Final Report

Study on Microcredit Interest Rates in Mexico
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<tr>
<td>BANSEFI</td>
<td>National Savings and Financial Services Bank</td>
</tr>
<tr>
<td>BANXICO</td>
<td>Banco de México (Bank of Mexico)</td>
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<tr>
<td>CF</td>
<td>Cost of Funds</td>
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<tr>
<td>CNBV</td>
<td>National Banking and Securities Commission</td>
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<td>IDB</td>
<td>Inter-American Development Bank</td>
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<td>FAS</td>
<td>Fundación Alemana Servicios, S. de R.L. de C.V.</td>
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<tr>
<td>FC</td>
<td>Cost of Funds</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GLP</td>
<td>Gross Loan Portfolio</td>
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<td>IFC</td>
<td>International Finance Corporation</td>
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<td>INEGI</td>
<td>The National Institute of Statistics and Geography</td>
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<td>IY</td>
<td>Interest yield</td>
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<tr>
<td>L.A.</td>
<td>Latin America</td>
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<tr>
<td>LACP</td>
<td>Popular Credit and Savings Law</td>
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<td>LE</td>
<td>Loan Loss Expense</td>
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<tr>
<td>LRASCAP</td>
<td>Law Regulating the Activities of Savings and Loan Cooperative</td>
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<td>MFI</td>
<td>Microfinance Institution</td>
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<tr>
<td>MIF</td>
<td>Multilateral Investment Fund</td>
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<td>OE</td>
<td>Operating Expenses</td>
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<tr>
<td>P</td>
<td>Profits</td>
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<tr>
<td>PEA</td>
<td>Economically active population</td>
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<td>PRONAFIM</td>
<td>National Microenterprise Finance Program</td>
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<tr>
<td>SE</td>
<td>Ministry of Economy</td>
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<tr>
<td>SHCP</td>
<td>Ministry of Finance and Public Credit</td>
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<tr>
<td>SOFINCO</td>
<td>Community Financial Societies</td>
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<td>SOFIPO</td>
<td>Popular Financial Societies</td>
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<tr>
<td>SOFOM</td>
<td>Multiple Purpose Financial Societies</td>
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<tr>
<td>Sparkassenstiftung</td>
<td>Savings Banks Foundation for International Cooperation</td>
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<tr>
<td>VAT</td>
<td>Value-Added Tax</td>
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International Finance Corporation (IFC)

The micro, small and medium enterprise ("MSME") segments play an important role in the Mexican economy, particularly for the country’s employment levels. However, access to finance for the segments remains a challenge. The World Bank Group (WBG) considers financial inclusion a key enabler to reduce extreme poverty and boost shared prosperity, and has put forward an ambitious global goal to reach Universal Financial Access (UFA) by 2020. The Mexican government has also prioritized this policy goal and launched its National Financial Inclusion Strategy in June 2016, which plans to accelerate access to financial services for more than half of the population currently left out of the formal, regulated financial system.

The Mexican microfinance sector is at the frontier of this important initiative to promote access to basic financial services and fund investments in the country’s MSMEs. It has been one of the fastest growing microfinance sectors across Latin America in recent years, and is impressive in its focus on women, and consistently, small average-loan sizes, a testament to the success of the institutions in serving low income communities in peri-urban and rural areas. Unfortunately, the Mexican Microfinance sector also stands out for the prohibitive cost of credit.

This important study shines a spotlight on the factors which contribute to the high interest rates, and key developments in the evolution of the sector which are helping to bring them down. The IFC is pleased to have been able to participate in this initiative, together with TRIPLE JUMP, MIF-IADB and PRONAFIM, and hopes that the excellent analysis prepared by the Sparkassenstiftung consultants will serve to stimulate the debate around this topic.
National Microentrepreneur Financing Program and Rural Women (PRONAFIM)

In Mexico, as in many regions of the world, the use of microcredit has contributed to the productive activities of segments of the population that are not normally served by the traditional financial system. This allows them to establish and maintain businesses that improve their standard of living and that of their families.

In order to boost the growth of this sector, PRONAFIM, as a program of the Ministry of Economy, promotes the objective of contributing to the creation of economic units and increasing the productivity of existing ones through the provision of microfinance services with enhanced conditions for microentrepreneurs.

To achieve this aim, PRONAFIM channels resources to microfinance institutions and / or specialized organizations in the form of credit facilities and / or subsidies so that they can provide financing tools (productive microcredit) and financial and business education to the country’s microentrepreneurs, with particular focus on women.

Speaking of “better conditions”, PRONAFIM refers specifically to the granting of microcredits accompanied by training, incubation and / or savings. It refers to expanding the coverage of microcredit in priority areas, as well as granting microcredit with competitive interest rates.

These products are often considerably more expensive than commercial banking loans. The impact is a reduction in the productivity levels of microentrepreneurs. That is why achieving competitive rates in the market is a priority of the program.

PRONAFIM has implemented a series of actions aimed at achieving this specific objective by proposing market solutions. It promotes competition and efficiency within the sector through various forms of support. It has also invested substantial effort in encouraging informed decision-making of the target population through the provision of workshops, training linked to microcredit and the incubation of productive activities. Similarly, the PRONAFIM microsite is being developed, a technological platform that will seek to eliminate information asymmetries and promote transparency through access to comparable local data on microfinance supply.

This study, driven by PRONAFIM, the Multilateral Investment Fund (MIF), the International Finance Corporation-World Bank, TRIPLE JUMP and the Fundación Alemana Servicios, is an additional - and fundamental - element in the search for competitive interest rates in microcredit for the benefit of the microenterprise population. Thanks to a rigorous analysis of interest rates, a better understanding of the price structure was obtained, which took into account the specific attributes of the microfinance industry, the types of products they offer, among other variables.

This document represents a step forward to continue to drive positive decision-making based on an intelligent public policy, with concrete strategies to improve the efficiency, productivity and competition of financial intermediaries, and to ultimately provide more and better microfinance services to the benefit of Mexican microentrepreneurs.
For TRIPLE JUMP it is a privilege to be presented with the opportunity to support the production of this study on interest rates in Mexico. As a social investor with a local presence, TRIPLE JUMP has observed the historically high levels of interest rates in the country with concern, and how these have persisted over time. Consequently, it has sought to understand the phenomenon and has adapted its investment strategy as a response. In this context, it identified the opportunity to initiate this project, with the help of important national and multilateral entities, in order to contribute to a better understanding of the determinants that prevent the decrease of the cost of credit, with the aim of offering greater financial access under responsible conditions as well as allowing clients to take advantage of their potential and thus improve their quality of life.

This study has overcome the difficulties of standardizing the information of such a complex and diverse market which is microfinance in Mexico, thus achieving a deeper understanding of the context and the idiosyncrasies of its cost structure by analyzing each component. The outcome has allowed us to outline the discussions about which actions or policies may have the greatest impact on reducing interest rates.

At TRIPLE JUMP we are satisfied with the collaboration that has been undertaken for these initial stages. We are grateful to the consultant for integrating our feedback and trust that more initiatives will be held on the subject. This, therefore, could represent the start of a longer-term process to continue to promote the interest of public and private sector entities in the development of an efficient and competitive market. At TRIPLE JUMP we are ready to continue supporting these efforts, with the ultimate aim of building a more inclusive Mexico.

TRIPLE JUMP is impact-focused investment manager in emerging markets, whose objective is to increase financial inclusion and generate a positive impact on excluded segments of society. Our investors range from institutional investors, banks, financial development institutions to foundations, family offices and governments. Our main offices are in the Netherlands and our regional offices in Georgia, Kenya, Mexico, Peru and Thailand; our clients are both financial service providers and funds, who serve our final clients, which are micro, small and medium enterprises (MSMEs) that operate in developing countries.
Acknowledgements

For the Sparkassenstiftung für internationale Kooperation, the financial and social inclusion of the lower income population is part of an inclusive effort that must not be regarded without considering both sides of the coin; on the one hand, the people (clients) and, on the other hand, the institutions that provide financial services. The main challenge resides in the effort to integrate and, if possible, to “harmonize” the relationships between these two key players in microfinance.

In this context, the price (rate) of access to financing for those who are excluded, and financial sustainability for the institutions that assume the risk and the challenges of doing so have sparked an enduring debate, particularly in Mexico where the rates of financing to the poorest are higher than those offered on average elsewhere in the region.

The Sparkassenstiftung, through its Mexican subsidiary, Fundación Alemana Servicios, S. de R.L. Of C.V. (FAS), has promoted the accomplishment of the present study specifically in order to explain and understand the factors that directly affect the level of active rates in microfinance in Mexico. It represents a significant contribution to the analysis, debate and actions that must be taken in the sector and in the industry as a whole. The report was technically and professionally executed by Blanca Aldasoro, with the assistance of Ernesto Cervera and Fernando Palmos to whom we offer acknowledgement and congratulations for the magnificent work undertaken.

However, this research effort and academic rigor would not have been possible without the financial support and funds from the International Finance Corporation (IFC) - the World Bank, the Multilateral Investment Fund (MIF), TRIPLE JUMP and the National Microentrepreneur Financing Program and Rural Women, PRONAFIM, affiliated to the Ministry of Economy, who financed the research and also represented the technical committee. In particular we would like to thank Lory Camba, Terence Gallagher, Norbert Schneider, Sergio Navajas, Guillermo Aguilar, Alberto Bucardo, Marnix Mulder, Claudia Rojas, Barbara Rademaker, Cynthia Villarreal and Brenda Zayola for their support and the valuable contributions and comments that enriched this work.

In a similar fashion, we would like to thank the Mexican microfinance institutions, integration agencies, consultants and public officials who formed part of the forum for discourse, and who generously contributed their knowledge and experience. In particular, we would like to express our gratitude to Yerom Castro, Alejandro Puente, Alfredo Hubard, Federico Manzano, Jorge Kleinberg, Manuel Ramírez, Vicente Fenoll, Rodolfo Medrano, Roxana Mercado, Gilberto Pérez, Joaquín Jiménez, Alfonso Castillo, Gabriela Zapata, Pablo Cotler, María José Roa, Rudy Araujo, Jorge Lara, Claudia Revilla, Patricia Villafuerte, María Eugenia Butler, Guillermo Colin, and Matilde Olazabal, among other actors and stakeholders from the sector.

Furthermore, we would like to underline the contribution of the technical team of the FAS, which worked on the cleaning, classification and analysis of the databases and records, thereby demonstrating a high commitment to the overarching objectives of the study. Finally, whilst we consider that this impressive academic and research effort responds to some of the questions about the behavior of microfinance rates in Mexico, it also invites new studies and interventions to obtain a deeper understanding of the areas that the present document did not address either due to the initial design of the research, or by limitations of various types. These limitations should be addressed and overcome in complementary and subsequent studies that derive from this work.

It should also be recognized that the content and opinions expressed in this report are those of the authors and do not necessarily represent the official positions of PRONAFIM, TRIPLE JUMP, IFC and MIF.

Yours cordially,

Gerd Weissbach

Head of Division for Latin America and the Caribbean of the Sparkassenstiftung für internationale Kooperation
Microfinance Institutions (MFIs) have achieved accelerated growth and a significant expansion in the servicing of the segments of the population finding themselves in poverty. For this reason, they have acquired a central role in financial inclusion in Mexico. However, its operation has been characterized by a very low average credit, which implies high operating costs and, therefore, high interest rates. This research analyzes these interest rates in order to reach a better understanding of the price structure.

To estimate the interest rate, the interest yield was used (IY). This comprises the total of all loan income (interest, commissions, other loan charges) as a percentage of the MFI’s average annual loan portfolio. This is considered to be an indicator that adequately reflects what clients are paying.

According to estimates, from 2006 to 2015, the average interest rate has shown a predominantly decreasing trend, although the reductions are lower in comparisons with previous periods, going from 75.6% in 2006 to 74.7% in 2015. Externally, when applying the Herfindahl Hirschman Index (IHH), the rate level is shown to be significantly influenced by market structure: when competition increases the interest rate decreases.

Internally, by disaggregating the interest rate by component, operating costs are the largest component and account for 57% of its structure. Its value increased from 30.8% in 2006 to 42.9% in 2015. By disaggregating operating costs, it was identified that the most significant subcomponent is personnel expenses, which represent 70% of the operating costs substructure. The main concern with the level of this subcomponent is the reasonableness of wages, coupled with the low level of productivity and the high level of staff turnover.

On the demand side, the scope of the study did not permit a deeper analysis, however, there are some considerations that influence the level of the interest rate: i) there is an excess of demand for credit that is pushing prices up. This reduces the power of the customers; (ii) the adoption of microcredit is not generalized, i.e. not all productive sectors use microcredit, but demand comes from a specific market segment for which it is profitable to cover that rate; (iii) in Mexico the level of financial education is low, and therefore the understanding of financial products and interest rates is limited, and (iv) when taking microcredit, clients not only evaluate the interest rate but also the costs of the associated transaction, and these may be worthy of more consideration than the interest rate.

To encourage the reduction of the interest rate, it is proposed to focus efforts on reducing operating costs and increasing competition to promote market incentives. For the reduction of operating costs, we suggest that the scale of operation be increased, so that fixed costs are diluted across a broader portfolio base. This can be done by increasing the MFI’s customer base, maintaining the same business model and current financial outreach, and or increasing average loan size, implementing individual credit and reaching new market segments that are not currently being served. To increase competition, we recommend promoting the consolidation of strong and significant institutions, which can really influence the market. Significant efforts are required for the successful implementation of these strategies. On the side of the MFIs, internal structures must be strengthened; on the government side, in terms of regulatory frameworks and infrastructure creation.
1. Preface
1. Preface

1.1 Introduction

The Mexican microfinance sector has been characterized as one of the most dynamic in Latin America, in a stage of growth and expansion. However, its microcredit interest rate is at higher levels than the rest of the region. Since microcredit is targeted at the population at the base of the pyramid, and its interest rate impacts its level of income, there is a need to establish which factors determine the value of these rates.

The lack of availability of reliable and regular public data has limited the production of rigorous studies on the microfinance sector in Mexico and, particularly, around interest rates. One of the most notable efforts is a case study published by Cotler (2012), which analyzes the factors that determine the value of microcredit interest rates in Mexico, using a sample of 30 MFIs. To do this, it considers three groups of variables: a) those that describe the characteristics of loans: the average loan size in real terms and the active interest rate; b) costs: funds and operating expenses, and c) the size of institutions, the profits they earn and the number of years in which have been operating.

Using a data panel it was observed that the two main determinants of the active interest rate are the cost of funds and the efficiency with which these institutions operate in the country. Its main results can be summarized in that the active interest rate is negatively correlated with the efficiency of the financial institutions that compose the sample, with the average size of the loans they offer and, positively correlated, with profit and the cost of funds. Therefore, a reduction in the interest rate could occur if the cost of funds is reduced or the efficiency with which the MFI mobilizes its resources increases.

In addition, the present research has been supported by other international publications, such as Campion (2012), Rosenberg (2013), Roselló (2014) to form a solid theoretical framework. These publications coincide in analyzing the level of microcredit interest rates by using the Interest Yield (IY) as a proxy, and by disaggregating its basic components. In all cases, operating costs are identified as the component with the greatest weight in the structure of interest rates, derived from high personnel expenditure, and establishes positive correlations between interest rates and the cost of funds, operational costs and loan-loss provisions as well as negative correlations with efficiency.

1.2 Objective and methodology

This study aims to analyze the interest rate in the microfinance sector in Mexico, with the objective of determining the impact of each of its components and allowing for a better understanding of the price structure of microcredit and its evolution over time.

It adopts a market focus, given that the equilibrium rate is analyzed, that is, the rate resulting from the interaction of supply and demand, in which the amount customers wish to acquire is the same as the MFIs wish to sell.

The document is organized in five chapters. In the first section, we start with the origin of microfinance in Mexico and analyze its context. In the second, the level of the interest rate is studied, estimating proxy interest yield, trends between 2006 and 2015, and how the market structure influences that level. In the third, the levels and trends of the components of the structure of the interest rate are examined: operating costs, cost of funds, loan loss provisions and profits. In the fourth, some considerations are presented on the demand for microcredit and its influence on the determination of the level of interest rates. The fifth chapter determines the sensitivity of the interest rate to each of its components and derives strategies to improve its structure.

1.3 Methodology

The study is structured around the methodological proposal of Rosenberg (2013) to analyze interest rates. This methodology is based on the fact that MFIs use the proceeds from lending to cover costs, and the difference between income and costs results in profits:

$$IF = CO + CF + EP + Ut$$

Where:
- $IF$ = Financial Income
- $CO$ = Operating Costs
- $CF$ = Cost of Funds
- $EP$ = Loan losses
- $Ut$ = Profits
Thus, when calculating the percentage that these components represent from the loan portfolio, the sum of interest and commission income as a percentage of the loan portfolio is an estimator that approximates MFI interest rates, denominated interest yield$^1$.

$$RI = \frac{\sum \text{Financial Income}}{\text{Average Loan Portfolio}}$$

Secondly, by means of econometric techniques, the elasticity of the interest rate with respect to its components was determined to estimate the magnitude of the change in the same, before a change of each one of its components and thus to be able to focus actions that can be more effective in the reduction of the average level of the interest rate in Mexico.

The sample of the study encompassed those MFIs that received financing from PRONAFIM, from 2006 to 2015. In addition, the financial data of Banco Compartamos S.A were added, given its leading position in the MFI sector in Mexico, with more than 2.8 million active clients$^2$. The data group and methodology used to generate the results are discussed in more detail in annex 7.1.

1.4 Macroeconomic environment

During the last 16 years, the evolution of the Mexican microfinance sector has occurred in a context of low average national GDP growth. The average growth of the Mexican economy was only 2.4%, on average, per year, slightly lower than the potential growth of 2.5% to 3.0% observed in the last 30 years (see Figure 1).

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$^1$ The interest yield figures are an approximation of microcredit interest rates actually charged, since there is no data on financial income and microcredit specific commissions.

$^2$ Institución Banca Múltiple (2016).
The previous behavior becomes even clearer when analyzing the growth of the country at the regional level. On the one hand, in the federative entities in which modern productive activities or with export orientation are located, the average annual growth in the last six years has been very substantial. On the other hand, the regions that do not show a dominant modern economic activity have registered a low growth and it is precisely in these regions that have seen the greatest amount of operations of the country’s microfinance sector.

In 2016, the Mexican economy faced a complex external environment, where the persistence of low oil prices, the normalization of monetary policy in the United States, a diversity of geopolitical events and a slowdown in international trade and global economic growth had the effect of increasing aversion to risk and financial volatility and posed challenges to the country’s economic stability, as well as its growth prospects.

Adding to the above, Donald J. Trump’s triumph in the US presidential election has led to increased uncertainty facing Mexico, particularly in trade and migration. The expectation of 2017 economic growth was adjusted downwards, from 2.3% to 1.7% per year. The main concerns are the slow growth in employment, a weak peso (21.0 pesos per dollar for 2017) that, in turn, will increase the upward pressure on inflation and the risk of lower remittances affecting consumption.

However, even given the slow growth of the economy, the banking system has an optimal level of capitalization, credit has expanded significantly, new banks have arrived, development banking has increased its share and, although the macroeconomic environment seems complicated, there is no systemic risk. From privatization and consequent financial reforms, from 2000 to 2016, the bank loan portfolio to the private sector grew by an average of 13% annually, above total GDP growth³.

1.5 Evolution of the microfinance sector in Mexico

The microfinance sector has become increasingly important as part of the Mexican financial system. It is composed of several institutions belonging to the banking sector and to the popular savings and credit sector, which share the objective of designing products according to the needs of the population at the base of the pyramid, regardless of the legal figures they use: Sofomes⁴, Sofipo⁵, Socap⁶ and niche banks⁷. In addition, there are other entities such as pawn shops, consumer credit institutions⁸ and informal financial services, which will not be considered as part of this research because the nature of their business models has a predominantly consumer focus, unlike the productive approach of microfinance.

The Socaps have their origins in the fifties, in the National Movement of Saving Banks promoted by the constitution of savings and credit cooperatives. In 1966 there were 575 registered cooperatives, which served more than 48,000 members. It wasn’t until 2001 that the savings and credit cooperatives were legally recognized in the Popular Savings and Credit Law to protect deposits of savers and promote through this the development of the sector. Subsequently, in 2009, the Law was published to regulate the activities of savings and credit cooperatives, and the non-profit nature of these entities was recognized.

In the case of the other entities grouped as microfinance institutions (MFIs), their origin dates back to the beginning of the 1990s, when they were used as instruments for productive development and poverty alleviation. The sector was created by NGOs since they were not authorized to collect deposits from the public, they had to focus on credit products. Discovering new ways to provide financial services, which would cover the high costs of servicing the base of the pyramid, was a gradual and costly process. The pioneers operating under this scheme were institutions that are currently sector leaders, such as Compartamos, Came, and Fincomún.

³ Banxico.

⁴ Multi-purpose Financial Institutions are public limited companies that, through the obtaining of funds through funding in financial institutions and / or public debt issues, provide credit.

⁵ Popular Financing Institutions are joint-stock companies, whose purpose is the popular savings and credit; authorized to mobilize deposits from the public, and regulated and supervised by the CNBV.

⁶ Savings and Credit Cooperatives have the purpose of carrying out savings and loan operations with their partners, do not pursue profit and are regulated and supervised by the CNBV.

⁷ See Annex 7.1 for more details on legal figures.

⁸ Consumer credit when the source of payment is the salary of a salaried employee, not the destination of the credit.
Despite the 1995 crisis, the microfinance sector expanded and funding raised through donations were insufficient. In order to grow, NGOs required lines of credit to finance their portfolios. During the initial stage, the institutions could access funds from multilateral organizations such as the IDB; subsequently, to access commercial lines of credit, institutions were forced to seek new legal figures.

Starting in 2000, the federal government began efforts to promote greater financial outreach of the markets. Among the most notable efforts are the publication of the Popular Savings and Credit Law (2001), reforms of the financial system to promote innovation and reactivate credit (2006) and the creation of government support programs to increase competition. As part of the reforms of the financial system, Sofomes was created to deregulate credit with very simple requirements for its legal constitution and with fiscal, procedural and funds advantages, which were adopted by most MFI$^{9}$.

Government support consisted of financing and technical assistance for the sector, creating the Pronafim in the Ministry of Economy, Patmir$^{10}$ in the Sagarpa and involved the development bank, highlighting the role of Bansefi$^{11}$. In order to fulfill their mission, government programs adopted the strategy of creating institutions and for this they provided a wide availability of resources. In 2009, 60% of MFI$^{s}$ had government funds as the main source of funds, only 28% of MFI$^{s}$ had commercial bank financing, and 6% were funded with savings$^{12}$. Thus, these programs played a very important role in the growth of the microfinance sector and through funds, they functioned as market regulators, demanding compliance with certain prudential standards.

At the same time, in 2007, Banco Compartamos successfully completed an initial public offering (IPO) of its shares, becoming the first MFI in AL to raise capital through offers to the public on the Stock Exchange and putting in public spotlights its exceptional profitability.

Thus, the sum of these factors attracted private companies with a purely commercial approach. In 2007, 74% of MFI$^{s}$ operated for profit$^{13}$. The incorporation of these companies into the sector accelerated its growth and the MFI$^{s}$ began to compete between them. As shown in figure 3, the Gross Loan Portfolio grew from 2006 to 2009, at a rate of 46%, annually.

However, many of these new competitors in the market sought quick and easy profits, with little knowledge of microcredit technologies and without adequate and prudent risk management practices, which took advantage of arbitration between different government programs to obtain funds from those with more lax selection criteria. Thus, 60% of the multiplicity of MFI$^{s}$ created began to have problems in fulfilling their commitments and only a few achieved sustainability$^{14}$.

The effects of the international financial crisis (2008) and the health emergency caused by the AH1N1 virus (2009) caused a slowdown in the growth rate of the sector and revealed a microfinance sector vulnerable to business cycles. Faced with the impact of the economy, MFI$^{s}$ reacted cautiously, establishing stricter lending policies, renegotiating their credit lines, and diversifying funds sources$^{15}$.

---

9 Basically the requirements are reduced to two shareholders and fixed minimum capital to the amount of MXN $ 50,000.
10 Patmir is currently part of the Bansefi structure
11 For details of the characteristics of government programs see Annex 7.3
12 MicroRate (2009).

---

14 B. Marulanda (2011).
15 Some analysts have pointed out that the financial crisis and the health emergency only exposed the already deteriorated quality of the credit portfolio, as a result of the accelerated growth of the sector.
In Mexico, Compartamos has been a leader in the consistently growing microfinance sector with high levels of profitability, consistent asset quality and adherence to best practices. It began operations under the Private Assistance Institution in Oaxaca and Chiapas in 1990. At the end of 1993, Compartamos agreed to IDB financing in 1996 from CGAP, and in 1998 it entered into a strategic alliance with Acción.

To finance its growth, it adopted a commercial strategy and pioneered the use of innovative financial instruments. In 2000, it was transformed into Sofol, which allowed it to have access to credits with financial institutions. In 2002 it established the first program of stock certificates, to issue debt in a public market. In 2006, it became a multiple banking institution and in 2007 successfully completed an initial public offering (IPO) of its shares, becoming the first MFI in Latin America to raise capital through public offerings on the Stock Exchange. In 2011 it extended its operation to Guatemala and Peru.

By the end of December 2016 in Mexico, Compartamos had a loan portfolio of 25,063 million Mexican pesos, provided comprehensive financial services to more than 2.8 million customers, and boasted national coverage. 87.4% of its clients are women with basic productive activities and whose average credit is MXN $ 6,993. Its main credit products operate under group methodologies and represent 94% of its loan portfolio, which has allowed accelerated growth; However, being a mass method is not significant enough to meet the needs of different customer segments.

As a sign of its adherence to best practices, the quality of its Loan Portfolio has kept the NPL ratio below 4.4% and its customer retention rate is 87.4%\(^{18}\); With more than 17 thousand employees, has a productivity index of 187 clients / employees, a staff turnover rate of 37.1%, as well as cutting-edge technology, as it provides electronic banking, mobile banking and ATM services. Fintech, through its Finlab platform.

Regarding their financial performance, as shown in the table, their Interest yield, operating costs and funding are below the industry average. Its efficiency has enabled it to generate profits higher than the industry average, which allowed it to build a solid capital base, since its creation and until 2004, all the profits were retained to finance the expansion.

<table>
<thead>
<tr>
<th></th>
<th>Compartamos Bank</th>
<th>Sector average</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI</td>
<td>72.6%</td>
<td>62.1%</td>
</tr>
<tr>
<td>CO</td>
<td>32.0%</td>
<td>33.4%</td>
</tr>
<tr>
<td>CF</td>
<td>3.3%</td>
<td>3.5%</td>
</tr>
<tr>
<td>EP</td>
<td>4.1%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Profits</td>
<td>17.8%</td>
<td>14.2%</td>
</tr>
</tbody>
</table>

As the sector leader in Mexico, its commercial strategy has influenced the price level and supply of financial products. Younger MFIs have tried to emulate their success with lending group methodology. They have adopted their interest rates as a benchmark but failed to scale up their operation. This has prevented the replication of operational efficiency and consequently similar levels of profitability have not been forthcoming.

Source: Authors’ calculations.

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16 Limited -purpose Financial Institution
17 The total proceeds of this sale amounted to $ 468 million in securities that were acquired by 5,920 institutional and individual investors from Mexico, the United States, Europe and South America.
18 The sector average is estimated at approximately 70%, according to interviews with MFIs.
19 Finlab aims to promote entrepreneurship and innovation, creating solutions for financial inclusion through sustainable models and enabled by disruptive technologies.
In subsequent years, the sum of public and private efforts resulted in substantial advances in financial inclusion. Looking at the public sector, we find the various normative modifications that have strengthened the popular savings and credit sector\(^{20}\), the Financial Reform (2014) and the promulgation of the National Financial Inclusion Policy (2016). In the private sector, an increase has been registered in the number of financial institutions, as well as access points (branches, ATMs, point of sale terminals and correspondents). Thus, from 2010 to 2015, the microfinance sector grew at annual rates of 23%; However, the accelerated growth of the microfinance sector led to a deterioration in the quality of the portfolio: the past due portfolio grew from 2006 to 2015, from 2.0% to 3.5% \(^{21}\).

Given the rise of microfinance, the authorities have sought to safeguard the healthy operation of the financial system, through the CNBV for regulated financial intermediaries and Condusef for those who are not regulated. The tightening of the law in the application of measures to prevent money laundering has recently generated a cleaning up process within the sector.

Thus, the results show the great progress that Mexico has had in terms of financial inclusion, but also the potential that it has to continue to grow in the coming years. The microfinance sector is young and in the process of growth and expansion.

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\(^{20}\) Creation of core accounts, mobile and niche banking, correspondent service and simplified record accounts.

\(^{21}\) The quality of an IMF portfolio was measured according to an industry standard indicator: the percentage of loans from an MFI that is more than 90 days in arrears.
2. Level and trends of microcredit interest rates
2. Level and trends of microcredit interest rates

2.1 Level and trends of interest yield

To measure the microcredit interest rate, different approaches can be applied: the Annual Percentage Rate (APR), Total Annual Cost (CAT) or Interest Yield (IY). Based on the data available for this study, the best approximation is to estimate the IY, an indicator that, when considering interest and commissions, adequately reflects what customers are paying. This chapter analyzes the level of the interest rate, its 2006-2015 trends, transaction costs for the customer, and how the market structure has influenced its behavior.

Figure 4 shows the IY distribution of all MFIs in the sample, indicating the simple average for each year. It is observed that the dispersion of the data is very high, in other words, there is a wide variation in the rates of microcredits, so that, in the following sections, any assertion about an average rate is based on significant underlying diversity.

![Distribution of Interest Yield per year](image)

Source: Authors’ calculations

From 2006 to 2015, average interest yields show a predominantly decreasing trend, although the decline is not significant in comparison with previous periods. Thus, after the upturn experienced in 2007 (80.6%), subsequent years saw a drop until 2015 when a recovery saw its value reach 74.7% at the close of the period, at 5.9 points below the initial value.

---

22 See annex 7.1.1
23 According to estimates by M. Chu (2012), in Mexico, the interest rate presented a decreasing trend, going from 115% in 2000 to 70% in 2010.
As shown in Figure 6, in the period 2006-2015, the minimum IY levels were in a range of (18.8% to 25.4%) and the maximum levels were in a range of (119% to 167%).

Keeping the reservations that implies comparing markets with different levels of development and environments, it is observed that when comparing the level of IY of Mexico versus the leading countries in microfinance in LA, its average is significantly lower. The interest yield of MFIs in Bolivia is 19%, followed by that of Peru 22% and in third place, Colombia with 28%.

---

24 When comparing the microfinance services markets of the Latin American region, an overview of their performance can be obtained, however, it is complex due to the lack of up-to-date, homogeneous and comparable information between countries. Therefore, the comparison with A.L. This requires further analysis, but the scope of this study and the availability of information did not permit it.

25 The analysis is based on Roselló’s (2014) research, which estimated the interest rates Performance of Bolivia, Peru and Colombia.
Figure 7. Interest Yield Peer Group Patterns

Interest Yield by Legal Status

Interest Yield by Institutional Size

Interest Yield by Institution Age

Source: Authors’ calculations
2.1.1. Peer group patterns

When analyzing the behavior of interest yield by legal figures, it is observed that the regulated institutions have higher levels than the unregulated ones. The explanation for this lies mainly in the fact that they face higher operating costs, high costs of funds and high level of loan losses. However, while the Sofipo reduced their levels during the period of analysis, the Sofomes increased them and reached similar levels. For their part, the Socap, possibly because they are not for profit, achieved the most significant level of reduction in the group. Both in 2006 and 2015, banks had the highest IY levels, while the lowest levels were presented by the Sofomes in 2006 and the Socap in 2015.

Regarding the scale of operation, we can see that the institutions with the highest levels of IY belong to the macro group, both in 2006 and 2015, which is explained by the fact that they generate the highest profits. On the other hand those with the lowest levels are the median MFIs. Small and micro MFIs, however, presented the most significant reductions during the period of analysis.

Finally, in terms of institution age, it can be seen that the institutions with the highest levels of IY are the most recent, and as the age increases, the level is reduced. This is because the most recent MFIs are those facing the highest operating costs and high level of loan losses. As a result, reductions in IY levels occurred in older MFIs. Campion (2012) believes that over time, MFIs learn more about their clientele and how to reduce costs, while providing increasingly better services, thus generating operational efficiency. With each increase of 1% in institutional age, the IY decreases by 0.15%.

2. 2. Costs beyond the interest rate

It is important to recognize that, in addition to the interest and fees paid by clients for microcredit, there are other costs associated with the credit in which the customer incurs for the management of requesting, receiving and paying the loan. These costs are called transaction costs and include concepts such as the price of transportation, the price of documentation, taxes and the opportunity cost in terms of the time the client invests in these process instead of being in his business. Transaction costs do not generate income for MFIs and, according to Schreiner (1999) for cases in LA, it is estimated that these costs can be up to 30% higher than the interest rate.

A transaction cost that deserves special mention is compulsory savings, which is part of the requirements of some MFIs and which implies that clients should save a percentage of their loan, usually 10%. Its original purpose was to promote savings and estimate customers’ repayment capacity, but currently it is mainly used as partial collateral of credit. With the customer having to pay interest for an amount greater than the amount actually available, compulsory savings increase the effective interest rate paid by customers.

In Mexico, there are no formal statistics on the percentage of MFIs that apply it, nor was there information in this study to estimate their impact; However, at the international level, it is estimated that one third of MFIs use compulsory savings and, according to Waterfield (2008) in an example for Mexico, this cost was estimated to add up to 20 additional percentage points to the interest rate.

Based on advertising, it is observed that the new MFIs, which are generally small and unregulated, have stopped applying this practice as a differentiation strategy in the market, while the older MFIs continue to use it, with the advantage of being predominantly regulated MFIs, the savings are protected and interest is paid to the clients for said savings.

26 The regulations here refer either to authorizations or to prudential supervision by the banking authorities of Mexico: National Banking and Securities Commission.
27 It should be mentioned that the Sofomes are not obliged to publish their financial information, so the information presented is only validated by the external audit. Therefore, their numbers should be handled with some caution.
28 MFI rankings were based on the credit portfolio, with five major to minor categories: macro, large, medium, small and micro. See Annex 7.1.2 for details.
30 R. Rosenberg (2013).
2.3 Market Structure and Competition
Competition implies an efficient allocation of productive resources, greater economic growth and, therefore, more welfare for the population. In this section, the Herfindahl Hirschman Index (IHH) is calculated to approximate the level of competition that exists in the microfinance sector in Mexico and how it relates to interest rates.

The IHH is defined as the sum of the shares in the relevant market of each of the participating MFIs elevated to the second power.

\[ IHH = \sum q_i^2 \]

where:
\( q_i \) represents equity in the total relevant market of the MFI.

As shown in figure 8, despite the large number of MFIs participating in the sector in Mexico, it has a high level of concentration, with a decreasing trend from 2006-2014, but a significant increase in 2015. This is explained by Portocarrero and Byrne when they warned that some concentration of the market is required to raise interest rate competition, i.e. there must be one or several market leaders large enough to influence the general rate scheme, effectively obliging other participants to follow suit by changing their prices\(^{32}\).

It should be mentioned that the structure of the Mexican microfinance sector is similar to the structure of Mexican banking as a whole: in applying the HHI to it, the results point to the existence of little competition. According to Banxico, the banking concentration in Mexico, measured in terms of assets, has remained relatively stable over the last decades, around 1500 points, with small transient rebounds\(^ {33}\). It has been pointed out that the high levels of concentration, operating costs, financial margins, commissions and profitability are indicative of competition problems in Mexican banking (Demirguc-Kunt et al., 2004; Ávalos and Hernández, 2006; Rivera and Rodríguez, 2007; Chiquiar and Ramos France, 2009).

\(^{32}\) F. Portocarrero y G. Byrne (2003).
\(^{33}\) Banxico (2013).
The level of concentration has an impact on the IY level: as the level of concentration decreases, i.e., as the level of competition increases, the level of interest yield is reduced.

This can also be seen in the microfinance industry in LA. According to MIF, the microcredit portfolio in the region is classified as moderately concentrated, implying a medium level of competition and a low interest rate of 27%. Based on the literature, it has been identified that among the key success factors in the microfinance industry in Latin America is an innovative free market environment where competition was promoted and strategies developed to improve the operational efficiency in a rational and sustainable way.

On the contrary, repressive state interventions, such as: subsidized credit, unfair competition from public financial institutions - which offer subsidized interest rates - debt forgiveness programs or limits on fixed interest rates - regardless of the costs of MFIs - distort the market, reduce financial inclusion and are inefficient and costly for taxpayers. The consequences of this type of intervention in other countries have caused the departure of commercial actors from the market, stimulated the application of commissions to circumvent the measure and provoked a rationing of credit, affecting mainly the poorest clients due to the high costs that their servicing implies. For this reason, the importance of supporting competition and the development of natural market mechanisms to respond to the diverse demands of consumers of financial services is emphasized.

\[\text{34 V. Trujillo (2013) and S. Navajas (2016).}\]
3. Level of the components of the interest rate and its trends
3. Level of the components of the interest rate and its trends

This section analyzes the 2006-2015 levels of the components of the interest rate structure and its trends. As shown in figure 9, operating costs are the major component of the interest rate structure, followed by profitability, the third position is occupied by loan loss expense, and finally the cost of funds.

Based on the literature, it has been established that microcredit operating costs are high due to the costs of placing and collecting payments on many small loans being higher than a single loan for the same amount. According to Rosenberg (2013) internationally, it is estimated that operating costs correspond to approximately 50% of nominal IY. In 2015 in the Mexican microfinance sector, operating costs corresponded to 57% of IY, which makes it necessary to establish interest rates above this level to cover these costs.

With regards to profit it is recognized that it is the most controversial component. Again, according to Rosenberg (2013), it is not considered a predominant factor that drives the level of interest rates, but is a strategic component of the operation of MFIs, since they generate capital to finance growth. This makes a capitalization rate advisable of at least 5% to 15% of the loan portfolio to support long-term growth.

Furthermore, loan losses remind us that there is an inherent risk in credit activity which is recognized as an expense in terms of the probability of loss associated with every credit. In 2015 in the Mexican microfinance sector, the level of loan losses corresponded to 11% of interest yield.

In relation to the cost of funds, the terms and conditions of the financing are usually dictated by investors and market conditions, in other words, they are not explained by internal factors, but by the generalized level of the rates and the MFIs must assume the costs. In 2015 for the case of Mexico, the cost of funds represents 6% of interest yield, being the component with less weight within the structure of interest rate.

---

**Figure 9. Distribution of components by percentage of IY (%)**

Based on the literature, it has been established that microcredit operating costs are high due to the costs of placing and collecting payments on many small loans being higher than a single loan for the same amount. According to Rosenberg (2013) internationally, it is estimated that operating costs correspond to approximately 50% of nominal IY. In 2015 in the Mexican microfinance sector, operating costs corresponded to 57% of IY, which makes it necessary to establish interest rates above this level to cover these costs.

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---

35 This is included in “Others” under “Other MFI Income / Expenses”, which includes concepts such as portfolio recovery, capitalized finance lease cost, impairment losses, donations and the proceeds in the sale of furniture and equipment. These items are not included in the analysis because they are not part of the financial activity of MFIs.

36 R. Rosenberg (2002).
3.1 Operating Costs
In the period 2006-2015, operating costs show a steadily increasing trend, rising significantly from 30.8% to 42.9%. In contrast, the international average was 11.4% \(^\text{37}\).

**Figure 10. Operating Cost Ratio**

![Operating Cost Ratio graph](image)

Source: authors’ calculations

As shown in Figure 11, in the period 2006-2015, the minimum operating cost levels were in the range of (5.6% to 13.1%) and the maximum levels were in the range of (96.0% to 158.8%).

**Figure 11. Operating Expense Ratio**

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Average</td>
<td>45.0%</td>
<td>53.6%</td>
<td>47.3%</td>
<td>51.0%</td>
<td>47.2%</td>
<td>47.0%</td>
<td>52.5%</td>
<td>49.0%</td>
<td>45.7%</td>
<td>49.4%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>30.8%</td>
<td>35.0%</td>
<td>37.7%</td>
<td>36.4%</td>
<td>35.7%</td>
<td>38.1%</td>
<td>39.4%</td>
<td>39.4%</td>
<td>40.5%</td>
<td>42.9%</td>
</tr>
<tr>
<td>Min</td>
<td>11.9%</td>
<td>13.1%</td>
<td>12.4%</td>
<td>11.1%</td>
<td>5.6%</td>
<td>5.8%</td>
<td>5.9%</td>
<td>6.3%</td>
<td>7.5%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Max</td>
<td>96.0%</td>
<td>110.7%</td>
<td>138.6%</td>
<td>157.3%</td>
<td>128.6%</td>
<td>114.3%</td>
<td>129.3%</td>
<td>158.8%</td>
<td>118.2%</td>
<td>135.5%</td>
</tr>
</tbody>
</table>

Source: authors’ calculations

When comparing the level of operating costs in Mexico versus the leading countries in microfinance in Latin America, it can be seen that they are significantly lower than Mexico’s operating costs. On average, the highest level of operating costs are found in Colombia (21.4%), followed by Peru (12.1%), and the lowest level is presented by Bolivia (11.3%) \(^\text{38}\).


\(^{38}\) The analysis is based on the research of Roselló (2014), who estimated the interest yield of Bolivia, Peru and Colombia.
Figure 12. Operating Cost Ratio by Peer Group

Operating Cost by Legal Status

Operating Cost by Institutional Size

Operating Cost by Institution Age

Source: Authors' calculations
3.1.1 Peer group patterns
From a legal status approach, it can be seen that higher operating costs are faced by regulated MFIs for profit, while lower levels are faced by non-profit regulated ones. Throughout the analyzed period the highest operating costs are presented by Sofipo. This can be attributed to the high costs involved in managing many deposits, low amounts and high transactionality. Furthermore, lower operating costs are discernible in the Socap case, which can be attributed to its business model. It should be noted that, despite various fluctuations in the period of analysis, all categories of MFIs show an increase in the level of initial versus final operating costs, although in some cases this increase is not significant.

When analyzing the behavior of operating costs by scale of operation, we can see that, on a larger scale, lower operating costs per loaned peso, in general. In this case, in 2015, micro MFIs have the highest level of operating costs (66.2%), and medium-sized ones have the lowest level (39.9%); This is due to the fact that economies of scale allow the distribution of fixed costs in a larger volume of credit portfolio. It is observed that, during the analysis period, all MFI categories, except for small and large ones, show costs of predominantly growing operations.

Additionally, when analyzing the MFIs of different ages, we observe that the MFIs gain experience, become more efficient, and reduce their operating costs. In 2015 the new MFIs have the highest level of operating costs (61.5%), and the lowest level is presented by the longest-lived MFIs (32.7%). This is consistent with Rosenberg’s (2013) research, which points out that the age of MFIs is negatively related to operating costs and that, therefore, operating costs decrease between 2% and 8% annually in the first six years of operation, between 1% and 2% in the next 5 years, and less than 1% in the following years. It is noted that MFIs increased their operating costs during the period of analysis, except for young and mature MFIs.

3.2 Substructure of operating costs
Since operating costs are the most important component of the interest rate structure, it is important to familiarize oneself with its substructure in order to gain a better understanding of the challenges faced by MFIs in order to be more efficient.

- Personnel expenses
- Operating expenses
- Expenditure on impulse and improvement of the institution
- Regulatory expenditure and taxes
- Other administrative expenses

To achieve this, detailed financial information was obtained from a subsample of the general sample, composed of 28 MFIs, for the period 2011-2015. Based on this information, operating costs could be broken down into subcomponents.

As shown in Figure 13, personal expenses are the largest subcomponent in the operating cost structure, followed by operating expenses. The rest of the categories are not significant in the overall structure. For details on the sub-components of operating costs, see annex 7.4.

3.2.1. Personnel expenses
This item includes payroll expenses, commissions, bonuses incentives, benefits, payment of PTU, and fees of external persons employed by the institution. Operating costs are firmly linked to wage levels, because it is a labor-intensive sector. As shown in Figure 14, personnel expenses show a predominantly decreasing trend, from 45.8% in 2011 to 36.4% in 2015. Personnel expenses account for 70% of operating costs in 2015.

---

40 Employee profit participation schemes
In the period 2006-2015, minimum personnel expenses were in the range of (5.8%, - 8.5%) and the maximum levels were in a range of (58.5% - 109.8%).

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Average</td>
<td>32.6%</td>
<td>42.4%</td>
<td>35.8%</td>
<td>39.7%</td>
<td>42.3%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>45.8%</td>
<td>41.3%</td>
<td>36.6%</td>
<td>34.4%</td>
<td>36.0%</td>
</tr>
<tr>
<td>Min</td>
<td>7.7%</td>
<td>7.9%</td>
<td>5.8%</td>
<td>7.6%</td>
<td>8.5%</td>
</tr>
<tr>
<td>Max</td>
<td>58.5%</td>
<td>64.3%</td>
<td>78.4%</td>
<td>109.8%</td>
<td>84.7%</td>
</tr>
</tbody>
</table>

Source: PRONAFIM, SE

For the purposes of this study, there is no disaggregated information on personnel expenses, however, there is concern about the reasonableness of executive salaries and board expenses, based on consultations with key actors in the sector and cases observed in practice. Concern is increased in the case of unregulated MFIs, which are not forced to follow best practices in the field of governance and transparency. High salaries may be underestimating MFIs’ profitability and overestimating operating costs.

Alongside the wage and salary load, it is important to also analyze the effect of employee productivity and staff rotation. Productivity measures the number of clients that an employee can manage. To reach financial feasibility, MFIs must be able to manage a great number of clients with minimum administrative effort and without affecting the quality of their portfolios. It not only depends on employee capability, but also on how a MFI adapts its politics and procedures to its purpose of money lending, and to optimize the time management of its staff. While the international industry parameters are around 130, the average productivity level of the MFIs in Mexico was 115 in 2011; this increased to 212 in 2013 and decreased to 96 in 201641.

Regarding staff rotation, an increasing trend is present in Mexico; in 2011, it was 31%, in 2013 it decreased to 59% and in 2016 it stood at 57%, recording a maximum of 243%42. For the mix market data, the average rate of staff rotation in L.A. was 17% in 2012 and increased, on average, one percentage point per year. The rotation costs go beyond severance and replacement related costs of personnel; among the main consequences of turnover is the instability of the portfolio due to the lack of control of the clients and the time it takes the new loan officer to build a relationship of trust, as well as the difficulty standardize policies and procedures, through which will achieve adequate risk management. In addition, it should be considered that, often, when an employee leaves an MFI, takes clients. For the mix, a MFI loses approximately 150 clients for each staff member that leaves the institution because they often take the clients with them43.

When analyzing the behavior of personnel expense, in the analyzed period, by profile of MFIs, according to legal status, it is observed that SOFIPOs face higher personnel expenses than SOFOMES. Likewise, it can be seen that both types of figures increased their personnel expenses, with more significant growth in SOFOMES expenses by more than 15 percentage points, and the difference gap between the two legal figures is decreasing.

Per institutional size, it can be observed that all categories increased their personnel expenses, with smaller MFIs showing the most notable variations. Medium-sized MFIs face higher personnel expenses, possibly attributable to installed capacity to grow, and in general, smaller-scale MFIs face higher personnel expenses than larger scale ones, although not every year.

In the case of institutional age, in general, it is noted that new MFIs face higher personnel expenses, except in 2011, which may have been due to the fact that longer-term MFIs were hiring more staff in order to grow. Likewise, it can be observed that new MFIs significantly increased their personnel expenses during the period of analysis, while the older MFIs reduced it, although these changes were nominal.

42 Ídem.
43 M. Krell (2013).
Figure 16. Personnel Expense Peer Group Patterns

Personnel Expense by Legal Status

Source: PRONAFIM-SE

Personnel Expense by Institutional Size

Source: PRONAFIM-SE

Personnel Expense by Institution Age

Source: PRONAFIM-SE
3.2.2 Peer group patterns
When analyzing the behavior of personnel cost, in the analyzed period, by profile of MFIs, according to legal status, it is observed that SOFIPOs face higher personnel costs than SOFOMEs. Likewise, it can be seen that both types of figures increased their personnel costs, with more significant growth in SOFOMES expenses by more than 15 percentage points, and the difference gap between the two legal entities is decreasing.

Per institutional size, it can be observed that all categories increased their personnel costs, with smaller MFIs showing the most notable variations. Medium-sized MFIs face higher personnel costs, possibly attributable to installed capacity to grow, and in general, smaller-scale MFIs face higher personnel costs than larger scale ones, although not every year.

In the case of institutional age, in general, it is noted that new MFIs face higher personnel costs, except in 2011, which may have been due to the fact that longer-term MFIs were hiring more staff in order to grow. Likewise, it can be observed that new MFIs significantly increased their personnel costs during the period of analysis, while the older MFIs reduced it, although these changes were nominal.

3.2.3 Other expenses
The second most important sub-component in the total operating cost structure are the operating expenses, which include all the MFI operation expenses, such as office material, services, security, leasing operations, travel expenses, gas, maintenance, depreciation, transport, systems, etc. These expenses represent 22% of the total operating costs. At the start of the 2011 period, operating expenses started at 8.4% and by 2015 had reached 11.1%.

The remainder of the expenses are not as significant. Impulse and improvement expenses represent 6.5% of the total operating cost structure and start in 2011 at 1.8% and grow to 3.4% in 2015. The normative expenses represent 0.5% of total operating costs: at the beginning of the period they were 0.2% and grew to 0.3% in 2015. Lastly, other administrative expenses represent 0.3% of total operating costs starting in 2011 at 0.2% and reaching 0.1% in 2015.

3.3 Cost of funds
In order to finance their loans, MFIs use a combination of equity and debt, and borrowed funds represent a cost that translates into interest expense.

The cost of funds decreased in the period 2006-2015, from 6.2% to 4.7%. As a market-determined component, comparing the trend of the cost of funds with the trends identified by Cetes 44, as a reference rate of government financing, it can be observed that they follow a very similar behavior. In 2008, there was a rebound, explained by the international financial crisis. During this period, MFIs that had financing abroad were exposed to the cycles of international financial markets and, therefore, vulnerable to external shocks. In addition, local financing was reduced and, therefore became scarcer. According to the Microrate study (2009) between October 2008 and March 2009, 32% of MFIs faced problems in finding financing and 75% faced more restrictive conditions, shorter terms and higher credit costs to obtain financing.

In addition to the reduction of market interest rates, it is assumed that the reduction in cost of funds was influenced by the diversification of funds that MFIs have adopted. These ranged from using equity capital and government funds to funds savings, national and international private funds, and even public debt. This combination of funds sources may entail significant administrative costs but lower cost of funds in general and are an effective liquidity risk management strategy to safeguard the necessary funds for the growth of MFIs. It is worth mentioning that in order to diversify sources of funds, access to these funds depends on the profile of MFIs: legal status, scale of operations, financial situation, among others, thus only the best performing MFIs have succeeded in doing so.

---

44 Certificates of the Treasury of the Federation. Bearer loans issued by the federal government, for which the Federal Government is under obligation to pay its nominal value at maturity.
As shown in Figure 18, in the period 2006-2015, minimum cost of funds levels were located in a range of (0% - 1%) and the maximum levels were in a range of (10.5% - 26.5%). The minimum levels are presented in newly created MFIs, which start operations with equity in the first few years until they can access funds. As MFIs grow, they must increasingly resort to more expensive commercial funds in local and international markets.

When comparing the cost of funds in Mexico versus the cost of funds of the leading countries in microfinance in Latin America, it can be observed that they are similar. On average, the lowest level is presented by Bolivia, with an average of 3.2%, followed by Colombia, 4.6%, and Peru, by 5.9%45.

---

45 The analysis is based on the research of Roselló (2014), who estimated the interests yield of Bolivia, Peru and Colombia.
3.3.1. Peer Group Patterns
When analyzing the behavior of the cost of funds, by legal status, it is observed that, at the beginning of the period, regulated institutions, which were recently created, faced higher funds costs than unregulated MFIs. Over time, the cost of funds decreases for banks and SOCAPs, and SOFINCOs, even when it increases their level, it still represented the lowest in the period. In the case of SOFIPOs and SOFOMEs, both for profit, the funds costs increase and are tied to practically the same level.

From an institutional age perspective, costs of funds increased for all categories, except for consolidated MFIs. As already mentioned, the minimum levels are exhibited in newly created MFIs, which start operations with equity in the first few years until they can access financing lines. In 2006 differences by age were significant, but in 2015 they are not, and MFIs have very similar cost of funds.

From an institutional size approach, during the review period, the cost of funds increases for all categories except for medium-sized MFIs. In general, micro and small MFIs are found to have lower cost of funds than larger scale MFIs. This is explained by the fact that as MFIs grow, they must increasingly resort to more expensive commercial funds in local and international markets, and even mobilize deposits. By diversifying the cost of funds, the level increases, but it reduces the liquidity risk of the institutions and allows them to grow faster by having the resources to reach more new clients and/or increasing the funds of already existing clients.
Figure 19. Cost of Funds Peer Group Patterns

Cost of Funds per Legal Status

Cost of Funds per Institution Age

Cost of Funds per Institutional Size

Source: Authors’ calculations
3.4 Loan loss provision for credit risk
As it was previously mentioned, between 2006 and 2015, the accelerated growth of the Gross Loan Portfolio of the microfinance sector brought with it a paralleled deterioration in the quality of the portfolio, resulting in a default increase from 0.9% in 2006 to 3.0% in 2015\(^{46}\).

![Figure 20. Evolution of the Non Performing Loan Portfolio](image)

Source: Authors’ calculations.

As a result, from 2006 to 2015, the level of loan loss expenses increased from 1.7% to 8.2% in 2015, representing 11% of interest yield. This level of LE is considered above the recommended parameters for the sector. According to Rosenberg (2002), a range of 1% to 2% is considered as the most appropriate parameter for this indicator.

![Figure 21. Loan Loss Expense Ratio](image)

Source: Authors’ calculations.

As shown in Figure 22, in the 2006-2015 period, the minimum LE levels were at the 0% level and the maximum levels were in a range of 7.4% - 24.4%.

\(^{46}\) The overdue loan portfolio is recognized at 90 days.
When comparing the level of loan loss expenses in Mexico versus the leading countries in Latin American microfinance, the level varies between countries due to methodological differences and to the classification of the credit portfolio, but it can be observed that they are significantly lower than those in Mexico. On average, the highest level of provisions is presented by Peru (4.0%), followed by Colombia (3.8%), and the lowest level is presented by Bolivia (2.1%).

When analyzing MFIs by institutional size, a consistent pattern of behavior is not observed. The MFIs with the highest level of LE were the large and the micro. All categories showed an increase in the level of LE, except for large MFIs, which reduced their level by almost 3 points. The increase in the most significant level of LE was that of macro and micro MFIs, which increased by more than 7 points.

Moreover, when analyzing MFIs of different ages, MFIs with fewer years of operation generally have the highest levels of LE, possibly attributable to their lack of experience in controlling the risk of their loan portfolio. In general, in 2009 there was a spike in LE in all of the peer groups attributable to the financial crisis. According to the study by MicroRate (2009), it was estimated that 59% of MFIs recorded an increase of between one point and three points in the portfolio at risk levels during this stage.

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### Figure 22. Loan Loss Expense Ratio

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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Average</td>
<td>2.1%</td>
<td>3.3%</td>
<td>4.1%</td>
<td>3.7%</td>
<td>4.6%</td>
<td>4.0%</td>
<td>4.8%</td>
<td>5.0%</td>
<td>5.3%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>1.7%</td>
<td>2.4%</td>
<td>3.0%</td>
<td>4.5%</td>
<td>4.4%</td>
<td>5.3%</td>
<td>6.7%</td>
<td>8.0%</td>
<td>7.9%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Min</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Max</td>
<td>7.4%</td>
<td>14.5%</td>
<td>16.5%</td>
<td>18.3%</td>
<td>19.2%</td>
<td>21.4%</td>
<td>21.7%</td>
<td>16.4%</td>
<td>22.0%</td>
<td>24.4%</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations

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3.4.1. Peer Group Patterns

With regard to MFIs of different legal status, there is a higher level of LE in regulated MFIs, especially in banks and SOFIPOs, which is explained by a trend toward more rigorous risk management practices required by the regulatory framework. In contrast, SOFOMes have the lowest levels of LE as they use various accounting policies to recognize and report on problem loans. It should be stated that all the categories observe an increase in the level of LE, the most significant growth being that of the banks, which have grown by more than 8 percentage points.

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47 The analysis is based on the research of Roselló (2014), who estimated the interests yield of Bolivia, Peru and Colombia.

48 MicroRate (2009).
Figure 23. Loan Loss Expenses Peer Group Patterns

**Loan Loss Expenses by legal status**

- **Bank**
- **SOCAP**
- **SOFINCO**
- **SOFIPO**
- **SOFOM**

**Loan Loss Expenses by Institutional Size**

- **Large**
- **Macro**
- **Medium**
- **Micro**
- **Small**

**Loan Loss Expenses by Institution Age**

- <5 years
- 5-10 years
- 10-15 years
- 15-20 years
- > 20 years

Source: Authors’ calculations.
3.5 Profits

Profits show a predominantly decreasing trend, from 19.4% in 2006 to 10.5% in 2015. According to Rosenberg, in microfinance a capitalization rate of at least 5% to 15% of the credit portfolio is recommended to support growth in the long term, so that the level presented by the Mexican sector is considered appropriate.

![Figure 24. Profits Ratio](image)

Source: Authors’ calculations

It is also important to emphasize that this component is the most flexible in the short term, so it is the first to absorb the adjustments derived from exogenous movements in the level of interest yield.

As shown in Figure 25, in the period 2006-2015, minimum profits levels were in the range of (5.6%, -13.1%) and the maximum levels were in a range of (29.8% - 48.3%).

![Figure 25. Profit Ratio](image)

<table>
<thead>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Average</td>
<td>6.0%</td>
<td>4.3%</td>
<td>4.8%</td>
<td>4.8%</td>
<td>5.1%</td>
<td>3.9%</td>
<td>4.4%</td>
<td>2.6%</td>
<td>2.7%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>19.4%</td>
<td>17.4%</td>
<td>15.3%</td>
<td>15.1%</td>
<td>15.1%</td>
<td>12.9%</td>
<td>10.3%</td>
<td>10.2%</td>
<td>11.5%</td>
<td>10.5%</td>
</tr>
<tr>
<td>Min</td>
<td>-10.5%</td>
<td>-37.0%</td>
<td>-41.9%</td>
<td>-52.0%</td>
<td>-53.2%</td>
<td>-47.6%</td>
<td>-40.8%</td>
<td>-37.2%</td>
<td>-38.4%</td>
<td>-34.3%</td>
</tr>
<tr>
<td>Max</td>
<td>45.4%</td>
<td>48.3%</td>
<td>29.8%</td>
<td>39.1%</td>
<td>43.3%</td>
<td>34.6%</td>
<td>42.7%</td>
<td>39.8%</td>
<td>30.8%</td>
<td>38.6%</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations.

When comparing the level of profits in Mexico with leading countries in the microfinance sector, we can see that their profits in Mexico are significantly higher. On average, Colombia has the highest level (3.5%) followed by Bolivia (2.0%) with Peru the lowest at 1.8%.

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49 The analysis is based on the research of Roselló (2014), who estimated the interests yield of Bolivia, Peru and Colombia.
3.5.1. Peer Group Patterns

Considering the variations by profile of MFIs, with regard to legal status, the institutions with the highest level of profit are banks, while SOFOMs and SOFIPOs have the lowest levels, reflecting losses during some years of the period concerned. It should be stated that all the categories observe a decrease in the level of profits, except the SOFINCOs and SOFOMes which increased their level by the end of the period.

When analyzing the behavior of profits according to institutional size, a higher level of profits is observed between the MFIs of greater operational scale. Furthermore, the trends experienced by these institutions are more stable in general. By contrast, smaller scale MFIs have lower levels of profitability, including losses over several years, and their profits levels have significant fluctuations. It is observed that, during the analyzed period, the levels of profit in all the categories diminished, except in the category of micro and large MFIs.

Furthermore, when analyzing MFIs of a different institutional age, we observe that new MFIs operated with losses during 2006-2015. As the number of years of operation increases, and with the concomitant gaining of experience, MFIs reach higher levels of profit. It should be noted that, during the period under review, the consolidated MFIs reduced their levels of profit, while in the case of the new ones it increased.
Figure 26. Profit Peer Group Patterns

Profits by Legal Status

Profits by Institutional Size

Profits by Institution Age

Source: Authors' calculations
3.6 The credit portfolio and the effect of the average loan size

The credit portfolio is the denominator of the financial indicators in this methodology, therefore the average loan size significantly influences in the results of the estimated indicators. Average loan size at low levels raises the interest rate, since fixed management costs must be covered by a smaller portfolio volume, which makes each peso borrowed more expensive.

Mexico has been characterized by the lowest average loan size in the Latin American region, so this effect must be taken into account when comparing its results with the countries of the region. According to Fomin (2013), the average loan size is estimated at USD $432, well below the levels in the region USD $1,846. Also, when analyzing the distribution of the credits of a sample of clients, in 2010, 72% of loans were placed in amounts lower than MXN $6,157 (USD $322). While this percentage has decreased, in 2015, the concentration of credits at these levels (59%) is still high.

![Figure 27. Average loan size in LA](source: FOMIN (2013))

![Figure 28. Distribution of credits per loan size](source: PRONAFIM, SE)

The main reason why average loan size has remained at such low levels is the predominance of the group lending methodology. Since its risk management model rests on social capital, group lending is limited by the collective capability of the group to pay, so the average loan size is lower than the average loan size of the individual methodology. For the same reason, it is considered that the group credit is not conducive to adapting to the pace of business growth. According to Graham (2013), 26% of credit applicants are clients who already have at least one loan but need more funds than they have access to with their MFI.

Likewise, the group lending methodology influences staff turnover, making it higher, and increases operating costs even more. This is due to the physical strain and effort involved for credit officers to move to where clients are located on a daily basis and that professional development opportunities are limited. In Mexico, the average staff turnover in group lending methodology was 54%, while in individual methodology it was 39%, in 2015\(^\text{50}\).

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\(^{50}\) ProDesarrollo (2014 y 2015)
On the other hand, when applying economies of scale, the group lending methodology has allowed an accelerated growth in the number of clients served, as shown in Figure 30. Since the principles of the lending group are designed to serve the most vulnerable segments of the productive sector, which do not have physical guarantees, this has allowed the population living in areas of high and very high marginalization to be serviced, thus achieving greater penetration than that of individual lending methodology (see Figure 31).
4. Considerations around microcredit demand
4. Considerations around microcredit demand

4.1 Introduction
People make extensive use of various strategies to finance events related to life cycles, consumption stability, dealing with emergencies, and investing in assets or business. According to Faz (2012), the type of financial strategies to manage cash flows depend on livelihoods, locality, income level, and the stage of the life cycle in which they currently find themselves. This explains the demand for credit.

Given the scope of this study and the availability of information in Mexico today, it was not possible to expand the analysis of demand and the role it plays in setting interest rates, however, there are some salient questions to ask when considering why clients pay high interest rates:

I. What percentage of the population has access to credit?
II. Who has access to microcredit? What is the profile of the microcredit client?
III. Of the population that has access to credit, what is their extent of their understanding of financial products? Do they have sufficient information to make decisions?
IV. What are the transaction costs of microcredit?

4.2 Widening access to microcredit in Mexico
Despite significant advances in financial inclusion in Mexico, access to credit remains limited. As shown in Figure 32, the percentage of the adult population that has access to formal credit is low and is further reduced in the most vulnerable segments: women and rural areas.

![Figure 32. Distribution of the adult population with access to credit](image_url)

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal credit</td>
<td>25.4%</td>
<td>23.9%</td>
<td>27.0%</td>
</tr>
<tr>
<td>Formal credit</td>
<td>16.4%</td>
<td>16.3%</td>
<td>16.5%</td>
</tr>
<tr>
<td>Both</td>
<td>12.6%</td>
<td>12.7%</td>
<td>12.5%</td>
</tr>
<tr>
<td>Without credit</td>
<td>45.6%</td>
<td>47.0%</td>
<td>44.0%</td>
</tr>
<tr>
<td><strong>Urban</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal credit</td>
<td>23.7%</td>
<td>22.9%</td>
<td>24.6%</td>
</tr>
<tr>
<td>Formal credit</td>
<td>19.3%</td>
<td>17.9%</td>
<td>21.0%</td>
</tr>
<tr>
<td>Both</td>
<td>15.0%</td>
<td>15.5%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Without credit</td>
<td>42.0%</td>
<td>43.7%</td>
<td>40.1%</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informal credit</td>
<td>28.5%</td>
<td>26.0%</td>
<td>31.1%</td>
</tr>
<tr>
<td>Formal credit</td>
<td>11.0%</td>
<td>13.2%</td>
<td>8.8%</td>
</tr>
<tr>
<td>Both</td>
<td>8.3%</td>
<td>7.2%</td>
<td>9.5%</td>
</tr>
<tr>
<td>Without credit</td>
<td>52.1%</td>
<td>53.6%</td>
<td>50.6%</td>
</tr>
</tbody>
</table>

Source: Enafin 2015

Similarly, we observe that the use of informal credit is prevalent. A significant percentage of the population uses both formal and informal credit, which means that the supply of formal credit has failed to meet all the needs of the population.

Therefore, in the credit market, the demand is greater than the supply. This leads to an excess of demand that pushes prices upwards, an additional factor that influences the level of interest rates, and generates greater power on the part of the service providers, i.e. MFIs, are in a more powerful position than clients.
Thus, when comparing Mexico with other countries of the Latin American region, it is observed that in the case of the latter, they have lowered interest rates at greater speed. The outreach of the credit is greater than has happened in Mexico given the lower excess of demand there, and consequently less pressure on the interest rate. According to the Global Findex (2015) in Mexico, the percentage of adults who have a credit in a financial institution is 10% below Bolivia, which is 20%, Colombia, 16% and Peru, 11%.

4.3 Profile of microcredit clients in Mexico

One of the arguments that have been used to justify the level of microcredit interest rates in Mexico has been the existence of demand. It is assumed that clients pay the existing interest rates because they are profitable, or at least convenient despite the high price implied by this type of credit. But how inclusive is microcredit in Mexico? Which market segment has had access to microcredit? What characteristics do microcredit clients have? What kind of economic activities can be financed through microcredit? What geographical coverage does microcredit have in Mexico? In this section, the profile of clients who have received microcredit between 2010-2015 is identified. To that end, the Pronafim database was consulted.

As explained above, group lending methodology has been predominant in the granting of microcredit, it influences the market segment that is addressed, specifically in gender, economic activity, average credit and the level of marginalization.

4.3.1. Distribution of clients by gender

Microcredits are given mostly to women. In 2010, the number of microcredits granted to women accounted for 88% of the total and reached 94% in 2015. The average loan size is higher for men than for women. Between 2010-2015, the average loan size for women grew 36% and the average credit for men, 42%.

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53 This database contains information exclusively from clients receiving microcredit with Pronafim resources, through the IMF, therefore, it should be considered that there is a bias of the clients’ profile in compliance with the rules of operation of the program quoted. However, the resulting trends are considered to be significant in the composition of the sector in Mexico. The database contains the credits placed between 2010-2015, with the detailed characteristics and profile of the accredited.
Microcredit has been targeted primarily at women as a gender equity strategy, promoting access to credit that they did not previously have. Additionally, it supports the introduction of women in the labor market. Given the lack of opportunities, women’s domestic chores are converted into economic activities. Also, it has been empirically observed that women represent a lower credit risk than men, who occupy similar economic positions. This is mainly due to the different gender roles defined by society\textsuperscript{54}.

Access to credit and economic participation assists in developing women’s confidence and empowerment. The ability to decide on their income, economic contribution to the home, greater autonomy in their movements outside of it, socialization, increase in self-esteem and the building of confidence in both themselves and their abilities can be regarded as the main achievements observed in women\textsuperscript{55}.

4.3.2. Distribution of clients by economic activity
There is a strong concentration of clients in the commercial sector, followed by services. In 2011, trade accounted for 43% of microcredits, and their importance increased as this rose to 82% for this activity by 2015. In terms of services, these accounted for 9% of microcredits granted in 2011, a figure that rose to 13% by 2015.

With regard to credit by activity, the commercial sector reflects the lowest average loan size, MXN7,731, followed by the average loan size for services, MXN7,812.

The concentration of clients in the commercial sector is easily explained by the predominance of the group lending methodology. Due to its characteristics of terms, amounts and frequency of payments, this methodology is favorable for economic activities of low investment and high turnover.

\textsuperscript{54} Mansell (1994)
\textsuperscript{55} \url{www.womenworldbank.org}
4.3.3. Distribution of clients by loan size

There is a substantial concentration in the number of loans at the lower end of the range in terms of amount, although with a decreasing tendency. In 2010, 72% of the loans placed were lower than MXN $ 6,157, and decreased to 59% in 2015. As the loan amounts increases, the number of credits placed is significantly reduced.

According to Graham (2013), 26% of credit applicants already have at least one credit, of which 44% were in default\textsuperscript{56}. In other words, at least a quarter of microcredit clients would like to have access to more funds than they currently have, but a significant percentage of them, 44%, do not appear to have the capability to pay to do so. Also, amongst clients who are interested in accessing more financing and possess sufficient solvency to do so, some are taking advantage of the opportunities offered by MFIs to increase the average loan size, but others have preferred to diversify their sources of funds, maintaining the same level of average loan size, but requesting credits in different MFIs.

4.3.4. Distribution of clients by federal entity

In 2010, four states accounted for 61.3% of the loans placed: Mexico State, Puebla, Veracruz and Chiapas. In 2015, these same states retained their position but the credit concentration had reduced to 46.6%.

During the period analyzed, the average loan size was very similar in Chiapas, Mexico State and Veracruz. In Puebla’s case it was higher.

The geographical distribution of MFIs has a close relationship with the level of marginalization of the states: states with the highest concentration of MFIs are among those with the highest percentage of the population living in poverty. According to data from Coneval (2015), Chiapas occupies first place with the highest percentage of population in poverty (76.2%), Puebla is 4th with 64.5%, Veracruz is 6th, with 58%, and the Mexico State lies in 7th, with 49.6\%\textsuperscript{57}. This is attributed to the fact that these MFIs originated as NGOs that sought in microfinance a strategy to combat poverty.

\textsuperscript{56} S. Graham, J. Ericksen, E. Ericksen (2013).

\textsuperscript{57} Coneval (2016).
4.3.5. Distribution of clients by level of marginalization

One of the most outstanding characteristics of the Mexican microfinance sector has been the level at which it has deepened its outreach, i.e. the degree of poverty of the clients that are being assisted; the poorer the clients of an MFI, the deeper the entity is in terms of its outreach.

As shown in figure 41, the penetration of financial services into lower income levels is lower because it involves both the challenges of cost and of risk. According to the Global Findex (2014), in LA, in the low income adult population segments, only 28% have access to a bank account, 10% to a savings account and 9% to a formal credit. This reflects the complexity of financial deepening and helps to explain why MFIs have focussed their efforts on these lower income levels.
business strategies on the less poor market segments, but which lack access to financial services.

Specifically as far as microcredit is concerned, financial deepening is even more complex because it can only be offered to those with minimal ability to pay. In this context, it is considered that Mexican MFIs have made important efforts to penetrate areas of high and very high marginalization; with 22% of the number of loans in 2010 placed in these areas and 16% in 2015.

It is also observed that the lowest average credit is placed in the municipalities with very high marginalization, however there is very little difference with the highest average credit that is placed in the municipalities with very low marginalization with amounts of MXN $ 931 and MXN $ 1,569 recorded respectively. Credit size is the most common measure for measuring depth of reach under the assumption that people in low income segments have limited payment capacity and the credits they can access are in low amounts as well. This is a reflection therefore, that the poorest population is served within the segment of the different categories of localities.

Therefore, the group lending methodology has allowed an accelerated growth in the number of clients and the servicing of a market segment of high social vulnerability, which previously had no access to credit: women, with economic activities linked to commerce, who live in municipalities with low and very low marginalization. On the other hand, it is evidenced that the adoption of microcredit is not generalized: demand is satisfied by the market segment for which it is profitable to pay the interest rate for this product, and there is a need to complement the credit supply with other products that allow the integral servicing of the population at the base of the pyramid, and which represent market opportunities for MFIs.

4.4. Financial education and interest rates

When a person knows how finances work, he has at his disposal the necessary tools to manage them. Furthermore, he has developed the necessary skills to apply them in real life, he is more likely to use his financial resources effectively, to better understand his options, to reach his goals more easily as well as make proactive rather than reactive decisions.

However, there is limited knowledge of the population regarding basic financial concepts such as inflation, interest rate, risk-return ratio. In the case of Mexico, according to the ENIF (2012), only 39% of users of savings instruments were aware of their interest rate and 37% of their commissions. Regarding credit, 34% of bank credit card users do not know their interest rate.
and 36% do not know the commissions under which they are obliged.

Therefore, on the basis of these statistics, it can be questioned whether, even when clients are making decisions in a free market environment, they know how to do it correctly with such a limited understanding of the real cost of microcredit. The lack of transparency in prices makes it difficult to compare options in the market.

4.5. Microcredit transaction costs
As discussed in section 2.2., in addition to the interest rate they pay, clients face transaction costs that include concepts such as the cost of transportation, the cost of obtaining the documentation, taxes, and the opportunity cost of the customer not being present in his business.

It is recognized that, because of the nature of microcredit of financing business needs rather than postponing activities until sufficient savings have been accumulated, its most important attributes are about accessibility and receiving funds in a timely manner. When a business has an investment opportunity or requires financing to acquire the inputs for its operation, the waiting time to receive the funds represents a high opportunity cost.

Thus, when selecting a credit, clients not only take into consideration the interest rate, but also consider transaction costs to the extent that an MFI streamlines its processes to reduce administration time and transaction costs for its clients.

In Mexico, MFIs have been characterized by simple procedures and controls, high responsiveness and quick disbursement of resources, which in part may explain why they, despite having higher interest rates, have a greater demand for credit than other types of financial intermediaries that charge lower interest rates, but whose requirements and processes are more complex.
5. Efficiency of the structure of the interest rate
5. Efficiency of the structure of the interest rate

5.1 Econometric analysis of the interest rate

This section analyzes the sensitivity of the interest rate to its components, to permit a focus on actions that may be more effective in reducing the average level of interest rates in Mexico. The analysis is based on financial and portfolio data for the MFIs of the sample, and uses econometric regressions, based on the model proposed by Cotler (2013).\(^\text{60}\)

In this model, Cotler considers three groups of variables: a) those that describe the characteristics of loans: the average loan size in real terms and the active interest rate; b) costs: funds and operating costs, and c) the size of institutions, the profits they earn and the number of years they have been operating.

For the econometric regression, the interest yield was used as a dependent variable. The selected explicative (exogenous) variables to reveal its behavior, and the availability of information were as follows:

- Cost of Funds.
- MFIs’ efficiency (defined as the inverse of the quotient of operation costs to the loan portfolio, adjusted by the past-due portfolio).
- Loan Loss Expenses.
- Profit
- Relative MFI scale (defined as the natural logarithm of the Performing Loan Portfolio of each MFI).

Specifically, panel-type returns are aimed at calculating the following functional ratio (1):

\[
Ec(t) = \frac{perf_{it}}{f(c_{it}, ef_{it}, pl_{it}, pr_{it}, sc_{it})}
\]

where:
- perf\(_{it}\) = MFI i interest yield in a period of time t
- c\(_{it}\) = MFI i cost of funds in a period of time t
- ef\(_{it}\) = MFI i efficiency index in a period of time t
- pl\(_{it}\) = MFI i loan loss expense in a period of time t
- pr\(_{it}\) = MFI i profit in a period of time t
- sc\(_{it}\) = MFI i relative scale in a period of time t

The results of the estimation of equation (1) are presented in Annex 7.4.

As shown in Figure 44, regression analysis shows that as the cost of funds rise, interest yields also tend to grow significantly. For every 1% increase in cost of funds, the interest yield increases by 9.6% in the current year, all other variables held constant. Therefore, we conclude that the cost of funds has a significant impact on the interest rates charged by an MFI. However, MFIs have little control over these rates since they are determined by financial markets.

The second component that most impacts the financial performance is the efficiency that is driven by the operating costs, adjusted by the non performing loan portfolio. Regression analysis suggests that with every 1% increase in efficiency, the interest yield decreases by 5.8% in the current year, holding all other variables constant.

It is assumed that, as MFIs improve their lending practices, the quality of the portfolio improves, thereby reducing the level of loan loss expenses and potentially helping to lower interest rates. According to the model, every 1% increase in loan loss expense results in a 3.8% increase of the interest yield in the current year, assuming all other variables are kept constant.

Profit is not considered as a predominant factor that drives interest rate levels. Every 1% increase in profit, the interest yield increases by 0.2% in the current year, keeping all other variables constant.

---

\(^{60}\) P. Cotler (2013).
Regarding the scale of operation, as González-Vega explains, scale matters not only in terms of the economies of scale generated by operational volume, but also in territorial expansion which reduces covariance. An additional factor is the portfolio volume enabling diversification among types of clients. Regression analysis suggests that with every 1% increase in the operating scale, the interest yield decreases by 10.6% in the current year, keeping all other variables constant, although its coefficient was not significant. For this reason, the increase in the scale of operation of MFIs should be encouraged.

On the other hand, given the heterogeneity of the MFIs considered in the study, additional regressions were performed, including a variable with the institutional age of the MFIs. As explained above, years of operation are presumed to influence the operational efficiency of MFIs as, over time, MFIs learn more about their clientele, how to reduce operating costs, and how to deliver better services. By including this variable, the estimated parameters were not substantially modified, and considering that the age variable registered the correct sign (<0), it was significant. Every 1% increase in institution age, the interest yield decreases 13.4% in the current year, all other variables constant.

Lastly, several studies use some form of proxy for market concentration. In principle, a higher market concentration would imply a higher interest rate. Most of these studies have discarded this variable to the extent that it is difficult to pinpoint the relevant market and, as a result, the shares in it. In any case, the Herfindahl Concentration Index (IHH) for the MFI market in 2006-2015 was used as an additional regressor for purposes of this estimation. The result of the estimation shows that all the coefficients have the expected sign and are significant (although not for market concentration). For every 1% increase in market concentration, the interest yield increases 2.8% in the current year, keeping all other variables constant.

Therefore, since the cost of funds and operating costs are the components that have the greatest influence on the interest rate, and since the cost of funds is determined by the financial markets, to encourage the reduction of the interest rate it is recommended focusing efforts on reducing operating costs.

5.2 Efficiency strategies
In order to enable the microfinance sector to reduce its interest rate in a rational and sustainable manner, the behavior of its components in the period was analyzed, together with its relative weight withing the overall rate structure and the sensitivity of the interest rate to each of these. Strategies to promote this goal are suggested below.

5.2.1. Promote competition
From the analysis of trends 2006-2015 and the econometric analysis, we can see that the interest rate is reduced when the concentration level of the market decreases, or in other words, when the level of competition increases. To truly increase the level of competition, it is necessary to promote the consolidation of strong and sizable institutions that can have a significant influence on the market and effectively instigate other participants to innovate.

Currently, the MFIs that could assume this role are those with the highest seniority and the greater scale of operation, since these have increased their efficiency: they present lower operating costs with adequate risk management, maintain a profitable operation at decreasing rates and allow, in turn, the reduction of interest yield. Similarly, regulated MFIs, although having high operating costs and facing higher requirements in terms of loan losses, have a lower level of profit, which shows a decreasing trend in the level of interest yield. These MFIs have made remarkable efforts to provide comprehensive financial services to the base of the pyramid, primarily savings, while at the same time complying with high financial standards, transparency and best practices in governance.

It must be stated that increasing competition is an efficient strategy to reduce the interest rate, however it is not a sufficient condition.

To promote sustainable change over time, strategies are needed to reduce one or more of its components. It is observed that, during the period analyzed, under the pressure of the market to reduce the interest rate in all cases the level of profits was reduced, which is the component with greater flexibility in the short term and, in addition, in some cases, operating costs and

---

61 Except in 2007, despite increased competition, interest yields also increased due to a very significant increase in the level of operating costs (the highest increase in the period analyzed) and a slight increase in the level of loan loss expenses. Even when the level of profits was reduced, these changes push up interest yields.
or loan losses had to be reduced too. However, the reduction in profits is limited because, as mentioned above, a minimum capitalization rate of 5% to 15% of the loan portfolio is required to support long-term growth; in addition, they represent only 14% of interest yield, so even if 0% could be made, its impact would be insignificant. Conversely, operating costs represent 57% of interest yield and, based on the econometric analysis, it was identified that the interest rate has a high sensitivity to this component, therefore, it is recommended to focus efforts on it.

5.2.2. Scale of Operation
In order for the microfinance sector to reduce its operating costs in a rational and sustainable manner, MFIs must increase their scale of operation. Economies of scale can neutralize the effect of high operating costs by distributing fixed costs across a larger volume of loan portfolio, which would in turn, reduce the level of costs per peso borrowed.

To affect this, one alternative is to increase the MFI’s client base and continue to grant loans through group lending methodology, which would allow maintaining the current level of the outreach of the sector. For this, the MFIs must strengthen their internal structure, optimize their processes and have a solid funding structure to adequately manage this growth.

Another alternative that can be applied in a complementary way to the previous one is to increase the average loan size to reach new market segments currently underserved, whose requirements in terms of amounts and terms are higher than the conditions currently offered in the market, and that would support the growth of the clients. For an adequate management of risk, credits of higher amounts should be granted under the individual lending methodology.

However, in Mexico, the implementation of individual lending has faced difficulties, its growth and expansion have been slow and its scope limited. The reasons for this are considered multifactorial, highlighting the institutional challenges represented by individual lending for MFIs, the improper handling of the data provided by the credit reference agencies (CRAs) and the high transaction costs of legal processes, coupled with a neutral government policy on lending methodology. These factors considered, MFIs face high costs and risks to the implementation of individual lending in Mexico.

In terms of the capacity of MFIs, individual lending requires trained credit assessment personnel, a sound funds structure as credit amounts are longer and longer terms, and comprehensive risk management. This represents institutional challenges that only the strongest MFIs can face.

With regards to CRAs, it is recognized that they are crucial as a risk management tool for the microcredit and the remarkable changes they have made during the period analyzed such as the reduction costs, the expansion of services, the efforts to simplify the processes for the reporting of information and promote the use of queries, filters to validate the consistency of the information, as well as the existence of trade agreements to share information between the two companies operating in the market. However, these improvements were made recently, being relatively new, and still three constraints persist for optimum performance of the CRAs: a) there is no obligation to all providers of credit, regardless of their legal status, to report their information to a CRA\(^2\). b) There are MFIs that do not have clear policies for to guide the decision-making of the credits on an information resulting from the CRA, and cases that even if these policies exist, staff do not know properly interpreting the CRA reports, and / or lack supervision schemes that monitor the implementation of such policies. c) Lastly, of the financial institutions that report to CRAs, there are no supervisory mechanisms that guarantee the quality, veracity and timeliness of the system, which leads to a loss of confidence; CRAs depend on the actions of the market players.

Regarding legal processes, the duration and high cost of the processes for judicial collection and execution of guarantees increase the credit risk and costs for MFIs. Although credit granting decisions focus on the client’s capability to pay, the legal framework influences the client’s behavior. This aspect is already recognized in the Financial Reform (2014), and changes are being contemplated to reduce transaction costs in judicial recovery of credits, but these modifications have not yet been implemented and still continue to represent an obstacle to financial activity.

Therefore, the number of MFIs that have attempted to implement individual loans has been reduced, with little significant results in terms of operating scale.

\(^2\) At present, pawn shops, development banks and entities such as SAPI do not report to CRAs.
and difficulties in maintaining the quality of the loan portfolio. From the perspective of the MFIs, after almost 20 years of operation, they are still calibrating the individual credit products to be able to upscale them. An example of this is Banco Compartamos, which since 2000 has offered individual credit, which currently accounts for only 5.8% of its clients, given the much greater participation of the group lending methodology. However, although this percentage appears to be low, it translates into more than 167,000 clients and a credit portfolio of 6,551 million Mexican pesos, representing an outstanding operating scale. Other cases can also be highlighted among the most well-established MFIs in the market, such as Te Creemos, set up in 2005, whose individual credit products have a loan portfolio of 756 million Mexican pesos and represent 56% of its total portfolio. Similarly, the case of Came, whose individual credit program already amounts to a loan portfolio of 43 million Mexican pesos.

In other words, despite the difficulties involved in granting individual loans in Mexico, MFIs' interest in this product is increasing and its share in the total credit portfolio is growing.

5. 2. 3. Losses due to operational risk
One variable that influences operating costs is the loss due to operating risks. This is made up of the losses that the MFIs have to assume for events caused by failures or insufficient processes, people, internal systems, technology and the presence of unforeseen external events.

At present it is not possible to quantify its level by the heterogeneity and difficulty in predicting the loss factors and determining their influence on interest rates. However, it is considered of the utmost importance to promote that MFIs measure their losses through inefficiencies, through the implementation of mechanisms and controls that reduce the possibility of failures and subjectivity in the execution of operations.

In this regard, the Basel Committee seeks to ensure that financial institutions implement adequate mechanisms to minimize the impact of potential losses as a result of operational factors, including legal risk, but excluding strategic and reputational risk.

In compliance with the regulatory framework for multiple banking, Banco Compartamos estimated the capital requirement for its exposure to operational risk for December 2015 at $ 255.7 million Mexican pesos, equivalent to 15% of the average requirement for market and credit risks.

5. 2. 4. Innovation and technology
Information and Communication Technology (ICT) has become an instrument to streamline and reduce the processes for financial transactions, allowing MFIs to provide services to population sectors where the establishment of traditional channels represents very high operating costs.

According to Ivatury (2006), in developed countries, low-cost “financial services” technology channels, such as those delivered through the internet and ATMs, process transactions at a cost that represents barely 20% of services delivered at branch offices.

In Mexico, progress has been made in developing a regulatory framework for the elaboration of commercial strategies that incorporate the use of new technologies and business models, such as mobile banking and branchless banking, while simultaneously seeking an orderly, transparent and prudent expansion, with greater protection for the end user. As of the Financial Reform of 2014, these changes incorporated regulated MFIs. According to the Conaif, with respect to the four channels of access to the formal financial system (branches, ATMs, agents and point of sale terminals), we can observe that the financial network has expanded in the last five years as it registered an annual average growth rate of 11% from 2010 to 2015.

Thus, technology is increasingly accessible, with online applications, offering greater flexibility and in modular schemes for use in different contexts, and linked to access through mobile devices. The challenge is to find viable business models that support and accompany an effective implementation of technological projects.

Kubo Financiero SFP merits a special mention in this respect. Created in 2012, it is an MFI regulated by the CNBV, which uses an online platform that connects people who need loans with investors seeking to invest their resources in an intelligent and agile manner.

63 Financial statements, with notes from Independent Auditors, 2015.
64 G. Ivatury (2006).
and with higher yields than they would receive in the traditional system (P2P lending). Through the creation of this financial community, operating and funding costs are significantly reduced, offering an individualized interest rate of between 22% and 55%, depending on the risk profile of the borrower. Loans can be used for working capital, fixed assets, education, or prepayment of other loans that have higher interest rates. Its main challenges can be summarized in increasing the outreach of internet banking in Mexico, adjusting the regulatory framework and generating confidence for people to invest and apply for loans online. By integrating technology and data, Kubo has distinguished itself as an innovative lending platform in the region. It has received investment from Alta Ventures México and Entrepreneur Capital, among others.

This study does not provide information on MFI innovation and/or technology use in order to estimate its impact on MFI operating costs, but it is undoubtedly recommended to expand this analysis at a later stage.
6. Conclusion
6. Conclusion

The Mexican microfinance sector has been characterized as one of the most dynamic in Latin America, recognized as a sector in a stage of growth and expansion. The accelerated growth has been fostered by the predominance of group lending methodology, which has also facilitated outreach of the population living in areas of high and very high marginalization, addressing those in severe poverty. However, the risk management model of the group lending methodology rests on social capital, so credit is limited by the group’s collective capability to pay, resulting in a low average loan size, with high operating costs per peso loaned.

As a consequence, the interest rate remains among the highest in the region, and even though it shows a decreasing trend, the rate of reduction is insignificant compared to previous periods, having gone from 75.6% in 2006 to 74.7% in 2015\textsuperscript{66}.

From the analysis of trends 2006-2015 and econometric analysis, we conclude that the factors that can influence the interest rate most are competition and operating costs, and joint actions must be undertaken to promote sustainable change over time.

Thus, in order to promote greater competition, the consolidation of strong and significant institutions should be advocated, which can really influence the market. Furthermore, to reduce operating costs it is recommended:

- Increase the scale of operation to neutralize the effect of high operating costs, increasing the MFI’s client base, maintaining the business model and the level of outreach, and / or increasing the average loan size, through individual lending methodology, reaching new market segments that are currently underserved.

- Identify, measure and control operational risk losses to minimize their impact and reduce operating costs.

- Promote technological innovation to streamline and reduce the processes that facilitate financial transactions.

To implement these strategies, MFIs need to train their staff in credit assessment; possess a solid funds structure that allows them to grant larger credits and guarantee the availability of resources on a permanent basis, as well as strengthen their risk management units.

In addition, government efforts are required to bring about improvements to the regulatory framework and infrastructure. In order to be able to grant individual credit at the base of the pyramid, it is necessary to simplify the regulatory framework for the granting and execution of credit guarantees, in order to reduce the risk of credit.

\textsuperscript{66} According to estimates by M. Chu (2012) in Mexico, the interest rate presented a decreasing trend, going from 115% in 2000 to 70% in 2010.
It is also necessary to strengthen the framework of action of CRAs to optimize risk management. It would be desirable the universality of the information that is handled by the different CRAs to allow the system as a whole to affect better risk assessments (Del Angel, 2013). It is also required to establish the obligation for all credit providers, regardless of their legal status, to report their information to a CRA. Finally, regarding the information reported by institutions, monitoring mechanisms must be established to ensure the quality, veracity and timeliness of the institution.

Public development banks have been a source of access to financing and a provider of technical assistance to MFIs. Therefore, in order to consolidate the sector in an orderly manner, it is important that development banks maintain good prudential supervisory practices and corporate governance to avoid risks in the financial system.

Finally, given the scope of this study and the availability of information, it was not possible to deepen the analysis around the role of demand in establishing interest rates, as well as the structure of personnel costs and use of technology. It would however be instructive to explore the following aspects in subsequent research:

a) A quantitative study on wages and salaries is recommended, including managerial salaries, and an analysis of the levels of productivity and turnover of personnel to identify their root causes, evaluate their consequences and propose guidelines for the design of strategic solutions across the industry.

b) Through qualitative and quantitative tools, a demand study should be conducted to identify clients’ knowledge, perceptions and preferences regarding credit products and interest rates. Additionally, it would be insightful to determine the total costs that a microcredit represents for the client, including interest rates and transaction costs.

c) A diagnosis of the microfinance sector on the use of technology, which would make an appreciation of the extent of innovation within the sector possible, as well as estimate its impact on the MFI’s operating costs and propose guidelines to boost its massification. Similarly, this would allow for the identification of the recommendations on public policies and on a regulatory framework that facilitate greater innovation in the sector.
7. Annexes
7. Annexes

7.1 Methodology

7.1.1 Description of the methodology

To measure the microcredit interest rate, different approaches can be applied: Annual Percentage Rate (APR), Total Annual Cost (CAT) or Interest Yield (IY).

The APR is a good representation of the effective cost of a loan because it takes into account the amount and timing of all the cash flows associated with the loan, not only including items that are explicitly designated as “interest” and “principal,” but also any other expected fees or charges, as well as compulsory deposits that are a condition of the loan. This approach is used by international organizations such as Microfinance Transparency67.

Where:

\[ A_k: \text{Amount disbursed in period } k \]
\[ K: \text{Payment} \]
\[ n: \text{Total number of payments} \]
\[ P_k: \text{Amount paid in the } k \text{ period} \]
\[ i: \text{Percentage rate of financial burden per unit-period expressed in decimal equivalents} \]

**APR**

\[ r_{APR} = i \times n \]

Where:

\[ R_{spp}: \text{Annual percentage Rate} \]
\[ n: \text{Number of periods} \]
\[ i: \text{Percentage rate of financial burden per unit-period expressed in decimal equivalents} \]

The CAT is a standardized measure of the cost of financing, expressed in annual percentage terms that, for informative and comparative purposes, incorporates all the costs and expenses inherent in the credits granted by institutions. In practice, it has been observed that the CAT is very sensitive to terms and periodicity of payment and therefore does not reliably reflect the costs of microcredit. This approach was designed by Banco de México68.

The CAT is the numerical value of i, expressed as a percentage, which satisfies the following equation:

\[
\sum_{j=1}^{M} \frac{A_j}{(1+i)^j} = \sum_{k=1}^{N} \frac{B_k}{(1+i)^k}
\]

Where:

\[ I: \text{CAT, expressed as a decimal}. \]
\[ M: \text{Total number of credit provisions}. \]
\[ J: \text{Consecutive number that identifies each provision of the credit}. \]
\[ A_j: \text{Amount of the } j\text{th loan loss provision}. \]
\[ N: \text{Total number of payments}. \]
\[ K: \text{Consecutive number that identifies each payment}. \]
\[ B_k: \text{Amount of the } k\text{th payment}. \]
\[ t_j: \text{interval of time, expressed in years and fractions of the year, which elapses between the date on which the contract takes effect and the date of the } j\text{th provision of the credit}. \]
\[ S_k: \text{interval of time, expressed in years and fractions of the year that elapses between the date on which the contract takes effect and the date of the } k\text{th payment}. \]

The Interest Yield (IY) expresses the total of all income from loans (interest, fees, other loan charges) as a percentage of the MFI’s average annual loan portfolio. This approach is used by international organizations such as The MIX Market.

\[ IY = \frac{\text{Financial Income}}{\text{Gross Loan Portfolio}} \times 100 \]

Based on the best data available for this study, we can only estimate the IY, since there is no information on the MFI credit portfolio of the sample, nor with information on compulsory savings. The IY is an indicator that, when considering interest and commissions, adequately reflects what customers are paying.

67 http://www.mftransparency.org/resources/calculating-transparent-pricing-tool/

68 Banco de México (2009). <https://goo.gl/VgYOWf>
For the calculation of the structure indicators, the accounting accounts used and the formulas are:

**Figure 45. Definition of Financial Indicators**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Yield</td>
<td>All interest and fee revenue from loans(^{69}) / average Performing Loan Portfolio</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>Operating Expense / average Performing Loan Portfolio</td>
</tr>
<tr>
<td>Cost of Funds</td>
<td>Financial Expense / average Performing Loan Portfolio</td>
</tr>
<tr>
<td>Loan Loss Expenses</td>
<td>Net annual provision expense for loan impairment / average Performing Loan Portfolio</td>
</tr>
<tr>
<td>Profit</td>
<td>Net result / average Performing Loan Portfolio</td>
</tr>
<tr>
<td>Performing Loan Portfolio</td>
<td>Total outstanding balance of the loans that have their principal and interest repayments up to the day according to the established payment plan, and those that are with a delay in their payments of up to 90 days</td>
</tr>
</tbody>
</table>

Source: Authors’ calculations

Unlike the Rosenberg methodology (2013) that uses Gross Loan Portfolio\(^{70}\), the Performing Loan Portfolio\(^{71}\) was used since it generates interest given that these are no longer accrued when the credit is transferred to Non Performing Loan Portfolio. It remains there until it is written off. Also, by including Non Performing Loan Portfolio in the denominator, portfolio write-offs would affect interest yield, reflecting a fictitious change in the price structure for the end user.

### 7.1.2 Description of the sample

For the purposes of this study, a Microfinance Institution (MFI) is an entity mainly focused on providing services to the microbusiness sector, which grants credits, uses specialized methodologies to analyze the credit risk of the population with low and informal revenues, and known in the industry of the region as “microcredit methodologies”.

The sample of the study was integrated with those MFIs that have received financing from the PRONAFIM, through a confidentiality agreement that limits the use of information exclusively for the purposes of the study.

The financial data correspond to the annual audited information reported by these MFIs in any year during the period 2006-2015. Thus, an unbalanced panel was integrated because not all MFIs received support from PRONAFIM during all the indicated periods. According to other similar studies, such as Rosenberg (2013) and Campion (2012), the advantage of using such panels is that they reflect a more realistic picture of the evolution of the entire market, such as entry and exit of MFIs and the diversity of actors.

In addition, the financial data of Banco Compartamos S.A. were included in this sample for the analysis period, since it is the MFI that leads the sector in Mexico. It started operations under the legal figure of Private Assistance Institution, in Oaxaca and Chiapas, in 1990. In 2000, having reached a scale of 60,000 clients, and with the objective of accessing commercial funds, it became a regulated financial company, adopting the figure of Limited Purpose Financial Institution, for profit. In 2006, with a scale of more than 600,000 clients, it obtains a license as a multiple banking institution. At the end of June 2016, Compartamos provides comprehensive financial services to more than 2.8 million customers in Mexico and has expanded its operations to Peru and Guatemala.

\(^{69}\) As a rule of thumb, and as a recommendation for best practices, accrued interest not collected should be considered as income while the credit is classified as current portfolio. However, it is not certain that Sofomes are applying this practice orthodoxy by not being supervised.

\(^{70}\) Refers to the total of the Loan Portfolio of a financial institution (Current and Overdue) without deducting the provision for bad loans.

\(^{71}\) Integrated by loans that are current in their payments of principal and interest, as well as those with principal payments or past due interests that have not met the assumptions to consider them as past due, and those that have been classified as past due portfolio restructure or renew and have evidence of sustained payment.
Given the heterogeneity of MFIs that make up the sample, we estimated both simple average and weighted average by loan portfolio. Simple average describe the “typical MFI” and make recommendations to encourage expected behaviors in institutions; weighted average more accurately describe the market situation, as larger MFIs serve more clients and receive the greatest weight in the results.

The main characteristics of the MFIs that make up the sample are described below. With regard to the institution age of MFIs, the years of operation are presumed to influence the operational efficiency of MFIs as, over time, MFIs learn more about their clientele, how to reduce costs and how to offer better services. In the sample of this study, the distribution of MFIs by institution age is the following:

<table>
<thead>
<tr>
<th>Age</th>
<th>Standar</th>
<th>No de IMFs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>0 - 5 years</td>
<td>26</td>
<td>17%</td>
</tr>
<tr>
<td>Young</td>
<td>5 - 10 years</td>
<td>67</td>
<td>44%</td>
</tr>
<tr>
<td>Medium Age</td>
<td>10 - 15 years</td>
<td>41</td>
<td>27%</td>
</tr>
<tr>
<td>Mature</td>
<td>15 - 20 years</td>
<td>6</td>
<td>4%</td>
</tr>
<tr>
<td>Consolidated</td>
<td>&gt;20 years</td>
<td>11</td>
<td>7%</td>
</tr>
</tbody>
</table>

Source: PRONAFIM-SE

As regards scale of operation, as González-Vega explains, scale matters as volume of operations to generate economies of scale, as territorial expansion to reduce covariances, and as portfolio volume to be able to diversify among types of customers. Despite the surprising growth of the portfolio and the emergence of multiple new institutions, the Mexican market structure is highly concentrated, with a small group of macro MFIs identified, with Banco Compartamos as the industry leader. In the sample of this study, the MFI distribution by scale of operation is as follows:

<table>
<thead>
<tr>
<th>Institutional Size</th>
<th>Size of credit portfolio (mil. Pesos)</th>
<th>No de IMFs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macro</td>
<td>0-16</td>
<td>20</td>
<td>13%</td>
</tr>
<tr>
<td>Large</td>
<td>16-55</td>
<td>18</td>
<td>12%</td>
</tr>
<tr>
<td>Medium</td>
<td>55-107</td>
<td>34</td>
<td>23%</td>
</tr>
<tr>
<td>Small</td>
<td>107-320</td>
<td>59</td>
<td>39%</td>
</tr>
<tr>
<td>Micro</td>
<td>&gt;320</td>
<td>20</td>
<td>13%</td>
</tr>
</tbody>
</table>

Fuente: Base de datos PRONAFIM-SE

Regarding legal figures, the microfinance sector is only partially regulated, meaning that regulated MFIs coexist with others that are not: Niche banks, popular financing institutions (SOFIPOs), savings and credit cooperatives (SOCAPs), community financial institutions (SOFINCOs) and multi-purpose financial institutions (SOFOMs).

Niche banks are specialized intermediaries, with the possibility of attracting public resources and access to the payment system, but whose specialization in the offer of services represents a lower risk for them; thus, they have a lower minimum capital requirement. In 2012, the first two bank licenses under this modality were authorized.

In 2001, SOFIPOs and SOCAPs were created and, in 2013, SOFINCOs were created. SOFIPOs are incorporated joint-stock institutions, which are aimed at popular savings and credit. This legal figure allowed the transformation of MFIs into financial intermediaries authorized to mobilize deposits from the public, as well as the opportunity for the entry of new private institutions with business models with financial intermediation. SOCAPs are intended to carry out non-profit savings and loan operations with their partners. SOFINCOs are public limited companies whose purpose is to meet the needs of financial services in rural areas.

The concept of SOFOM was created in 2006, within a framework of reforms to the financial system to promote innovation, and to increase competition and access to financial services. They are corporations that, through the obtaining of resources through funds in financial institutions and / or public debt issuances, provide credit. This concept entailed fiscal, procedural and funds advantages, so that both NGOs and private institutions with a commercial focus migrated to this
legal concept and operate their MFIs\textsuperscript{72}. In the sample of this study, the distribution of MFIs by legal status is as follows:

<table>
<thead>
<tr>
<th>Legal Status</th>
<th>No IMFs</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banks</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>SOFIPOs</td>
<td>16</td>
<td>11%</td>
</tr>
<tr>
<td>SOCAPs</td>
<td>13</td>
<td>9%</td>
</tr>
<tr>
<td>SOFOMes</td>
<td>114</td>
<td>75%</td>
</tr>
<tr>
<td>Otras</td>
<td>5</td>
<td>3%</td>
</tr>
</tbody>
</table>

In 2016, there were 144 authorized SLCs, which served 5.5 million members across 1,878 branches\textsuperscript{73}; 44 SOFIPOs, which serve 3.4 million customer across 1,093 branches\textsuperscript{74}; 26 SOFINCOS, which serve 94 thousand clients\textsuperscript{75} and 312 SOFOMs\textsuperscript{76}.

Considering specifically the operating expense analysis, the data were obtained from a sub-sample of the general sample, which reported their disaggregated information by type of expenditure, annually, between 2011 and 2015. It was made up of a balanced panel with 30 MFIs.

For each year, the distribution of MFIs for which information was available was as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>No de IMFs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>17</td>
</tr>
<tr>
<td>2007</td>
<td>32</td>
</tr>
<tr>
<td>2008</td>
<td>42</td>
</tr>
<tr>
<td>2009</td>
<td>56</td>
</tr>
<tr>
<td>2010</td>
<td>81</td>
</tr>
<tr>
<td>2011</td>
<td>99</td>
</tr>
<tr>
<td>2012</td>
<td>116</td>
</tr>
<tr>
<td>2013</td>
<td>124</td>
</tr>
<tr>
<td>2014</td>
<td>124</td>
</tr>
<tr>
<td>2015</td>
<td>104</td>
</tr>
</tbody>
</table>

\textsuperscript{72} It is worth mentioning that, due to its creation in 2006, the information we present for 2005 for this legal figure corresponds to the legal entity MFIs had previously operated under.

\textsuperscript{73} National Banking Commission (2009).


\textsuperscript{75} I. Cruz (2015).

\textsuperscript{76} Pronafim <www.pronafim.gob.mx>
### 7.2 Government Programs to Strengthen the Microfinance Sector

#### Figure 50. Government Programs to Strengthen the Microfinance Sector

<table>
<thead>
<tr>
<th>Program</th>
<th>Description</th>
<th>Activities</th>
<th>Focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Microfinance Financing Program PRONAFIM</td>
<td>National Program that contributes to the consolidation of the microfinance sector. Through FINAFIM and FOMMUR it provides microcredits, training and technical assistance.</td>
<td>Financing and technical assistance.</td>
<td>Urban and rural populations living in poverty without access to traditional banking.</td>
</tr>
<tr>
<td>Agricultural Trust Funds FIRA</td>
<td>Operates as a second-tier bank with own equity.</td>
<td>Grants credits, guarantees, training, technical assistance and technology transfer.</td>
<td>Agricultural, rural and fishing sector of the country.</td>
</tr>
<tr>
<td>The National Savings and Financial Services Bank Bansefi</td>
<td>Operates as a second-tier bank with own equity.</td>
<td>It provides loans, guarantees, training, technical assistance and technology transfer.</td>
<td>Agricultural, rural and fishing sector of the country.</td>
</tr>
<tr>
<td>The Rural Microfinance Technical Assistance Project</td>
<td>This project operates through alliances between specialized consultants and Socaps and Sofipos, to achieve greater financial inclusion in rural areas of high marginalization.</td>
<td>Services of savings, investment, credit, remittances and life insurance.</td>
<td>Rural populations with high marginalization.</td>
</tr>
<tr>
<td>PATMIR</td>
<td>This project operates through alliances between specialized consultants and Socaps and Sofipos, to achieve greater financial inclusion in rural areas of high marginalization.</td>
<td>Services of savings, investment, credit, remittances and life insurance.</td>
<td>Rural populations with high marginalization.</td>
</tr>
</tbody>
</table>

Source: Authors’ compilation
7.3 Interest Rate Econometric Analysis

These factors were subject to analysis using financial and portfolio data for sample MFIs, by using a model for econometric regressions.

For the econometric regression, the interest yield was used as a dependent variable. The selected explicative (exogenous) variables to reveal its behavior, and the availability of information were as follows:

- Cost of Funds.
- MFIs efficiency (defined as the inverse of the quotient of operation costs to the gross portfolio, adjusted by the past-due portfolio).
- Loan Loss Expenses.
- Profit
- Relative MFI scale (defined as the natural logarithm of the Performing Loan Portfolio of each MFI).

Specifically, panel-type returns are aimed at calculating the following functional ratio (1):

\[ Ec(1) \quad perf_{it} = f(fc_{it}, ef_{it}, pl_{it}, pr_{it}, sc_{it}) \]

where:
- \( perf_{it} \) = MFI i interest yield in a period of time t
- \( fc_{it} \) = MFI i cost of funds in a period of time t
- \( ef_{it} \) = MFI i efficiency index in a period of time t
- \( pl_{it} \) = MFI i loan loss expense in a period of time t
- \( pr_{it} \) = MFI i profit in a period of time t
- \( sc_{it} \) = MFI i relative scale in a period of time t

The expected signs in the functional relationship in their partial derivatives are the following:

- \( perf_{it} \) > 0
- \( ef_{it} \) < 0
- \( pl_{it} \) > 0
- \( pr_{it} \) > 0
- \( sc_{it} \) < 0

The results of the estimation of equation (1) are presented below, considering a generalized least squares system with random effects.
The results of the estimation show partial derivatives for all the estimated coefficients, with the correct and significant sign, with the exception of the institutional size variable.

From the estimated coefficients (partial derivatives) we calculated the average elasticity for each of the regressors, which are shown in the following table.
**Figure 53. Results of the Estimation of Generalized Least Squares with institution age variable**

```
.xtreg rendimiento costofondeo eficiencia2 perdida utilidad escala aniosoperacion
Random-effects GLS regression                     Number of obs  =        795
Group variable: id                                Number of groups =        125
R-sq:                                              Obs per group:
within  = 0.2476  min  =  2
between = 0.2910  avg  =  6.4
overall = 0.2361  max  = 10
Wald chi2(6)      =     253.80
corr(u_i, X)   = 0 (assumed)
Prob > chi2       =     0.0000
```

|                      | Coef. | Std. Err. |     z  |     P>|z| | [95% Conf. Interval] |
|----------------------|-------|-----------|-------|--------|----------------------|
| rendimiento          | 0.8120645 | 0.1008277 | 8.05   | 0.000  | [0.6144458, 1.0109683] |
| costofondeo          |      |           |       |        |                      |
| eficiencia2          | 0.0009315 | 0.0010664 | -9.20  | 0.000  | [-0.0019051, -0.007725] |
| perdida              | 0.376827 | 0.044906 | 8.47   | 0.000  | [0.2897827, 0.4641827] |
| utilidad             | 0.112363 | 0.0213317 | 5.28   | 0.000  | [0.0708234, 0.1544421] |
| escala               | 0.0016708 | 0.0068223 | -0.24  | 0.807  |                      |
| aniosoperacion       | 0.0074491 | 0.0035223 | -2.11  | 0.034  | [-0.0143527, -0.005455] |
| _cons                | 0.62397 | 0.0700822 | 8.90   | 0.000  | [0.4866115, 0.7613285] |
|                      | sigma_u | 0.1660972 |       |        |                      |
|                      | sigma_e | 0.1672632 |       |        |                      |
|                      | rho      | 0.4965023 |       |        | (fraction of variance due to u_i) |

Source: Authors' calculations

**Figure 54. Results of the Generalized Least Squares Estimation with Market Concentration Variable**

```
.xtreg rendimiento costofondeo eficiencia2 perdida utilidad aniosoperacion ihh,re
Random-effects GLS regression                     Number of obs  =        795
Group variable: id                                Number of groups =        125
R-sq:                                              Obs per group:
within  = 0.2466  min  =  2
between = 0.2982  avg  =  6.4
overall = 0.2400  max  = 10
Wald chi2(6)      =     253.73
corr(u_i, X)   = 0 (assumed)
Prob > chi2       =     0.0000
```

|                      | Coef. | Std. Err. |     z  |     P>|z| | [95% Conf. Interval] |
|----------------------|-------|-----------|-------|--------|----------------------|
| rendimiento          | 0.81749 | 0.1018277 | 8.05   | 0.000  | [0.6182516, 1.016728] |
| costofondeo          |      |           |       |        |                      |
| eficiencia2          | -0.0099632 | 0.0010735 | -9.28  | 0.000  | [-0.0120672, -0.0078591] |
| perdida              | 0.3790652 | 0.0446883 | 8.47   | 0.000  | [0.2914777, 0.4666527] |
| utilidad             | 0.1133258 | 0.0210213 | 5.39   | 0.000  | [0.0721249, 0.1545268] |
| aniosoperacion       | -0.0078914 | 0.0032323 | -2.44  | 0.015  | [-0.0142298, -0.0015529] |
| ihh                  | 0.0368262 | 0.0695211 | 0.53   | 0.596  | [0.0994326, 0.1730851] |
| _cons                | 0.597415 | 0.0443486 | 13.47  | 0.000  | [0.5104934, 0.6843366] |
|                      | sigma_u | 0.15683149 |       |        |                      |
|                      | sigma_e | 0.16726146 |       |        |                      |
|                      | rho      | 0.4675023 |       |        | (fraction of variance due to u_i) |

Source: Authors' calculations
7.4 Analysis of the Structure of Operating Costs

As mentioned in Chapter 2, operating expense is the component that contributes most to the interest rate structure, so it is important to analyze its substructure.

Chapter 2 analyzed personnel expenses. In this section the following categories are analyzed:

- Operating Expenses
- Impulse and Improvement costs
- Regulatory Expenses and Taxes
- Other Administrative Expenses

7.4.1. Operating Expenses

This subcomponent includes all the operating expenses of the institutions, such as: stationery, services, security, leases, per diems, gasoline, maintenance, depreciation, transportation, systems, etc. These expenses are the second most important determinant in the structure of total operating costs, after personnel expenses.

Operating expenses started the period in 2011 at 8.4% and reached 11.1% in 2015. Operating expenses represent 21.5% of total operating costs.

Figure 55. Operating Expense Ratio

When analyzing the evolution of operating expenses by MFI profile, it can be seen that MFIs with the highest costs are micro MFIs (32.9%), SOFOMes (16.8%), and young MFIs (19.9%). On the other hand, those with lower levels are the small MFIs (11.0%), SOFIPOs (13.2%), and mature MFIs (1.1%).
Figure 56. Operating Expenses Peer Group Patterns

Operating Expenses by Legal Status

Operating Expenses by Institutional Size

Operating Expenses by Institution Age

Source: PRONAFIM – SE
7.4.2. Regulatory Expenses and Taxes

This subcomponent includes quotas to federations and other government agencies, fines, savers protection fund, property taxes and tenure, as well as government procedures such as operating licenses, among others.

Regulatory expenses are marginal in the total cost structure. At the beginning of the period they represent 0.2% and grow to 0.3% in 2015. Thus, at the end of the period, regulatory expenses represent 0.5% of total the operating costs, with a negligible contribution.

![Figure 57. Regulatory Expense Ratio](source: PRONAFIM-SE)

Considering the variations by profile of MFIs, it is observed that MFIs with the highest regulatory expenses are micro MFIs (2.3%), SOFOMes (0.9%), and young MFIs (1.0%). On the other hand, those with lower levels are macro MFIs (0.2%), SOFIPOs (0.4%), and medium age MFIs.
Figure 58. Regulatory Expense Ratio

Regulatory Expenses by Legal Status

Source: PRONAFIM – SE

Regulatory Expenses by Institutional Size

Source: PRONAFIM – SE

Regulatory Expenses by Institution Age

Source: PRONAFIM – SE
7.4.3. Impulse and Improvement Costs
This sub-component includes training expenses, marketing, public relations, and technical assistance, among others. They are non-significant in the total operating costs structure. They start the period in 2011 at 1.8% and grow to 3.4% in 2015. Impulse and improvement costs represent 6.5% of total operating costs.

Figure 59. Impulse and Improvement Costs Ratio

When analyzing the path of impulse and improvement costs by MFI profile, it is observed that MFIs with the highest costs are small MFIs (5.4%), SOFIPOs (12.0%) and young MFIs (12.7%). On the other hand, those with lower levels are Micro MFIs (2.6%), SOFOMEs (3.1%) and senior MFIs (1.1%).

Source: PRONAFIM- SE
Figure 60. Impulse and improvement Costs Ratio

Impulse and Improvement Costs by Legal Status

Source: PRONAFIM-SE

Impulse and Improvement Costs by Institutional Size

Source: PRONAFIM-SE

Impulse and Improvement Costs by Institution Age

Source: PRONAFIM-SE
7.4.4. Other Administrative Expenses

This subcomponent includes losses and others that cannot be classified within the previous subcomponents. The other administrative expenses are the lowest value sub component. They start in 2011 at 0.2% and reach 0.1% in 2015. They represent 0.3% of total operating costs structure.

When analyzing the path of other MFI profile expenses, it is observed that MFIs with the highest level are micro MFIs (1.6%), SOFOMes (0.9%), and young MFIs (1.1%). On the other hand, those with lower levels are the macro MFIs (0.1%), SOFIPOs (0.1%), and the senior MFIs (0.2%).

Source: PRONAFIM- SE
Figure 62. Other Administrative Expense Ratio

Other Administrative Expenses by Legal Status

Other Administrative Expenses by Institutional Size

Other Administrative Expenses by Institution Age

Source: PRONAFIM-SE
7.5. The interest rates in Latin America

By comparing the microfinance services markets of Latin America, an overview of their performance can be obtained, and best practices can be identified. However, this type of analysis is complex due to the lack of updated, homogeneous and comparable information among countries. The data may not be comparable across countries for accounting and conceptual reasons that affect the accounts of the financial statements in different ways. In addition, the availability of data is not the same across the countries analyzed or, often, within the same country for different types of institutions.

This section presents a comparative analysis between the leading countries of the microfinance sector in L.A. and Mexico, taking into account the aforementioned caveats, and considers the differences by country size, economy, and level of development of the microfinance sector. While the leading countries represent consolidated microfinance sectors, Mexico represents a young sector, in a stage of growth and expansion. However, it is considered that this analysis allows a determination of the position that Mexico has reached in the Latin American microfinance sector, and reveals significant advances based on its previously described tendencies.

The analysis is based on Roselló’s (2014) research, which estimated interest yield in Bolivia, Peru and Colombia77.

7.5.1. Interest Yield

As shown in Figure 63, on average, the interest yield of the MFIs in Bolivia is 19%, followed by Peru with 22% and in third place Colombia with 28%. Nevertheless, upon analyzing the interest yield per type of entity, we find that the lowest levels are found in the traditional bank and cooperative corporations, with ranges from 10% to 26%, while non-regulated MFIs represent the highest levels, reaching up to 42%.

When comparing the level of the interest yield in Mexico versus that of the countries leading the microfinance field in L.A., it can be observed that, on average, the levels are three times higher than those in Bolivia and Peru, and more than double the levels in Colombia. When analyzed by type of entity, the shortest gap is identified in the case of cooperatives; while the biggest gap resides with banks.

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77 C. Roselló (2014).
Figure 64. Operating Costs/ Performing Loans per type of institution

Source: FOMIN 2014

Figure 65. Cost of Funds/ Performing Loans per type of institution

Source: FOMIN 2014

Figure 66. Loan Loss Expenses/ Performing Loans per type of institution

Source: FOMIN 2014

Figure 67. Profit/ Performing Loans by type of institution

Source: FOMIN 2014
7.5.2. Components of Interest Rates

Operating costs represent 55% of total costs in Peru, 59% in Bolivia and 75% in Colombia. When comparing the level of operating costs in Mexico versus the leading LA countries, we see that the gap between Mexico and the country with the highest average, Colombia, is 18 points. When analyzing by type of entity, we see that the shortest gap is located in the case of cooperatives while the largest gap occurs in banking, as well as in financial performance.\(^{78}\)

Within the total of operating costs, personnel expenses are the largest item of all types of entities, representing between 52% and 58% of the total cost structure. However, levels in proportion to the gross loan portfolio are low. In the distribution of the components of operating costs, on average, for MFIs in each country, we find that personnel costs are in the range of 3.6% to 7.1%, Bolivia being the country with the lowest expenditure and Peru with the greatest level of spending. It is in this subcomponent that the largest gap lies between Mexico and the leading countries of Latin America\(^{78}\). The gap in personnel expenses between Mexico and the country with the highest average, Peru, is more than 29.5 points. When analyzing by type of entity, we see that the shortest gap is located in the case of unregulated MFIs. The largest gap occurs in regulated MFIs.

The second component, due to its weight in the interest rate structure, is the cost of funds. Bolivia is the country with the lowest level, with an average of 3.2%. When comparing the cost of funds in Mexico versus the leading LA countries, it can be seen that the gap is smaller than in the other components, and that only in the category of unregulated MFIs is Mexico the country with the highest levels. There is no gap between Mexico and the country with the highest average, Peru, both are at the same level. When analyzing by type of entity, we note that the shortest gap is located in the case of regulated MFIs. The biggest gap can be found with the banks.

Regarding the loan loss expenses, the level varies between countries due to methodological differences and to the classification of the credit portfolio. On average, the highest level of loan losses is shown in Peru (4.0%), followed by Colombia (3.8%), and the lowest level is presented by Bolivia (2.1%). When comparing the level of loan losses in Mexico versus the leading LA countries, it can be seen that the gap between Mexico and the country with the highest average, Peru, is only 4 points. When analyzing by type of entity, the shortest gap is registered in the case of the cooperatives, while the biggest gap is noted in the case of the banks.

The fourth component is profit. On average, the highest level of profit is demonstrated by Colombia (3.5%), followed by Bolivia (2.0%), and the lowest level is presented by Peru (1.8%). When comparing the level of profits in Mexico versus the leading LA countries, we note that the gap between Mexico and the country with the highest average, Colombia, is 6.7 points. When analyzing by entity type, we see that, except in the case of cooperatives, Mexico does not exhibit the highest levels.

\(^{78}\) One possible explanation lies in the fact that, although microcredit has been operating in Mexico since the 1990s, Bancos’ incursion into microcredit is very recent, dating back to around 2006, as well as the creation of Regulated MFIs under the legal entity of Sofipo, which dates from 2004; In contrast, in the leading countries, banks began operating in the 1990s, BancoSol (1992), being one of the most recognized.

\(^{79}\) Despite the limited information available by type of entity, a large gap between the participating countries can be observed.
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