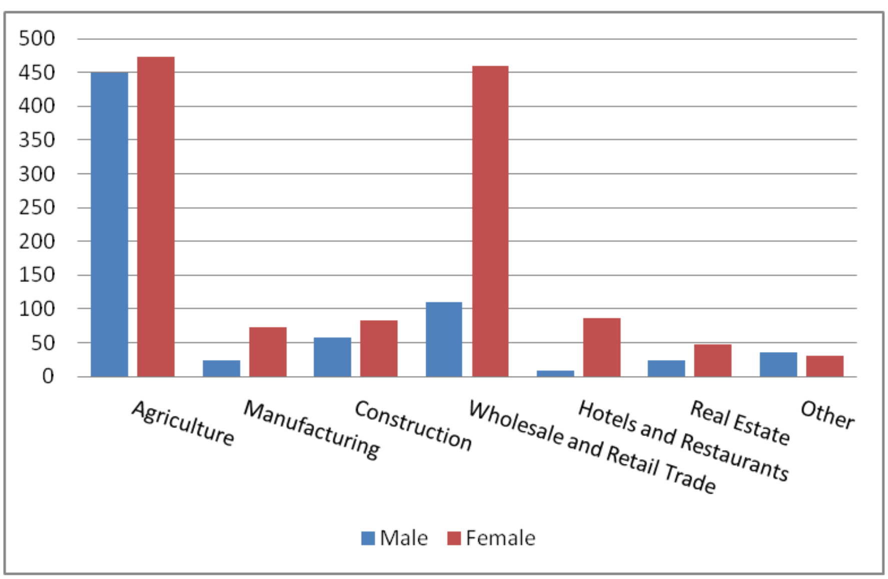
No economic activity has a statistically significant coefficient. In other words, people who receive multiple loans do not work in a particular economic sector.

Compared with Chuquisaca, the only significant regional difference in terms of loan size could be found in La Paz. Clients in La Paz receive on average slightly fewer loans.

In terms of economic activity and gender (by number of loans), women are predominantly situated in the agricultural and retail sectors, whereas men are focused generally on the agricultural sector (Figure 13).

House ownership type has no statistically significant effect on number of loans received. However, larger households on average receive more loans, as do clients who have been with the MFI for longer periods.

Figure 13: Economic Activity and Gender Distribution by Loan Counts, MFI A



[4] The code for an 'active' loan aggregated whether the payments were up-to-date and up to 30 days late.

Determinants of Multiple Loans in MFI B

Women receive on average more loans than men, as do older clients. Individuals with a higher likelihood of living under the poverty line are less likely to receive multiple loans. The longer the client has been with the MFI, the more loans they have received on average. This result is intuitive. Clients who have been with the MFI for a long period fall on the right side of survivorship bias—clients who were not financially viable were not offered further loans.

7. Conclusion

Financial services in Bolivia are strongly regulated and microfinance institutions in particular take voluntary measures to be transparent. Bolivia experiences one of the highest national poverty incidences of the countries in this report. Ahead of the 2015 election, the government is undertaking a range of changes to the financial sector. They are set to mold the landscape into one which caters to the sector in which most poor people work—agriculture.

- This is leading some MFIs, such as MFI B in our sample, to diversify their portfolio to include wealthier clients. These clients can be charged lower rates in order to balance out the higher interest rates charged to the more vulnerable agricultural sector.

- Both MFI A and C center their operations in regions which have incidence levels close to the national poverty line and achieve this through explicit regional targets. MFI A, which is part of VisionFund, selects these regions based upon which are below the national poverty line. MFI C explicitly chooses regions to enter based upon the national poverty line and human development index (HDI). They focus on women, small holder farmers, and rural dwellers.

- The poverty concentrations of these MFIs are all similar and high. The average client of MFI A has a 42% likelihood of living below the national poverty line, the average client of MFI B has a 39% likelihood, and the average client of C has a 38% likelihood.

Ecuador

Ecuador has exhibited impressive resilience to the effects of the global financial crisis of 2008, given that two of its main sources of foreign earnings were simultaneously hit—petroleum and remittances from abroad—and that it is a dollarized economy and thus has constrained access to macroeconomic tools. Ecuador is an example of a country in which a multitude of reforms were implemented in recent times which directly or indirectly impact poverty. Indeed the administration of President Rafael Correa undertook countercyclical fiscal stimulus and measures as close to monetary policy stimulation as possible.

In terms of monetary policy, in 2009 the central bank raised the reserve requirement to 3% of their deposits and required private banks to hold 45% of their reserves domestically (Banco Central de Ecuador, 2014). In terms of fiscal policy, between 2006 and 2009 government spending on education as a percentage of GDP doubled, from 2.6% to 5.3%, and spending on social welfare more than doubled—from 0.7% to 1.8% (Ministerio de Finanzas del Ecuador, 2014). It expanded its main cash transfer program, the Bono de Desarrollo Humano (BDH), by almost 25% through targeted outreach to eligible families who were not yet enrolled. Impact evaluations exploiting the randomized phase-in nature of BDH, such as Fernald and Hidrobo (2011) and Edmonds and Schady (2012), found that this unconditional cash transfer led to improvements in child development including statistically significant increases in school enrolment and significant decreases in child labor. This is relevant to this report as it affects the landscape of poverty in Ecuador and as such affects the poverty outreach MFIs can achieve.

This conjuncture of explicit effort to improve welfare of the most vulnerable through monetary and fiscal measures is the one in which our data must be situated. These efforts may lead to lower poverty incidences across regions, microfinance disbursements held equal, which would mean less poor households in aggregate and could entail more competition from formal banks as demand for credit would increase. We shall investigate our hypothesis that in areas with higher competition for clients, microfinance organizations which do not directly target the poor may be more likely to provide loans to the poorest than they would in areas in which more affluent unbanked require credit.

In 2011 the Superintendencia de la Economía Popular y Solidaria (SEPS) was created to regulate co-operatives, communal banks, non-governmental organizations and other entities that provide financial services within the solidarity economy. According to the World Bank's Global Financial Inclusion Index, in 2011 37% of adults had an account at a formal financial institution (*Ecuador - Global Financial Inclusion (Global Findex) Database 2011, 2014)*. In 2014 the Banco Central del Ecuador signed an agreement with a mobile operator that had 1/3 of the market in a bid to promote mobile-payment systems amongst unbanked rural residents in particular. The Inter-American Development Bank (IDB) provided a US$50 million loan in 2011, aimed at expanding employment opportunities and reducing poverty among low-income women particularly. The program was intended to result in a 60% increase in credit available in districts with high levels of poverty, of which at least 54% would benefit women entrepreneurs.

Figure 1: Choropleth of poverty incidences in regions served by MFI R

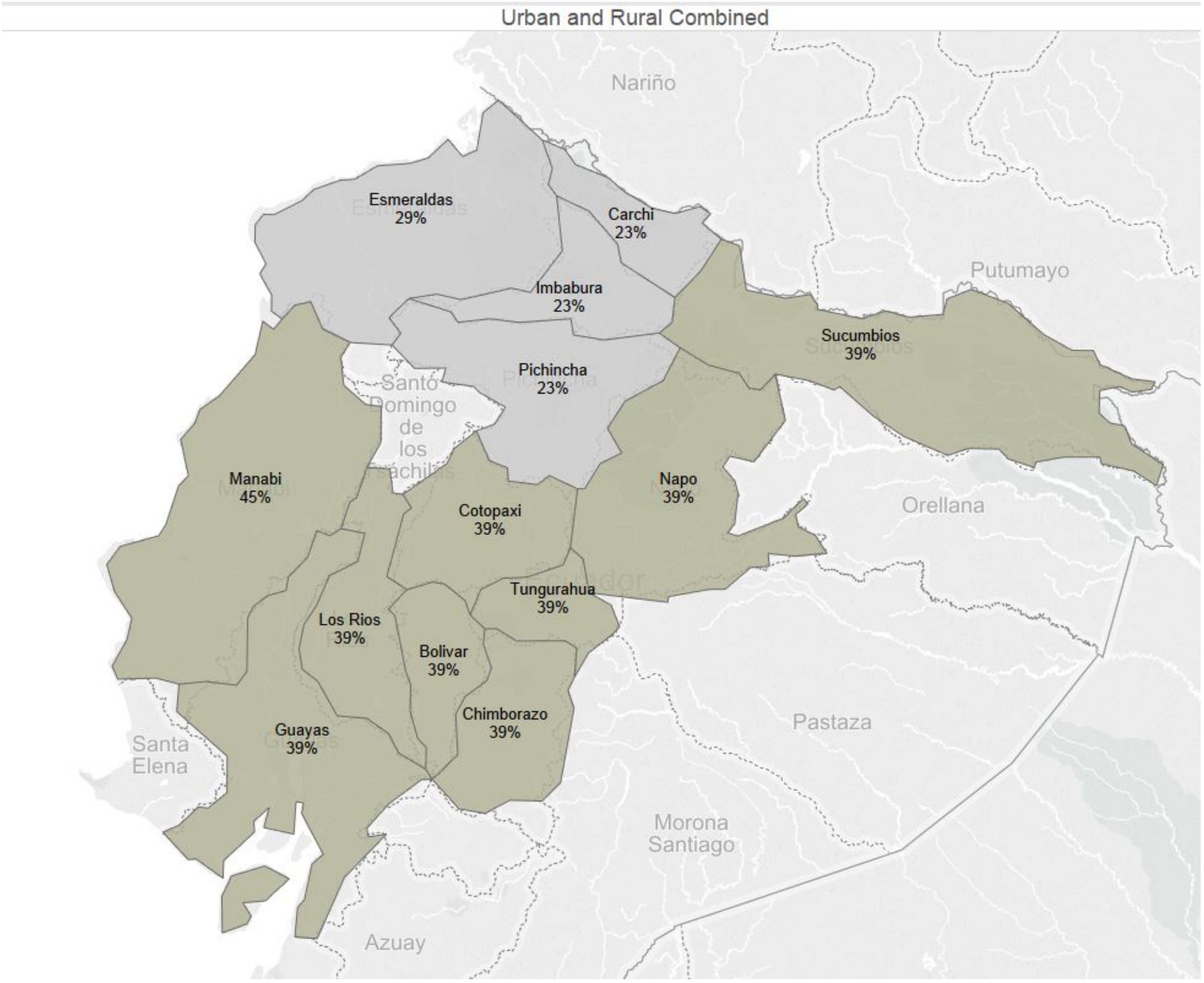
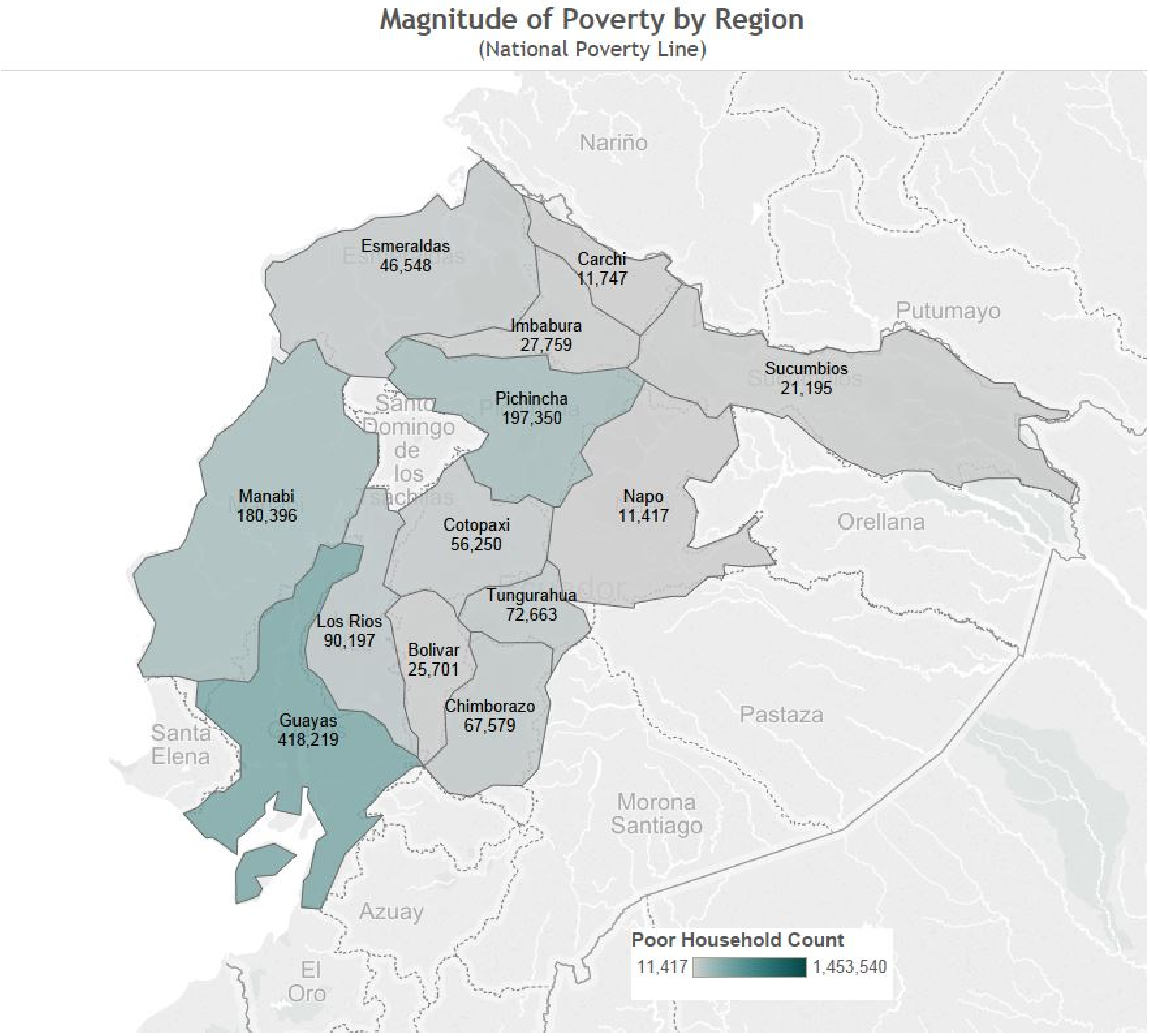


Figure 2: Choropleth of poverty magnitudes in regions served by MFI R



1. Concentration of Poverty Outreach

Figure 3 below depicts the four regions in which MFI R achieves the highest poverty concentration. In Chimborazo, this MFI has two branches, one in Rio Bamba and one in Guamote. Much of the population in these areas consists of poor, indigenous people. Over 50% of the MFI's clients in Guamote live below the national poverty line. MFI R explained that banking saturation is the key to the high poverty concentration of clients in that region. Indeed, most of the indigenous population had started saving accounts in cooperatives before the MFI entered the market. As such, these accounts served as collateral in financial institutions and demonstrated demand for credit in the area, which led to many financial institutions entering the market. This led to high banking saturation in the area and, as in previous chapters of this report, high banking saturation leads MFIs to service a poorer client base.

Sucumbíos is a forest area in which only one bank operates, the 'Banco de Fomento', a government-run bank. The high transaction cost of operating in a sparsely populated forest area is made ever more complex by the fact that it is a borderland, home to many Colombian refugees. In this unstable situation, many clients who are refugees would not have secure incomes, support networks, or any forms of collateral. MFI R only reaches 269 individuals in Sucumbíos, yet it achieves a poverty concentration akin to that of areas where it has operations ten times larger. This implies that the targeting is highly honed in this branch. World Vision, the parent NGO of MFI R, does not operate in this area, unlike most of the other areas in which MFI R achieves a high poverty concentration. MFI R instead works with the United Nations High Commissioner for refugees (UNHCR), receiving funding to provide services in this challenging region.

Figure 3: Regions with the highest poverty concentration

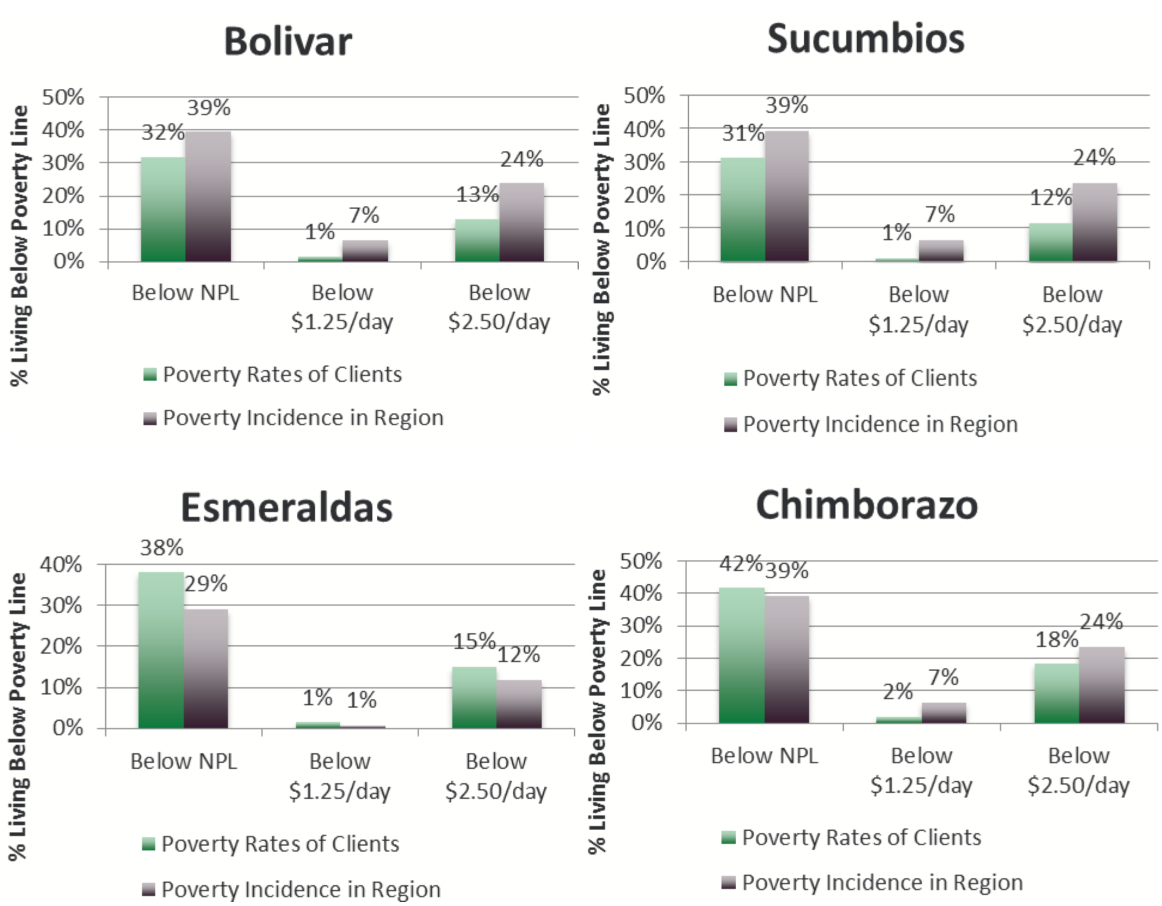


Figure 4 depicts concentration in the regions in which MFI R has the lower percentage of clients living below the national poverty line. The lowest concentration is found in Los Rios, with 18% of its clients living below the national poverty line. Both the Imbabura and Manabí regions have a client concentration of 23%. Imbabura's poverty incidence is 23% while Manabí's is 45%. As discussed with MFI R, these concentrations are required to ensure financial sustainability in high cost environments (i.e. serving very remote areas).

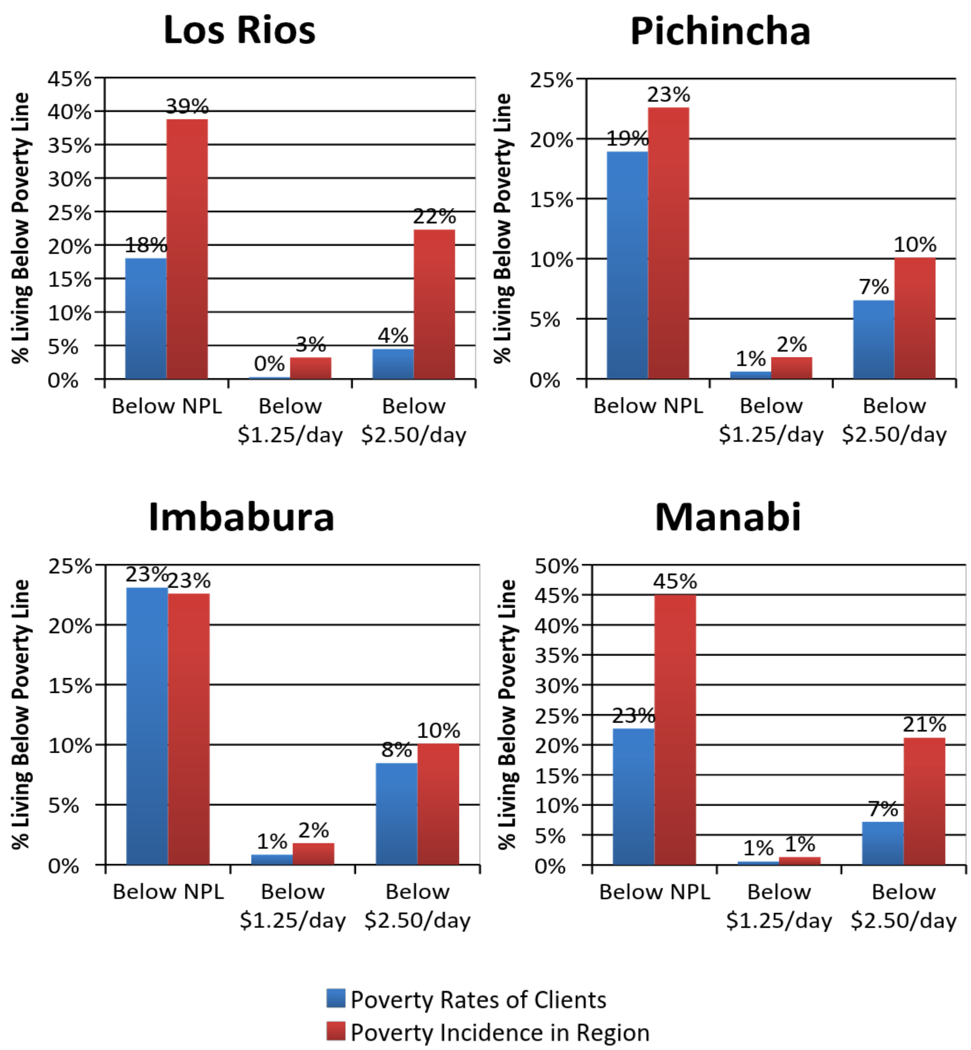
The MFI explained that the low poverty concentration in the Pichincha region is due to a very challenging landscape and associated costs of operation which impedes the MFI from providing loans in the poorest areas. The region is dominated by the Andes mountain ranges and volcanoes. The climate varies from tropical to glacial due to the different land altitudes. In the northwest, temperatures range from 15 Celsius to 25 Celsius, while in the Andean region it ranges from –3 to 10 Celsius.

Imbabura is the region in which MFI R has its largest operations, reaching 8,913 individuals. Although the concentration in this region is amongst the four lowest, it matched the incidence in the area.

The relatively low concentration in Manabí when compared to the regional incidence may be due to the fact that the MFI only entered Manabí 14 months ago, following a recent change in the strategy of VisionFund. This region has the highest poverty incidence (45%) of all the regions in which the MFI operates.

The MFI has one of the lowest scales of all their points of operation in Los Rios, reaching 413 individuals. The client concentration in this area is 18% whereas the regional incidence is 39%. The strategy of the MFI in this region explains this low concentration. Initially they sought clients in urban areas of low banking saturation in order to establish the branch and earn credibility in the area. Only once this is achieved to their satisfaction will they move to more rural areas and poorer households.

Figure 4: Regions with the lowest poverty concentration



2. Scale of Poverty Outreach

MFI R is the only Ecuadorian institution that provided data, it provided information on all its new clients over the years 2011-2014, amounting to over 45,000 individuals across 12 regions, and made possible to undertake scale and penetration analysis. As Table 1 illustrates, the majority of MFI R's operations are situated in the Imbabura, Carchi, Cotopaxi, and Chimborazo regions. MFI R is part of VisionFund, an international microfinance network which requires its MFIs to target poorer rural communities, often in areas working alongside its parent NGO World Vision, which itself focuses its programming on the most vulnerable. VisionFund evaluates which markets to enter based upon national poverty levels, seeking to offer services in the poorest areas.

Table 1: Overview of data provided by Ecuadorian MFI

Region	Sample Size	Region	Sample Size
Imbabura	8913	**Pichincha**	3588
Carchi	8202	**Bolivar**	2799
Cotopaxi	6314	**Tungurahua**	1752
Chimborazo	5827	**Los Rios**	413
Manabí	4971	**Sucumbíos**	269
Esmeraldas	4823	**Napo**	18
Total			**47889**

As Table 2 illustrates, in 2011 this MFI served 1,525 individuals who lived under the national poverty line, 1,376 in 2012, 5,435 in 2013, and 3,981 in 2014, reflecting concentration rates of 27%, 22%, 29%, and 27% respectively. MFI R achieves a poverty concentration higher than the national incidence rate in 2013 and 2014. In their interview, the MFI noted that in 2012 they had experienced data collection issues in terms of quality control, which explains the sudden drop in concentration rate. Following this they set up a number of quality control processes to ensure this would not reoccur.

Table 2 – Scale of poverty outreach

Country	MFI	Time period	MFI scale	Sample size	Sample strategy	Scale of poverty outreach	% concentration	National poverty rate
Ecuador	MFI R	2011	5649	5649	Total new clients	1525	27	29
Ecuador	MFI R	2012	6256	6256	Total new clients	1376	22	27
Ecuador	MFI R	2013	18740	18740	Total new clients	5435	29	26
Ecuador	MFI R	2014	14744	14744	Total new clients	3981	27	23

3. Concentration versus Incidence, by Region

We now delve into the scale and incidence of MFI R in the regions where it operates. These are important metrics to consider in order to understand the extent to which this MFI is reaching poor individuals. In terms of absolute number of clients, MFI R reaches most people in Imbabura (8,913); however, it is in Chimborazo that the MFI reaches most individuals living under the national poverty line. The reason, as discussed previously, is that in the absence of high banking saturation, operations which focus on urban areas are more likely to cater to wealthier people (Imbabura).

The importance of looking at incidence in conjunction with scale is demonstrated by the data on Sucumbíos and Carchi. Indeed, 31% clients in Sucumbíos are below the poverty line and this statistic in isolation may mislead the reader to believe MFI R is reaching a higher proportion of the regions' poor than in Carchi for example which has 23% of its clients under the national poverty line. However, only 84 individuals below the poverty line are being reached in Sucumbíos versus 1,868 individuals in Carchi, as Figure 6 demonstrates.

Figure 6: Scale and Concentration of Poverty by Region

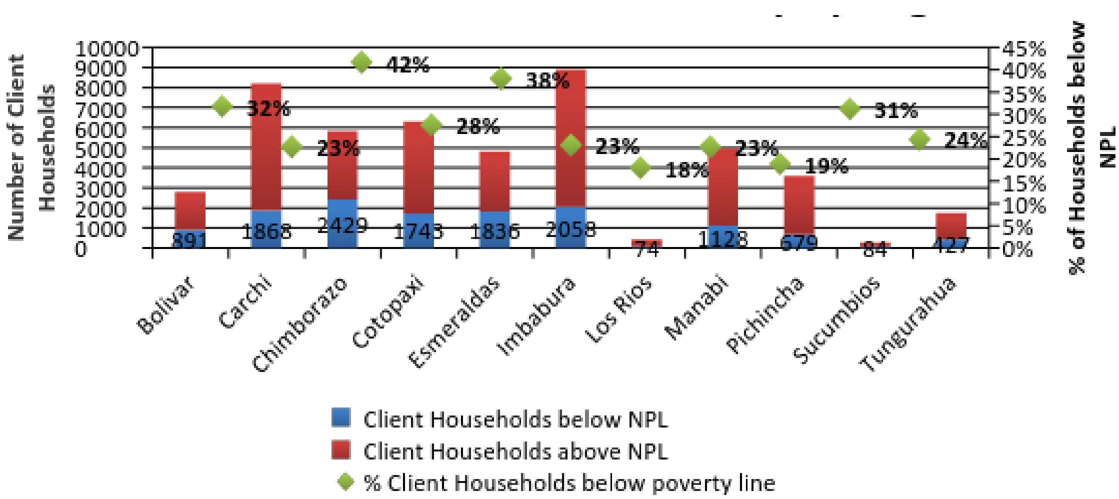
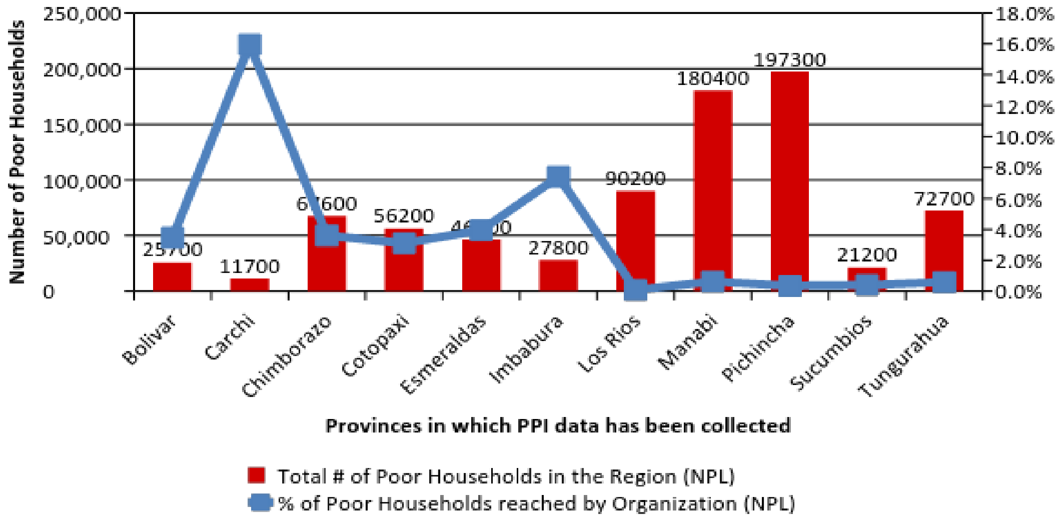


Figure 7 provides insight into the relative size of outreach of MFI R across regions of Ecuador. Impressively, they reach 16% of households under the poverty line in Carchi. Carchi is one of the regions of Ecuador with the lowest number of households living below the national poverty line, and its foothold there is key to the MFIs financial sustainability and ability to serve the poor elsewhere. Penetration in the two regions with the highest poverty incidence, Pichincha and Manabí stands at 0.3% and 0.6%. Penetration in Imbabura is the second highest, at 7.4%, then all remaining regions are either in a cluster of over 3% such as Esmeraldas, Cotopaxi, Chimborazo and Bolivar or under 1%.

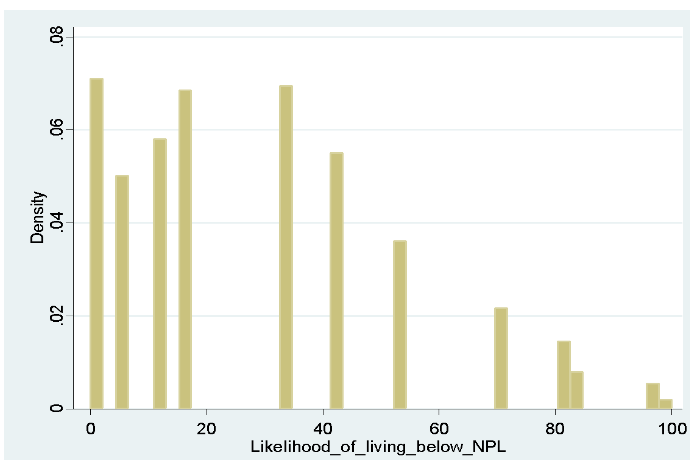
Figure 7: Penetration of Poverty Outreach



4. Poverty Likelihoods and the Incentive Structures of Loan Officers

Figure 8 illustrates the distribution of poverty likelihoods of clients. The average client has a 28% likelihood of living below the national poverty line. The mission statement of this MFI does not explicitly target the poor; instead, it seeks to promote microenterprise development and the quality of life of their clients.

Figure 8: Histograms of poverty likelihoods



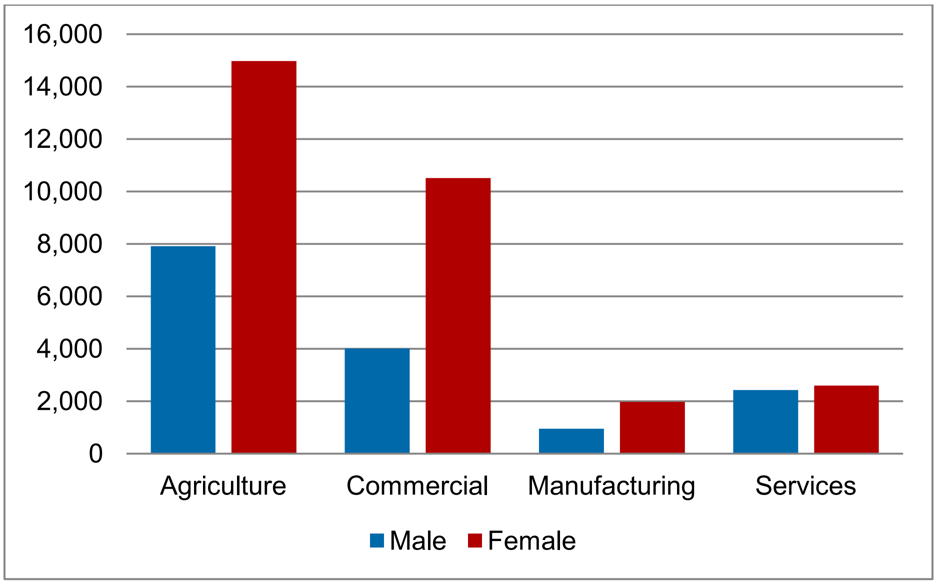
Loan officers in this MFI receive a fixed salary and a variable one. The latter is based upon retention of clients, total number of clients, the amount of the portfolio, and quality of the portfolio. The decision of whether to offer a loan and its size is made by a credit committee that studies the repayment capacity, the client history, and the credit bureau information. This MFI has a policy of not offering loans to anyone with more than four outstanding loans. The loan officer incentive structure of this MFI is not directly targeting the poorest, although the fixed salary portion of the incentive mitigates perverse incentive. However, because this MFI is part of VisionFund, it is required to operate in areas of high poverty incidence, thus its commercial strategy leads to achieving poverty concentrations close to the national average.

5. Client Profiles[5]

There is no statistical difference of loan amounts received by gender, unlike many of the other MFIs in this report. This is all the more important as women make up 67% of MFI R's client base. [6]

As compared to those who work in the agricultural sector, people who work in the commercial, manufacturing, and services sectors all receive loans on average US$53 higher, US$39 lower, and US$114 lower, respectively.

Figure 9: Economic Activity and Gender Distribution by Loan Counts, MFI A



MFI R seems to disburse similar loan amounts across individuals of differing poverty likelihoods. Each additional percentage point increase in the likelihood an individual living below the national poverty line is associated with a decrease of US$2 in loan size. To contextualize this, the average loan disbursed by MFI R is US$597. This demonstrates the relatively insignificant positive relationship between the wealth of a client and the loan amount.

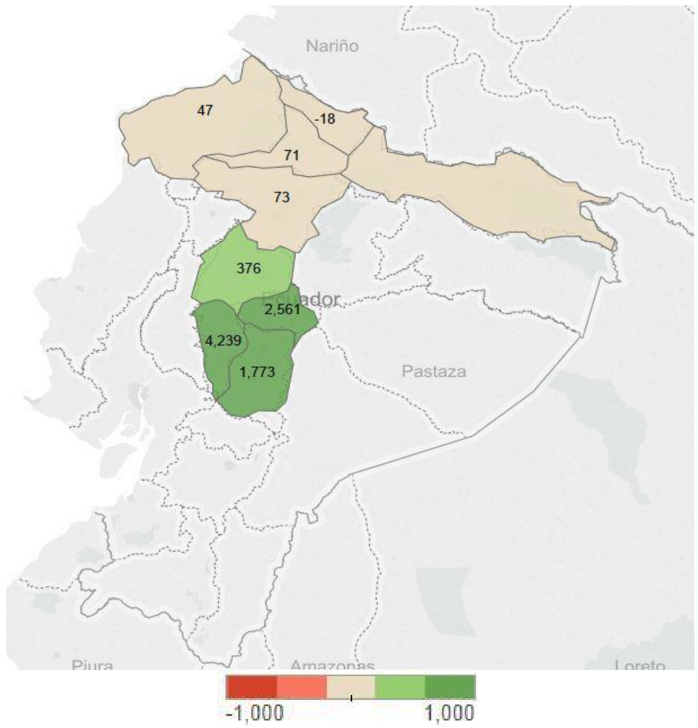
The data provided by MFI R includes an additional variable for the year 2011, which is "have you received a loan from an MFI before?" The report finds that individuals who have previously received loans from other microfinance organizations receive on average loans US$285 smaller than those who have not received them, and this result is statistically significant at the 1% level. This result is in line with the concern for over-indebtedness in Latin America as well as the internal regulation of the MFI.

[5] The MFI provided a very large and representative sample (44,184 observations) of its clients.

[6] The variable which controls for the date of the first loan issued to a client does not exactly capture whether being a client of an MFI for an extended period of time increases the size of the loan since we have a negligible number of repeat observations per client. As such, the inclusion of the variable here simply acts as a control for the year of issue

Figure 10 presents loan size by region, taking Sucumbíos, the region with the poorest clients, as the baseline. The green areas are actually the regions with the highest poverty incidences relative to the areas in beige. Figure 10 thus shows that MFI R is disbursing larger loans in areas of relatively more widespread poverty.

Figure 10: Loan size by region (baseline Sucumbíos), MFI R



6. Conclusion

- MFI R, part of VisionFund, targets markets in areas with poverty incidences below the national poverty line. This MFI focuses the largest proportion of its operations in Manabí, the region of Ecuador which has the highest poverty incidence and one of the largest indigenous populations. Three of the four regions with highest concentrations have some of the highest incidence levels in the country.

- Concern for operational sustainability arose once again during discussion of the areas of lowest concentration. On the one hand, the three regions in which the MFI disburses the largest loans are Tungurahua, Bolivar, and Chimborazo, which each have the second highest poverty incidence (39%). On the other hand, the MFI has its largest scale of operations in Imbabura where it has a significant market of non-poor clients which balance its portfolio. The picture painted by this MFI is one of successfully balancing financial sustainability and targeted outreach to the poorest. Thus, VisionFund's explicit poverty focus seems to have led to a high poverty outreach for its MFI in Ecuador, as it did in Bolivia.

- The regression output shows that on average women receive slightly smaller loans, individuals in the agricultural sector receive the largest loans, and individuals with a lower likelihood of living in poverty receive larger loans.
- VisionFund MFIs prioritize serving women – in Ecuador 67% of clients are women and in Bolivia they received the largest number of loans. If investors seek poverty outreach with a gender perspective, funding VisionFund MFIs appears to provide results.

Guatemala

Guatemala is a multi-ethnic country in which 40% of the population identifies as Indigenous and speaks one of 24 Mayan dialects as first language. The median age is 17, and it boasts the highest GDP growth rate (3.3%) in Central America (The World Factbook, 2014). A 36-year civil war that ended in 1996 has left a legacy that persists through distinct regional inequalities in poverty incidences. The Commission of Historical Clarification found that 83% of fully identified victims of human rights violations were Mayan (Chamarbagwala and Morán, 2011). The Western highlands bore the brunt of the conflict and include the two departments with the highest poverty incidences, as depicted in Figures 1 and 2, and coincidentally the highest proportion of indigenous inhabitants. The microeconomic impact of war can have persistent and profound repercussions on productive capacities of future generations. Damages include injury and death, loss of property, displacement from homes, and reductions in human capital through inability to attend school. A recent paper found that the final period of civil war (1985–1996) resulted in 23% less schooling among men and 30% less schooling among women (Chamarbagwala and Morán, 2011).

Since 1996, the economy has stabilized and liberalized, experiencing an average growth rate of 3.5% and a doubling of exports between 2002 and 2010 (MINECO, 2014). Guatemala has continued to improve. The 2013 figures are evidence of this; GDP grew at a rate of 3.7%, inflation in November 2014 was only 3.5%, and interest rates were approximately 4% (BANGUAT, 2014). Despite these improvements in economic performance, Guatemala faces substantial challenges in terms of low human capital and high inequality. The size of the government and its investment capacity is constrained by a national budget, which equals a mere 15.5% of GDP, the lowest in Central America and nearly ten percentage points below the average. These metrics may have contributed to Fitch Rating's downgrade of the national debt from BB+ to BB in 2014. Three out of four people live in poverty in 44% of rural municipalities (World Bank & INE, 2014). In addition, Guatemala has suffered natural disasters that have disproportionately affected the poor. According to the Economic Commission for Latin America and the Caribbean's impact evaluation, Hurricane Stan in 2005 caused damage and loss amounting to 3.4% of 2004 GDP.

In 2014, the Superintendencia de Bancos (SIB) published data on 12,802 points-of-service (ATM, branch or banking agent), nearly 1,400 more than the year before (The Center for the Study of Financial Innovation 2014). This indicates increased financial inclusion in the country. However, the IMF has expressed concern over growing levels of indebtedness.

Figure 1: Choropleth of poverty incidence in Guatemalan departments served by MFI G

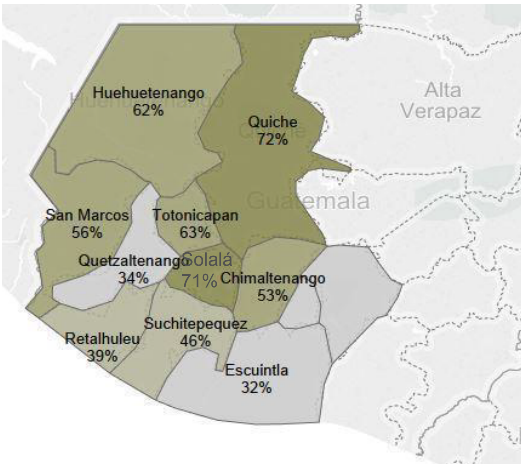
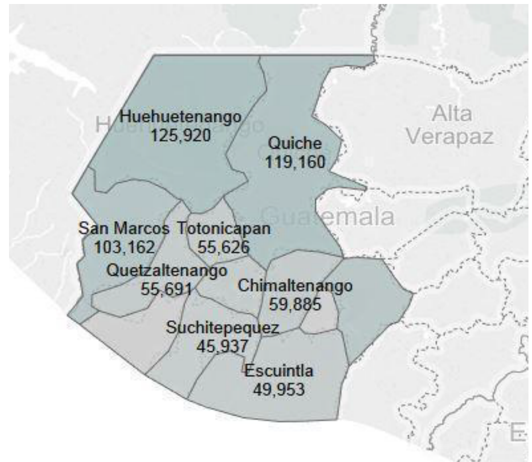


Figure 2: Choropleth of poverty magnitudes in Guatemalan departments served by MFI G



1. Concentration of Poverty Outreach

Forty percent of MFI G's clients across the country are living below the national poverty line, the same rate as in Guatemala as a whole. Two percent of MFI G's client base live in extreme poverty, and 20% of its clients live below the $2.50-per-day international purchasing power parity line (Figure 3).

Figure 3: MFI G's Concentration of Poverty against national and international benchmarks

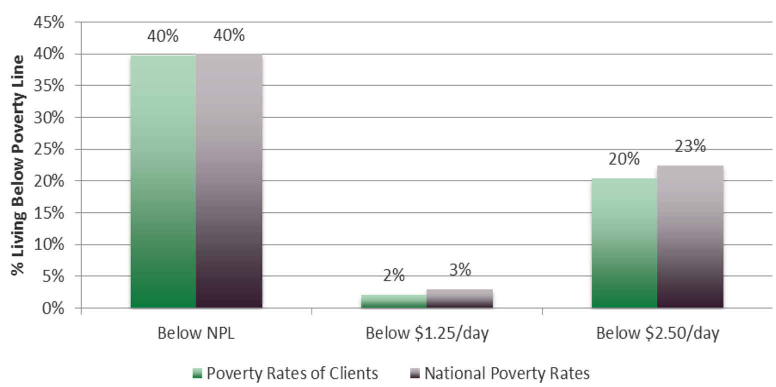


Figure 4 shows the four departments with the highest poverty concentration. Although at the time of data collection the mission statement of the Guatemalan MFI did not specify a target poverty level, their choice of which areas to enter was based upon poverty maps, and they believe that their product design of low loan sizes and compulsory educational training sessions leads to self-selection of the poorest into the services. Indeed the top four concentration areas include the two departments with the highest number of poor households in Guatemala (Huehuetenango and Sololá), suggesting that the MFI is targeting the areas with highest poverty incidence. Indeed the majority of departments in which MFI G operates are in the Western Highlands, an area characterized by mountainous landscapes, high concentration of indigenous population, dispersed rural populations, and poor-quality infrastructure.

Sixty-eight percent of MFI G's clients in the Quiche region live below the national poverty line, compared to a regional poverty incidence of 72% (Figure 4). Fifty-five percent of clients in Sololá live below the national poverty line which compares to 67% incidence. Coincidentally, MFI G has been operating in Quiche and Sololá for the longest period of time and they house their largest operations. These departments have very dispersed rural populations. MFI G brings the banking services "to their doorstep" through village meetings conducted in the indigenous dialect, and as such is an attractive institution to borrowers. The mission statement of this MFI changed in 2014 to include "impoverished"; however, at the time this data was collected their mission statement was "to provide microcredit and education to Guatemalan women so that they can create their own solutions to poverty for themselves, their families and their communities." Despite the fact that their mission statement did not explicitly specify the poor, they entered departments with the highest poverty incidences and provided a product that indirectly targets the poor. They offered only group banking, initially with a 6 month term, a cap on the first loan, and compulsory monthly educational trainings. Clients can gradually increase their loan sizes and terms as they prove to be responsible borrowers and have the capacity to take on more debt.

Figure 4: Departments with the four highest poverty concentrations

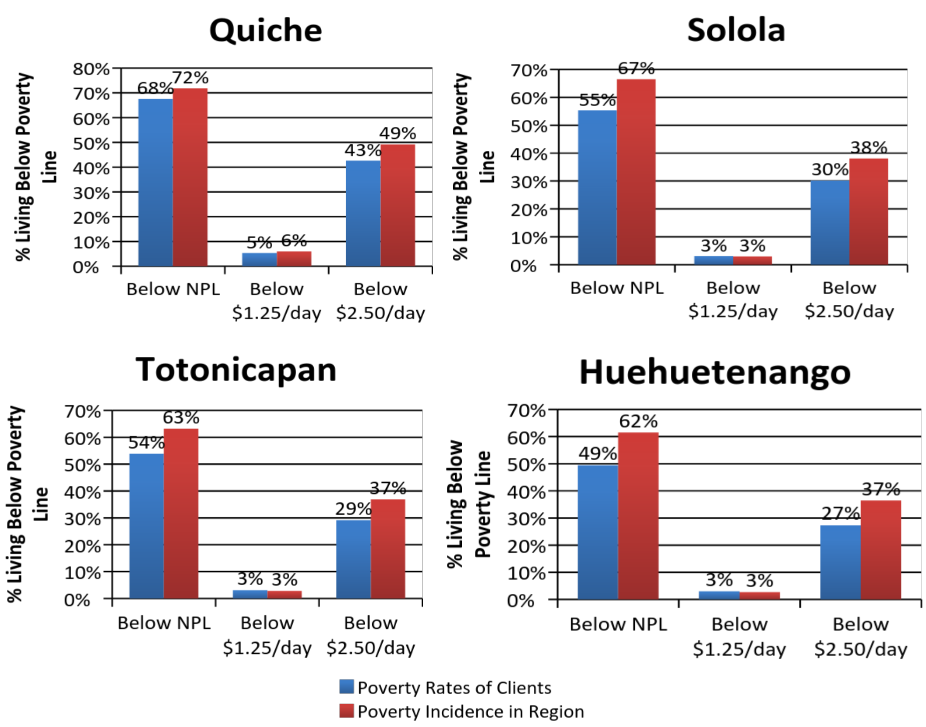
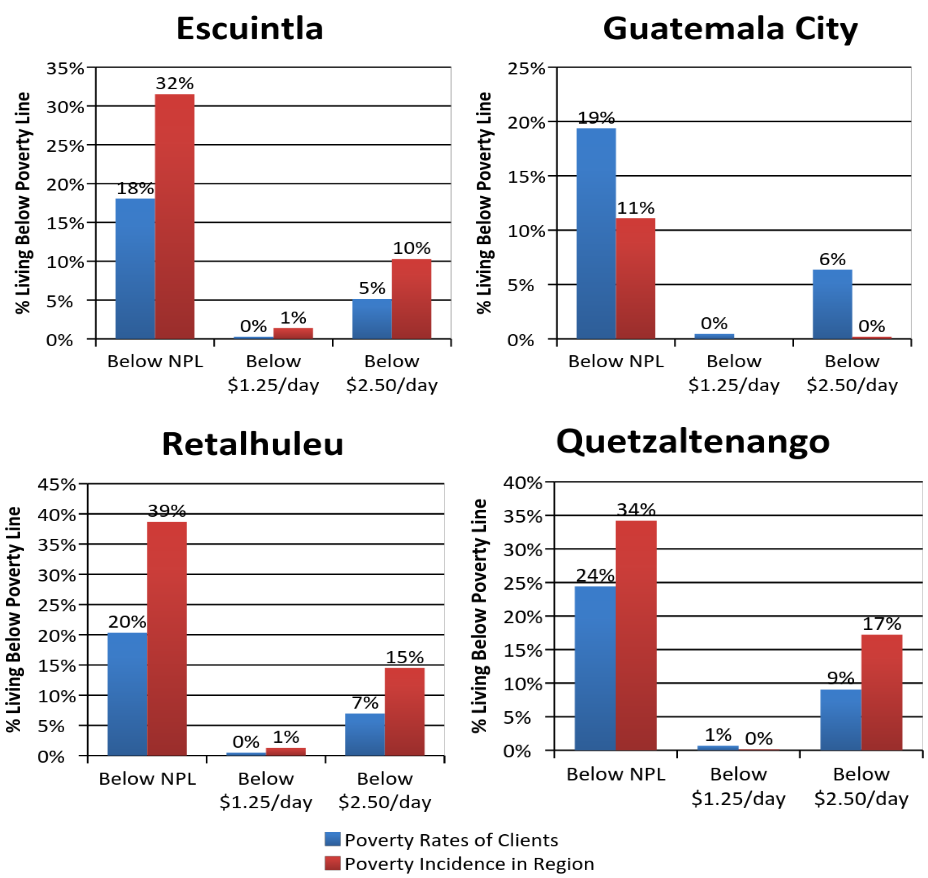


Figure 5 highlights the four departments where MFI G has the lowest poverty concentrations. According to discussions with MFI G, whereas most branches were opened based upon regional poverty rates, the decision to open a branch in Escuintla did not follow this strategy. Escuintla is not part of the Western Highlands and produces 43% of Guatemalan GDP. The loan terms offered in the departments of Escuintla[7] and Guatemala City range from 6 to 8 months, as opposed to 9 months in all other departments. Officials of the MFI spoke of these loans being taken out for income smoothing purposes. According to the MFI, it extended into the Department of Guatemala City in a few communities bordering Escuintla and Chimaltenango in order to maximize efficiency of the areas served by a couple of loan officers out of Escuintla and Chimaltenango branches. Guatemala City poverty incidence is 11%, the national average is 40%, and poverty incidence in Quiche is 72%.

Figure 5: Departments with the four lowest poverty concentrations



[7] It is important to specify that this branch does not cover the entire city of Guatemala, only the areas closest to Escuintla.

2. Scale of Poverty Outreach

Only one MFI in Guatemala (referred to as MFI G) is included in this report. It reached 21,686 individuals across 12 departments in the year 2012-2013. This paper analyzes a large sample of 50% of its entire client base.[8] This MFI has six branches located in Sololá, Escuintla, Suchitepéquez, Quetzaltenango, Chimaltenango, and Quiche, and the bulk of its operations are centered on these six departments. Its largest operations are in Quiché and Sololá. The general proportion of operations across branches was verified during the interview with the MFI, to ensure the non-random sample was not obscuring relevant information. The sample sizes in San Marco and Huehuetenango were the smallest because the MFI has only recently entered these areas. Representation in San Marcos is only 35 and as such is excluded from further discussion of outreach in Guatemala.

Table 1: Overview of data provided by Guatemalan MFI

Department	Sample size	Department	Sample size
Escuintla	2409	Guatemala	589
Quiche	2056	Totonicapán	490
Sololá	1380	Sacatepequez	307
Chimaltenango	761	Retalhuleu	294
Quetzaltenango	716	Huehuetenango	166
Suchitepéquez	710	San Marcos	35
Total			**9963**

3. Concentration versus Incidence, by Region

We next delve into the proportion of clients living below the national poverty line as a proportion of client households of the MFI. This sheds light on the extent to which the MFI is reaching the poorest individuals in a given region.

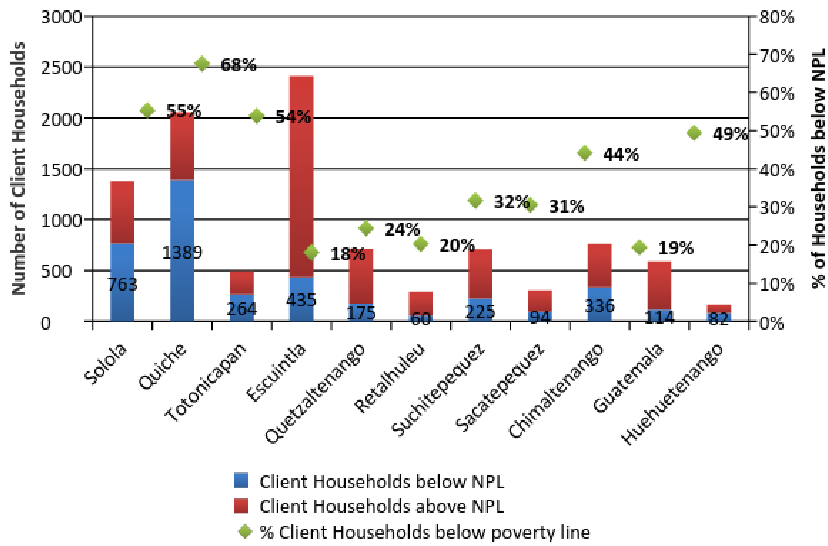
In Escuintla, 18% of clients live below the national poverty line —the lowest proportion of all departments. MFI G reaches the largest number of people under the national poverty line in Quiche—the second poorest region after Huehuetenango. This is in terms both of scale (1,389 clients) and of percentage of total clients served in the region (68%).

The poverty concentration among operations in Huehuetenango is 49%. However, when comparing by scale, twice as many poor individuals are served in Quetzaltenango (although its concentration is 24%). This is a classic

[8] The intent of the MFI was to census their entire client base by administering the PPI during the disbursement meetings where attendance is required. However they did not achieve 100% completion rate for four main reasons. The loan officers did not turn in 100% of the surveys, the loan officers did not administer the survey in every meeting, a portion of the surveys were invalid, and loan officers did not put the unique identifier on the survey form.

example of why it is important to take both scale and concentration into account. In fact, the reason for the low scale in Huehuetenango is that MFI G has recently moved into Huehuetenango. It is very successful at reaching the poor probably because of a high poverty incidence and a product tailored specifically to poorer individuals (e.g., initial loan size-cap, education training).

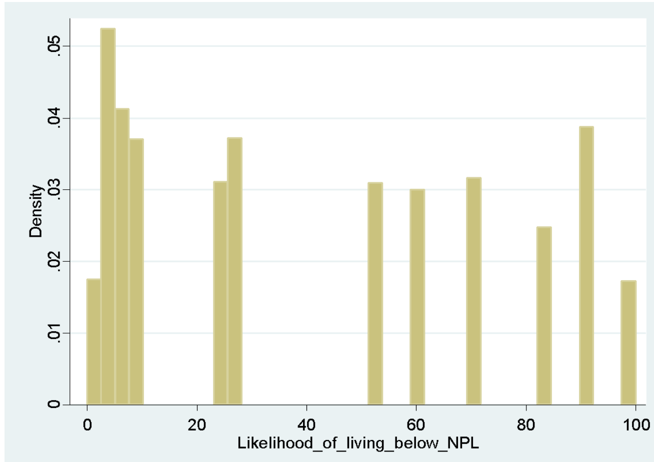
Figure 6: Scale and Concentration of Poverty by Region



4. Poverty Likelihoods and the Incentive Structure of Loan Officers

Figure 7 shows a histogram of the likelihoods of a client living below the national poverty line. The average client of MFI G has a 40% likelihood of living below the national poverty line. The clusters on the left of the histogram are the areas where MFI G has not managed to reach the poorer population, reportedly mainly due to the lower poverty incidence in these areas. Indeed, 64% of clients in Escuintla have less than an 8% likelihood of living below the national poverty line, as do 63% of clients in Guatemala City. Conversely, only 11% of clients in Quiche have less than an 8% likelihood of living below the national poverty line. Fifty percent of clients in Quiche have a likelihood between 83% and 100% of living below the national poverty line. This exemplifies a diversified portfolio.

Figure 7: Histogram of poverty likelihoods



According to discussions with the MFI, the choice of departments to serve as well as the branch locations are based upon banking saturation, the income level of the populations, and the relevance of the product to the local population. The reason why this MFI has recently opened a branch in San Marcos is because it is piloting an agricultural loan product appropriate for a predominantly agricultural base. Although exact income targets were not fixed at the time this data was collected, they have now finalized target percentages of new clients they aim to reach below the extreme poverty line (2%), national poverty line (45%) and 200% national poverty line (16%). The MFI will use the PPI to measure these targets. These targets will be enforced at both the branch and institution level, and they will be included in the branch level incentives.

Currently, the credit decision process includes data gathered by loan officers on the potential client's economic activity, income, assets, and outstanding loans. They also check with two credit bureaus to ensure accurate data on over-indebtedness. However, the MFI mentioned that a number of MFIs in Guatemala do not report to credit bureaus so this process is not foolproof. Since all initial loans offered by MFI G follow the village banking model, a level of vetting has already been performed by the group members before presentation to the MFI.

The incentive structure for loan officers does not include a poverty target. It is based on its portfolio quality, the percent of clients attending education sessions given at the time of repayment, the percent turned in and validity of PPI surveys, and a target for client retention.

5. Client Profiles

This report has profiled the size of loans disbursed by MFI G as well as the profile of those who receive multiple loans. The MFI provided a substantial sample size (9,928 observations). The main drawback to profiling clients most likely to receive multiple loans is that although we have data on the number of loans an individual has received, we have not been issued with IDs that allow us to identify recipients of repeat loans to pair PPI observations with loan amount and issue date for clients with multiple loans, both of which are necessary to construct a panel dataset.

Loan size increases with age. Every additional percentage point in the likelihood that a client lives below the national poverty line is associated with a loan disbursement GTQ 4 lower. This equates to approximately US$ 0.50 at time of publication.

Repeat loans are larger. Each additional loan is associated with an additional GTQ 280, on average and ceteris paribus, which is confirmatory of the credit approval policy of the MFI.

Compared to the baseline of the client being a widow, all other marital statuses receive considerably larger loans. Divorced clients receive on average GTQ 155 more, married clients receive GTQ 271 more, single clients receive GTQ 217 more and separated clients receive GTQ 217 more. This is intuitive, as widows have the highest likelihood of being poor.

As compared to the baseline of the Chimaltenango region, clients in all departments receive larger loans. Sololá received the largest comparatively at GTQ 973, followed by Totonicapán (GTQ 772) and Quetzaltenango (GTQ 711). Escuintla has the least difference, receiving on average only GTQ 17 more than the region of Chimaltenango.

Compared to the baseline of clients working in the agricultural sector, those working in every other sector receive larger loans.

The report correlated economic activity and number of loans per client in order to ascertain whether the relationship varies by economic sector. The interaction term suggests that an additional loan received does not increase the loan size evenly across all economic sectors. Indeed, we find that clients who work in craftsmanship receive loans GTQ 35 smaller than those in the agricultural industry—conditional on an additional loan being received. On the other hand we find that those in the wholesale and retail industry receive on average loans GTQ 54 larger than clients in the agricultural sector, conditional on an additional loan having been received.

Investigating the determinants of multiple loans uncovers that older clients tend to receive more loans, and those who are receiving larger loans are relatively more likely to have received multiple loans.

Individuals who work in handicrafts are all more likely to receive multiple loans as compared to those working in the agricultural sector.

Individuals in the Huehuetenango and Totonicapán departments receive the fewest loans as compared to the baseline of those in Chimaltenango, although this likely reflects the fact that these are relatively newer branches. The result relating to poverty likelihood is not statistically significant. This means poorer people are not more likely to receive a small number of loans.

Figure 8: Loan amounts by region (baseline Chimaltenango)

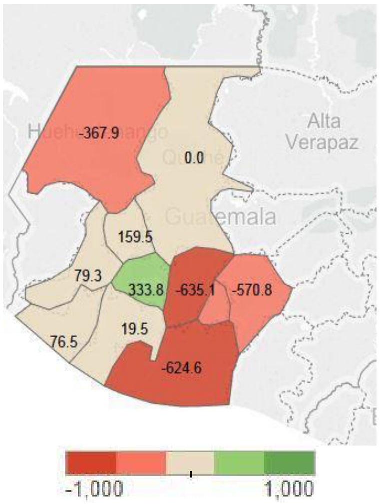
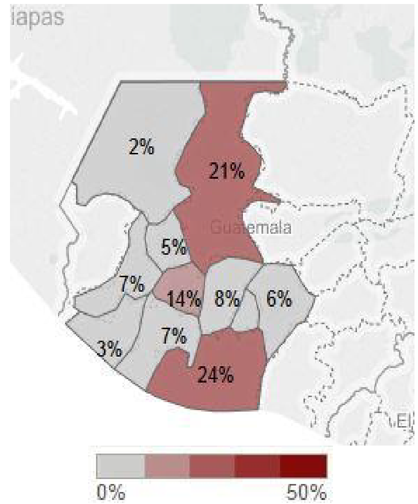


Figure 9: Poverty concentration by region (baseline Chimaltenango)



6. Conclusions

- MFI G reaches a poverty concentration of 40% across its area of operation, equal to the national poverty incidence, and 20% of its clients live below the $2.50-per-day international purchasing power parity line.
- Although at the time of data collection, the mission statement of the Guatemalan MFI did not specify a target poverty level, their choice of which areas to enter was based upon poverty maps and they believe that their product design of low loan sizes and compulsory educational training sessions leads to self-selection of the poorest into the services. For example, their second largest operation and highest concentration (68%) are in Quiche, the area with the highest poverty incidence (72%).
- The regression output reveals a number of characteristics of client profiles. The loan amount increases with age, and each additional loan to a given individual is associated with a GTQ 286 increase in the size of the loan. Married individuals receive larger loans than all other situations. The largest loan sizes are in some of the poorest departments such as Sololá and Totonicapán, whereas some of the least poor departments receive relatively smaller loans on average such as Escuintla, Guatemala and Sacatepéquez. Wealthier people are more likely to receive larger loans; however, wealthier clients are not more likely to receive multiple loans. This is the only instance of that in our report, and is encouraging for the poverty outreach of the organization.

Nicaragua

Nicaragua is the poorest country in Central America and the second poorest in the Western Hemisphere (The World Factbook, 2014). The economy grew 4.6% in 2013, despite a 33% decline in coffee export revenues due to a coffee rust fungus. 17% of GDP originates in agriculture, 26% in industry and 58% in services, whereas 31% of the labor force works in agriculture, 18% in the industrial sector, and 50% in services.

The microfinance sector in Nicaragua is undergoing a process of consolidation and recovery after being faced with an array of challenges between 2008 and 2011. The global financial crisis coupled with the "Movimiento No Pago" (a movement for non-payment of loans), and heightened by political interference, has left the industry 'both illiquid and unpopular' (The Center for the Study of Financial Innovation, 2014). The industry served 324,000 clients before the crisis and dropped to 225,000 in 2011. Total portfolio dropped from US$420 million in 2008 to US$ 170 million in 2011. CGAP estimates that in 2014 80,000 microfinance clients worked in the agricultural sector and nationwide there were 268,000 customers.

The adoption of "Promotion Act and Regulation of Microfinance" in 2011 and the creation of the National Commission for Microfinance (CONAMI), which became operational in 2012, have given the sector a much needed boost. The new law seeks to improve the transparency of interest rates. Microfinance institutions can set their rates but regulation prohibits additional charges to borrowers and the imposition of a maximum fee for late payment charges ('Nicaragua | Portal de Microfinanzas - CGAP' 2015).

While the industry expects the new regulatory framework to boost financial inclusion in the country, many challenges persist. The Global Microscope 2014, prepared by The Economist Intelligence Unit (EIU), ranked Nicaragua 18th of the 55 included countries with regards to the regulatory environment for financial inclusion (Economist Intelligence Unit 2014). According to the World Bank global database of financial inclusion (Global Findex), only 14% of adults (aged 15 and over) had access to financial services in 2011, one of the lowest percentages in the region (World Bank, Global Financial Inclusion Database-Global Findex, 2014).

This report includes one MFI participating from Nicaragua—referred to henceforth as MFI "N." This section is relatively brief because no additional information on the clients other than the basic PPI results was provided. This precludes urban/rural discussions and regression analysis of loans.

Figure 1: Choropleth of poverty incidences in Nicaraguan regions served by MFI N

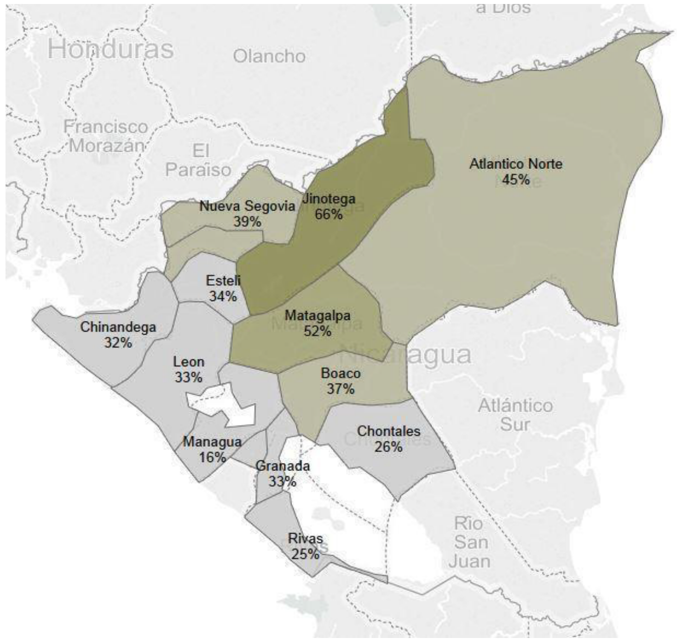
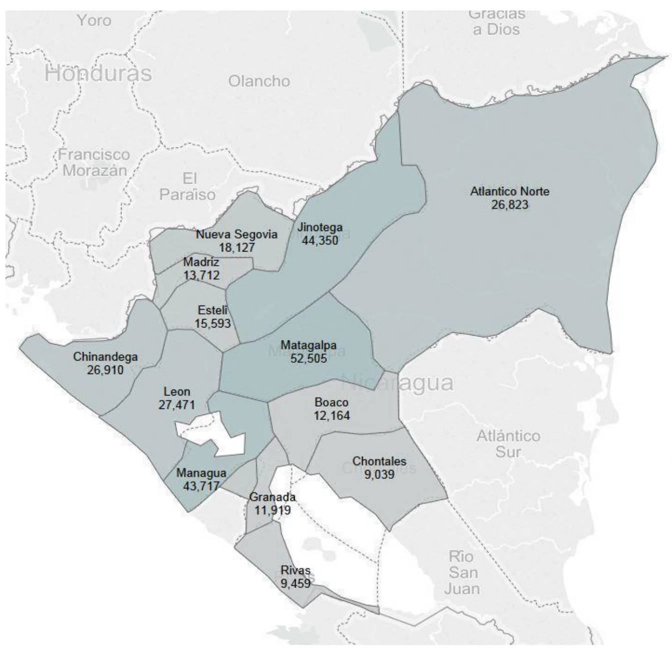


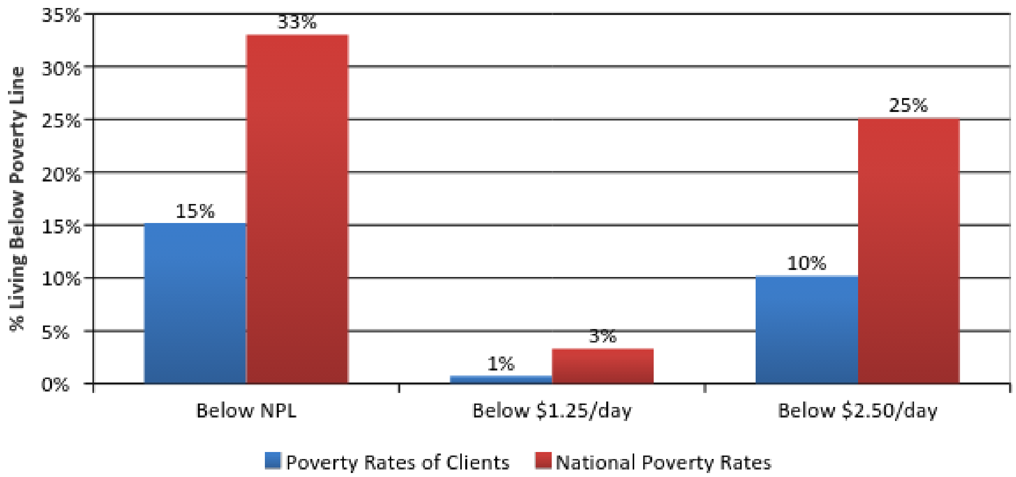
Figure 2: Choropleth of poverty magnitudes in Nicaraguan regions served by MFI N



1. Concentration of Poverty Outreach

A heterogeneous pattern emerges in Nicaragua, where operations in certain regions achieve much higher poverty concentrations than in others, although nowhere does the MFI match the regional poverty incidence. In Nicaragua 33% of the population lives below the national poverty line, the average client of MFI N has a 15% likelihood of living under the national poverty line, as depicted in Figure 3.

Figure 3: MFI N's Concentration of Poverty against national and international benchmarks



In Figure 4, we present the four regions with the highest levels of poverty concentration and the four regions with the lowest concentration. Both the data and the information provided by the MFI during an in-depth interview show that in areas of high banking competition, MFI N cannot compete with the low interest rates of larger commercial banks, and consequently focuses on the poorer individuals. On the other hand, MFI's operations in areas with low concentration indicate the need to ensure financial sustainability and diversify risks.

The high concentration in the first two regions (Chinandega and Masaya) is a product of high banking saturation in the area and the concentration in the other two areas is a product of an MFI-wide strategy to focus complementary services in two of the poorest regions. Indeed the highly fertile land of Jinotega and Matagalpa regions coupled with high poverty rates (Jinotega has a poverty incidence of 66% and Matagalpa has an incidence of 52%) and a lack of technical knowledge has led MFI N to focus all of its technical assistance in these two areas. It is interesting that two very different reasons have led to high concentration levels.

Figure 4: Regions of Nicaragua with highest levels of poverty concentration

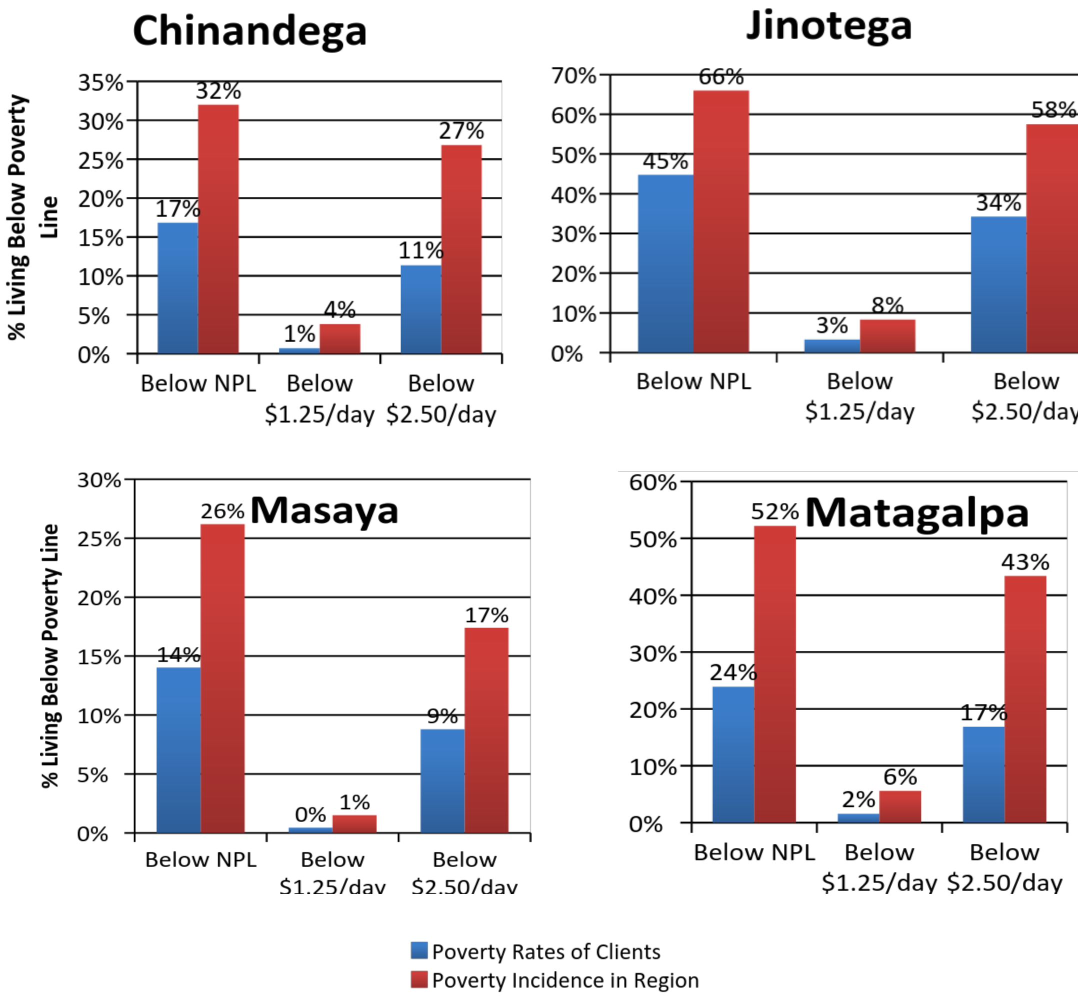
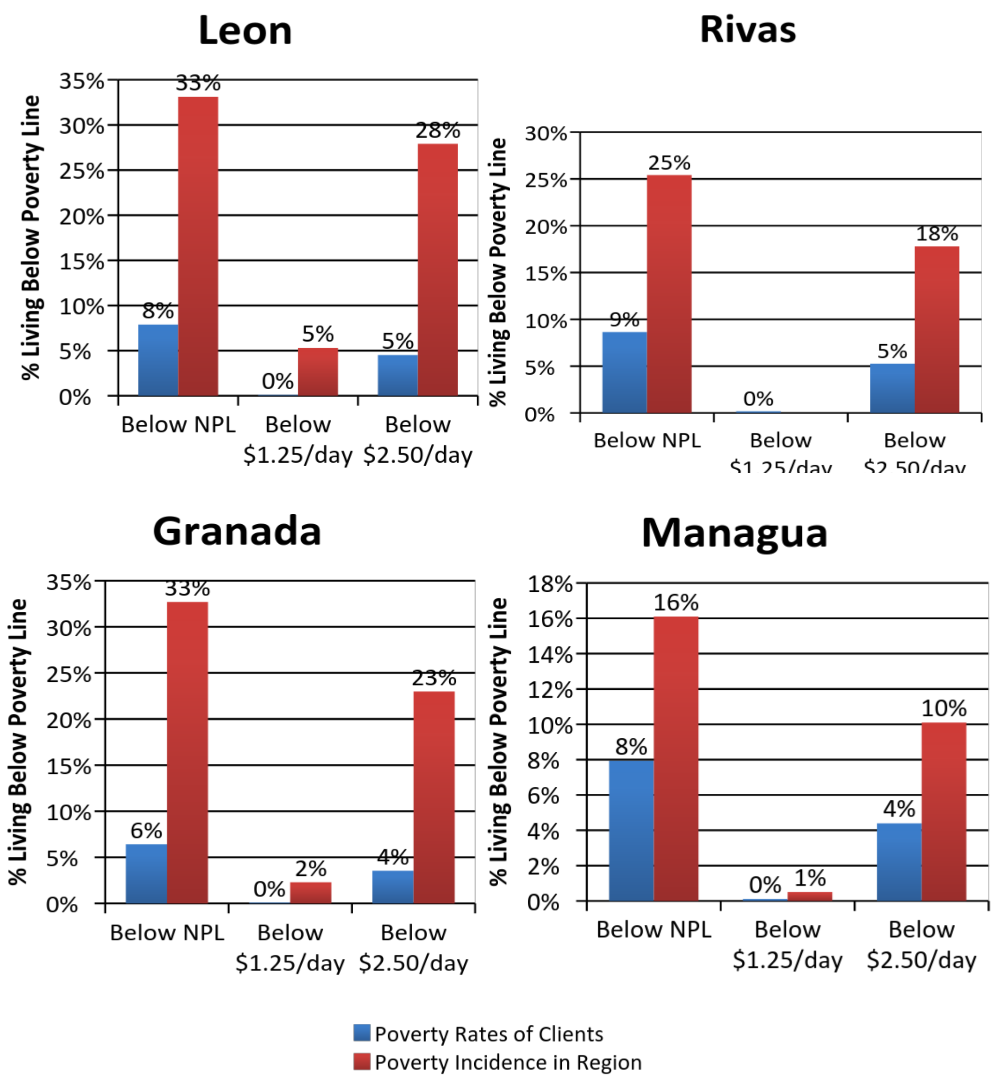


Figure 5 displays the four regions with the lowest poverty concentrations and tells the story of the markets MFI N entered in order to ensure financial sustainability. Rivas is one of the wealthiest parts of the country with a magnitude of poverty of 9,454, Grenada stands at 11,919. In these areas MFI N offers different products which are aimed at relatively more affluent customers. MFI N has the lowest poverty concentration in Leon (8%).

Figure 5: Regions of Nicaragua with the lowest levels of poverty concentration



2. Scale of Poverty Outreach

This section discusses the scale and outreach of the MFI. This measure is important because although the concentration of poverty in their client base may be low, if the MFI serves a large number of people, it could be reaching more poor households than an MFI with a higher concentration but a lower scale. This MFI did not provide a random sample therefore the 15% concentration rate of this MFI is not informative, nor can we deduce with confidence the number of clients living below the national poverty line.

However we provide a breakdown of the concentration rates by region as this may be indicative of relative outreach in difference areas. The maps show that Jinotega has the highest poverty incidence, with 66% of the population on average living below the national poverty line. Matagalpa however has the largest magnitude of poor people at 54,505, followed by Jinotega and Managua. Thus MFI N seems to focus its operations in some of the poorest regions of Nicaragua. This is likely a reflection of their mission and the factors that dictate which regions they enter. The decision of which regions to enter is based upon the existing banking saturation of an area as well as the dominant economic activity of the area—they focus on the agricultural sector. MFI N is not poverty focused per se but instead aims to improve the quality of life of the micro-entrepreneurs they assist. As such, they focus on financial inclusion of small to medium size enterprises.

Nicaragua's "Movimiento No Pago" (a movement for non-payment of loans) shook the microfinance industry of Nicaragua in 2008 and had a profound effect on the operations of MFI N. During their interview the MFI revealed that prior to the movement, their strategic model was to provide finance to poorer segments of the population by subsidizing them with the business of more affluent cattle farmers. However, once the movement took hold the MFI shifted towards more commercial segments of the population in urban areas. Indeed although the loans they offer to Banco Comunal clients vary from $150 to $700, this is a small segment of their client base, their average loan size is $800 and in some products they compete with formal banks.

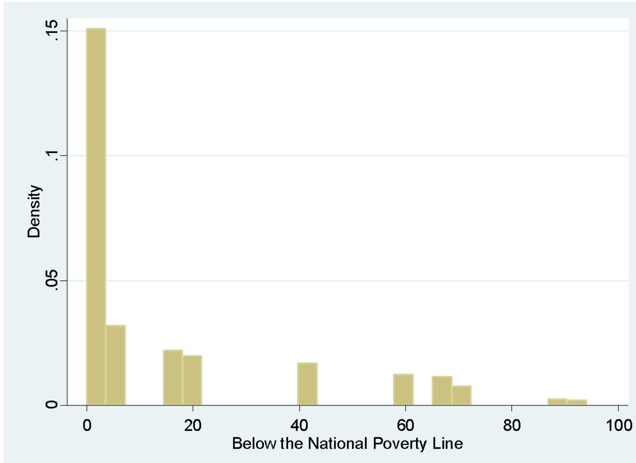
Table 1: Overview of data provided by Nicaraguan MFI

Region	Sample size			Region	Sample size
Managua	184			**Estelí**	25
Rivas	88			**Carazaro**	24
Matagalpa	78			**Atlántico Norte**	16
Masaya	56			**Madriz**	15
Chinandega	56			**Chontales**	14
Jinotega	53			**Nueva Segovia**	5
Leon	51			**Boaco**	3
Granada	36				
Total					**704**

3. Poverty Likelihoods and the Incentive Structure of Loan Officers

As Figure 6 depicts, the average client of MFI N has a 15% likelihood of living below the national poverty line. The mission statement of this MFI is not to directly target the poor but instead to improve financial inclusion, whilst ensuring the financial sustainability of their operations. This is in line with the incentives of the loan officer, which are based upon the portfolio quality (portfolio at risk, overdue etc.), total loan amount disbursed, and the client retention rates. This MFI measures the level of over-indebtedness of clients before disbursing a loan, this is one aspect reviewed by the credit committee prior to disbursement.

Figure 6: Histogram of poverty likelihood



5. Conclusion

- The operations of MFI N are strongly influenced by the legacy of the "No Pay" movement which shook the industry in 2008. Although they have always been focused on the financially excluded rather than the poor, in their interview the MFI stated that the movement prompted a shift in strategy away from the agricultural sector where most of the vulnerable population were, towards more wealthy cattle farmers in search of operational sustainability.

- The average client has a 15% likelihood of living below the national poverty line, which compares to the national average of 30%. However, the regional variation tells a story of a highly diversified portfolio, in line with the commercial strategy of the MFI. Moreover the data was not randomly sampled.

- The four regions with the highest concentrations reflect two separate mechanisms. On the one hand, Jinotega and Matagalpa have some of the highest poverty incidences and the MFI chose to focus its efforts on these two regions in terms of complementary services such as technical assistance. On the other hand the two regions, Chinandega and Masaya, are the two regions with the strongest competition, and in their interview the MFI asserted that this banking saturation led them to offer services to poorer clients.

- The four areas with lowest concentration are the embodiment of their strategy to diversify their portfolio. They have their largest point of operation, eight branches, in the richest area, Managua, which has a 16% poverty incidence. They are offering different products in these areas which cater to the needs of richer individuals.

Limitations

Given that this study intended to use only existing data already collected by MFIs operating in LAC,[9] the analysis does not involve a large sample of all the MFIs in each and every country. For example, in three countries, the sample includes only one MFI per country, they are Guatemala, Nicaragua and Ecuador. In other countries it includes more MFIs with varying market shares. Moreover, some of the MFIs consulted did not provide a representative sample of their entire client base, because some were collecting data for very specific purposes (e.g., one MFI was collecting data exclusively from new clients), and we did not extrapolate the data for these MFIs. Among the few MFIs that provided a representative random sample of their entire portfolio, they did not stratify by region or by branches (again, as they were pursuing their own business purposes). As such, we were unable to draw conclusions at the entire LAC level, and the discussion of penetration is generally valid at MFI level.

The remit of this report was not to provide a quantitative analysis of the impact of banking saturation on poverty outreach, and the dearth of regional-level data available in each country precluded it. Data from regulatory institutions which could obtained supported our hypothesis, as did the PPI data from participating MFIs and the in-depth interviews with industry experts. However, procuring additional data on banking saturation at the regional level would have provided a more robust illustration of the hypothesis.

Recommendations for Future Research

The following are just a few suggested topics recommended for further research:

- The 2013 Financial Services Law makes Bolivia a country to monitor closely. The country benefits from a robust regulatory structure and the microfinance sector has shown its commitment to transparency through voluntary participation in the FINRURAL network. Bolivia will be a ripe learning ground for studying the effects of increasing competition in the banking industry and testing the hypothesis of this report. Namely, the law requires formal banks and MFIs to keep their average interest rate 11.5%, and that formal banks keep 50–60% of their portfolio in either social housing loans or productive sectors including agriculture. This competition between formal banks and MFIs to reach the clients following the quotas imposed by the government will likely push up competition for the client base that MFIs traditionally serve in relatively poor areas. It will be an interesting opportunity to study further as the country has one of the highest poverty incidences of Latin America.

[9] In others words, the scope of this report did not include the collection of new data but attempted to benefit from data already collected by MFIs in the region.

- A key determinant of whether an MFI extends loans to poorer individuals is certainly the incentive structure of the loan officers. One of the key differences between formal financial institutions and microfinance institutions is the emphasis placed on the value of qualitative knowledge about prospective customers. Loan officers contribute with their specialized knowledge of potential clients that may not seem viable by commercial banks. These marginal clients constitute a greater risk than the typical clients of commercial banks, so if the incentive of the officers is for example loan size and number of loans issued, they may not be as incentivized to seek out these clients. It would be very interesting to code in some way how the incentive structure encourages the loan officer to seek out the poorer clients, and regress this on PPI scores. The MFI in Guatemala is implementing a loan officer incentive structure which includes the PPI, so it will be interesting to see how their outreach progresses.

- It would also be useful for the MFI to administer the PPI each time a loan is issued to a client. This is common practice in some MFIs, but most in this study collect PPI data only the first time a loan is issued to a client. Panel data would allow us to map loan amounts, repayment histories, and PPI likelihoods over time. This would enhance a regression analysis output, and allow a study to shed light on the characteristics associated with delinquency, map the poverty movements of clients over time, and monitor poverty outreach changes correlating with variations in commercial strategies.

- The governments of Colombia and Bolivia have recently taken measures to facilitate and promote the use of mobile banking. This will partly address challenges faced by MFIs when seeking to reach the remote, unbanked population. Since poverty concentration is consistently lower in rural areas as compared to urban areas, this may be an interesting avenue to pursue a study to understand the impact on poverty outreach.

- This report initially sought to include the financial details of MFIs. However the MFIs overall were only able to provide aggregate financials rather than the branch-level breakdown. Thus any analysis would obscure the truly crucial heterogeneous happenings across the country. Gathering this data could shed light on the levels of risk aversion of MFIs and how this relates to their poverty outreach.

- Microfinance offers relief to liquidity constrained individuals, but like traditional loans, the impact of credit depends on its specific use as well as other idiosyncratic variables. As such, if a panel dataset can be constructed, it would be interesting to analyze the correlation between use of loan and movements in poverty over time. Indeed, consumption loans are hypothetically less likely to contribute to sustainable increases in income than fixed or working capital loans.

- Literature has emerged that links increasing banking saturation across Latin America with a relative atmosphere of “easy credit.” It would be interesting to investigate whether the profile of clients in regions which experienced a marked increase in competition have been receiving equal or larger loans given higher indebtedness. A comparison of results between MFIs which have a policy of not disbursing loans to those with three or more outstanding loans and those which don't have the policy could help direct recommendations.

- The role played in poverty outreach of products offered by an MFI is an interesting area to research. Specifically designed products can lead to self-selection of a target group. As discussed by many MFIs in this report, it may be of use to the industry to collect specific information on the details of product issuance and analyze corresponding client data in order to form an idea of which products and product designs seem to be most suited to different demographics.

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Appendix

Loan Statistics, by Country

	Peru MFI-A	Peru MFI-B	Peru MFI-C	Colombia MFI-A	Ecuador	Guatemala
Number of Loans	201,715	28,545	13,590	122,188	—	9,623
Average Loan Amt.	6,160	366	4,979	2,669,246	597	2,620
% Loans to Women	49%	100%	50%	47%	66%	—
% Loans to Urban	23%	69%	—	19%	49%	—

Regression Tables

Peru: MFI A

	(1)	(2)
VARIABLES	Loan Amount	Number of Loans
Number of loans	342.1***	
	(7.386)	
Female	-1,432***	0.407***
	(56.10)	(0.0207)
Working capital	-2,977***	1.025***
	(65.39)	(0.0241)
Home improvements	2,568***	-0.753***
	(110.2)	(0.0384)
Consumer credit	-6,612***	-1.557***
	(63.02)	(0.0242)
Poverty likelihood	-46.78***	-0.00770***
	(1.293)	(0.000563)
Amazonas	2,622***	-1.723***
	(214.5)	(0.0876)
Ancash	644.0***	-2.327***
	(213.9)	(0.0845)
Apurimac	4,559***	-2.768***
	(366.0)	(0.0896)
Arequipa	184.2	-1.064***
	(135.7)	(0.0757)
Ayacucho	762.8**	-2.795***
	(325.6)	(0.0856)
Cajamarca	2,270***	-1.912***
	(147.7)	(0.0725)
Callao	-192.4	-1.659***
	(241.9)	(0.0881)
Cusco	170.8	-2.881***
	(157.6)	(0.0729)
Huanuco	1,226***	-1.483***

	(170.2)	(0.0778)
Ica	-279.1	-1.208***
	(243.4)	(0.123)
Junín	-226.6**	0.186***
	(112.6)	(0.0716)
La Libertad	1,100***	-1.642***
	(132.0)	(0.0711)
Lambayeque	486.8***	-2.149***
	(161.5)	(0.0780)
Lima	225.7*	-1.131***
	(122.9)	(0.0698)
Loreto	1,526***	-3.438***
	(326.1)	(0.0870)
Moquegua	-589.5***	-1.120***
	(208.1)	(0.0950)
Pasco	1,006***	-0.314***
	(170.7)	(0.0922)
Piura	-658.1***	-2.352***
	(144.9)	(0.0733)
Puno	340.7*	-3.236***
	(201.1)	(0.0773)
San Martin	262.4*	-2.878***
	(134.4)	(0.0697)
Tacna	1,554***	-1.062***
	(172.8)	(0.0849)
Tumbes	376.8	-2.113***
	(293.6)	(0.100)
Ucayali	570.9***	-0.739***
	(128.3)	(0.0750)
Urban	557.4***	-0.0818***
	(60.77)	(0.0253)
Manufacturing	240.5**	0.122***
	(108.0)	(0.0449)
Commerce	1,047***	0.00895
	(60.70)	(0.0267)

Transport	806.7***	-0.248***
	(117.8)	(0.0375)
Services	334.0***	0.471***
	(128.8)	(0.0475)
PDM dummy	-3,813***	-2.142***
	(58.09)	(0.0321)
Time since joined	-0.0275***	-2.36e-05***
	(0.00437)	(1.95e-06)
Loan amount		5.12e-05***
		(1.15e-06)
Constant	7,432***	5.089***
	(137.5)	(0.0743)
Observations	183,116	183,116
R-squared	0.130	0.119

Peru: MFI B

	(1)
VARIABLES	Loan amount
Poverty likelihood	-0.171***
	(0.0332)
Age	1.442***
	(0.544)
Age^2	-0.0140*
	(0.00737)
Time since joined	-0.0380***
	(0.00198)
Urban	-0.173
	(2.063)
Divorced	-33.57
	(40.42)
Married	-44.11
	(33.72)
Single	-48.34

	(33.41)
Separated	-67.02**
	(33.84)
Cohabitation	-32.98
	(32.91)
Commerce	-89.87***
	(9.863)
Services	-104.9***
	(9.985)
Manufacturing	-114.9***
	(14.76)
Crafts	-176.9***
	(11.63)
Amazonas	36.62***
	(2.713)
Ancash	32.22***
	(2.804)
La Libertad	43.94***
	(2.732)
Lambayeque	-3.246
	(2.931)
Puno	259.6***
	(4.879)
San Martin	5.588***
	(1.433)
Tacna	412.8***
	(11.21)
Ucayali	66.45***
	(1.983)
Constant	444.5***
	(38.08)
Observations	22,029
R-squared	0.404

Peru: MFI C

	(1)	(2)
VARIABLES	Loan Amount	Number of Loans
Arequipa	653.5***	-0.841***
	(221.5)	(0.318)
Ayacucho	1,100***	-2.764***
	(238.3)	(0.263)
Callao	235.1	-2.813***
	(255.2)	(0.314)
Huancavelica	235.3	-4.362***
	(300.9)	(0.256)
Huanuco	-944.5***	-4.588***
	(304.0)	(0.264)
Junín	-1,661***	-3.332***
	(213.7)	(0.264)
La Libertad	-323.2	-4.260***
	(246.5)	(0.276)
Lima	-493.3***	-2.354***
	(183.0)	(0.276)
Female	-650.3***	0.210**
	(92.01)	(0.0903)
Age	175.5***	0.204***
	(19.21)	(0.0182)
Age^2	-1.810***	-0.00118***
	(0.218)	(0.000216)
Commerce	-1,418***	1.584***
	(179.8)	(0.122)
Production	-2,098***	1.103***
	(201.8)	(0.152)
Services	-2,345***	0.858***
	(179.5)	(0.119)
Number of loans	79.40***	
	(9.956)	

Working capital	-2,804***	0.442***
	(110.9)	(0.100)
Consumer credit	-2,212***	-0.464***
	(148.5)	(0.114)
Poverty likelihood	-22.30***	-0.0180***
	(3.834)	(0.00358)
Time since joined	7.952***	0.00375***
	(0.977)	(0.000943)
Loan amount		7.34e-05***
		(8.67e-06)
Constant	3,519***	-1.821***
	(486.1)	(0.445)
Observations	13,244	13,244
R-squared	0.109	0.160

Colombia

		(1)	(2)
EQUATION	VARIABLES	amountoftheloan	loansperclient
SINGLE	Female	-265,804***	0.0110***
		(19,932)	(0.00282)
	Client age	80,436***	0.00868***
		(5,097)	(0.000673)
	Client age^2	-824.2***	-8.21e-05***
		(60.70)	(7.79e-06)
	Individual loan	5.513e+06***	-0.0343***
		(54,021)	(0.00412)
	Poverty likelihood	-10,523***	-0.000393***
		(378.7)	(6.04e-05)
	Loans per client	-87,290***	
		(18,216)	
	dcredittype1	675,365***	-0.0723***
		(29,750)	(0.00338)
	dcredittype3	332,926***	-0.0683***

		(31,519)	(0.00467)
	dcredittype4	-643,219***	0.0183
		(40,535)	(0.0119)
	dcredittype5	-497,265***	0.237***
		(55,112)	(0.0179)
	Rural	-284,390***	-0.00670*
		(32,237)	(0.00393)
	Widow	-167,389***	-0.0207**
		(49,320)	(0.00889)
	Divorced	-128,937	-0.0406**
		(160,499)	(0.0164)
	Single	-443,666***	-0.0306***
		(24,286)	(0.00377)
	Separated	-261,709***	0.00359
		(44,632)	(0.00760)
	Cohabitation	-148,076***	-0.00488
		(22,636)	(0.00345)
	Manufacturing	-300,251***	-0.0108*
		(38,967)	(0.00645)
	Construction	-294,645***	-0.0293***
		(59,318)	(0.00796)
	Retail	374,625***	0.0179***
		(29,000)	(0.00459)
	Hospitality	379,413***	0.00196
		(143,344)	(0.00802)
	Transport/Communication	347,420***	-0.0139*
		(68,525)	(0.00779)
	Nariño	-116,485***	0.135***
		(22,052)	(0.00309)
	Putumayo	21,674	0.0535***
		(28,253)	(0.00441)
	Estrato1	75,749	-0.138***
		(48,266)	(0.0148)
	Estrato 2	489,101***	-0.126***
		(58,372)	(0.0154)

	Estrato 3	705,892***	-0.0165
		(117,554)	(0.0260)
	Estrato 4	1.347e+06***	-0.0507
		(488,211)	(0.0534)
	Estrato 5	-3,593	-0.193***
		(350,608)	(0.0679)
	Time since loan issue	-449.9***	1.50e-06
		(45.10)	(8.57e-06)
	Amount of the loan		-2.07e-09***
			(4.35e-10)
		(182,160)	(0.0234)
	Constant	667,438***	0.915***
SINGLE	Observations	114,581	114,581
	R-squared	0.316	0.031

Bolivia

	MFI A	MFI B	MFI C
VARIABLES	Number of loans	Number of loans	Number of loans
Female	0.696***	0.0536***	5.080***
	(0.0832)	(0.0183)	(0.635)
Age of client	0.0337***	0.00291***	0.231***
	(0.00329)	(0.000514)	(0.0200)
Poverty likelihood	-0.00649***	-0.000146	-0.0317***
	(0.00191)	(0.000259)	(0.0104)
Manufacturing	-0.180	-0.0441*	
	(0.204)	(0.0258)	
Construction	0.153	-0.0358	
	(0.170)	(0.0282)	
Retail	-0.0858	-0.0366	
	(0.116)	(0.0228)	
Hospitality	0.354	-0.0425	
	(0.281)	(0.0268)	
Transport/Communication	0.285	0.0597*	
	(0.316)	(0.0337)	
Education	-0.338	0.00152	

	(0.505)	(0.142)	
Community Service	-0.428**		
	(0.193)		
householdsize	0.0807***		
	(0.0255)		
timesincejoinedmfi	0.00219***		
	(0.000163)		
Cochabamba		-0.0881***	1.855*
		(0.0272)	(1.074)
La Paz		-0.276***	3.457***
		(0.0309)	(0.897)
Oruro		-0.229***	2.384*
		(0.0257)	(1.218)
Potosi		-0.0873***	1.929*
		(0.0290)	(1.119)
Santa Cruz			-2.713***
			(0.755)
Tarija			-0.220
			(0.953)
Constant	-0.388	1.270***	-2.958**
	(0.241)	(0.0361)	(1.188)
Observations	2,025	8,096	786
R-squared	0.188	0.030	0.248

Ecuador

	(1)	(2)
VARIABLES	Loan amount	Loan amount
Female	-3.194	-8.974
	(28.32)	(27.77)
Age	34.95***	26.41***
	(6.962)	(6.607)
Age^2	-0.376***	-0.283***
	(0.0883)	(0.0844)
Group Loan	405.9***	393.2***

	(57.24)	(56.14)
Commerce	53.03	40.92
	(32.36)	(32.03)
Industry	-39.14	-48.53
	(45.91)	(45.80)
Services	-114.4***	-123.0***
	(41.85)	(41.63)
Date since joined	-1.351***	-1.601***
	(0.0655)	(0.0699)
Poverty likelihood	-2.376***	-1.960***
	(0.744)	(0.722)
Has received loan before	-285.4***	
	(26.38)	
Bolivar	4,245***	4,239***
	(226.0)	(225.5)
Carchi	-39.31	-18.31
	(69.42)	(69.23)
Chimborazo	1,813***	1,773***
	(167.8)	(167.6)
Cotopaxi	389.1***	375.6***
	(77.90)	(77.44)
Esmeraldas	15.96	47.35
	(74.53)	(74.47)
Imbabura	71.67	70.71
	(71.74)	(71.53)
Pichincha	78.31	73.14
	(72.38)	(72.08)
Tungurahua	2,597***	2,561***
	(230.2)	(229.5)
Constant	912.0***	1,291***
	(156.4)	(149.2)
Observations	11,676	11,880
R-squared	0.241	0.237

Guatemala

	(1)	(2)
VARIABLES	Loan Amount	Number of loans
Age	41.85***	0.0425***
	(5.758)	(0.0105)
Age^2	-0.470***	-0.000312**
	(0.0719)	(0.000132)
Poverty Likelihood	-4.149***	0.000519
	(0.428)	(0.000751)
Manufacturing	253.6***	0.383***
	(50.24)	(0.0931)
Retail	315.5***	0.0420
	(38.11)	(0.0652)
Hospitality	36.52	-0.0649
	(86.21)	(0.137)
Number of loans	280.2***	
	(12.38)	
Divorced	154.7	0.182
	(108.2)	(0.176)
Married	270.7***	0.687***
	(61.00)	(0.0725)
Single	216.7***	0.482***
	(63.17)	(0.0769)
Separated	217.0***	0.468***
	(61.25)	(0.0753)
Chimaltenango	-635.1***	0.0602
	(43.32)	(0.0657)
Escuintla	-624.6***	0.0446
	(40.55)	(0.0642)
Guatemala	-570.8***	-0.398***
	(49.11)	(0.0661)
Huehuetenango	-367.9***	-0.546***
	(52.66)	(0.0685)

Quetzaltenango	79.29	-0.493***
	(56.26)	(0.0734)
Retalhuleu	76.53	-0.196
	(71.49)	(0.129)
Sacatepéquez	-269.2***	-0.387***
	(60.80)	(0.0776)
Sololá	333.8***	0.338***
	(48.49)	(0.0911)
Suchitepéquez	19.53	-0.250**
	(61.51)	(0.101)
Totonicapán	159.5***	-0.423***
	(59.69)	(0.0795)
Loan amount		0.000792***
		(2.20e-05)
Constant	996.0***	-1.523***
	(125.1)	(0.211)
Observations	9,315	9,315
R-squared	0.336	0.299

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The Progress out of Poverty Index® (PPI®) is a poverty measurement tool for organizations and businesses with a mission to serve the poor. With the PPI, organizations can identify the clients, customers, or employees who are most likely to be poor or vulnerable to poverty and integrate objective poverty data into their assessments and strategic decision-making.

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