THE DEVELOPMENT OF MICROCREDIT IN COLOMBIA

Dairo Estrada
Ana María Yaruro
Felipe Clavijo
Laura Capera
Jairo Gómez

ASOMICROFINANZAS

BANCO DE LA REPÚBLICA COLOMBIA

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Acknowledgments

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Authors

Dairo Estrada

PhD in economics from the Universidad Complutense de Madrid, master in economics from the Universidad Autónoma de Barcelona, and economist from the Universidad de Antioquia. He is currently main economist at *Banco de la República* (the Central Bank of Colombia) and served as president of the Fund for the Financing of the Agricultural Sector (Finagro) until September 2021. He has been leading economist at the Central Bank of Colombia, advisor to the presidency of Finagro, director of the Financial Stability Department, head and analyst at the Monetary Monitoring Section at the Office for Monetary and Reserves of Banco de la República. He has been professor of Banking and Corporate Finance at the Pontificia Universidad Javeriana, Universidad de la Sabana, and Universidad de los Andes. Among his most recent publications are the book Rural Financial Inclusion: The case of southern Tolima (*Banco de la República* and USAID, 2017) and the articles: Análisis de la inclusión financiera en áreas rurales en Colombia (Asobancaria, 2017); Colombian bank efficiency and the role of market structure (Temas de Estabilidad Financiera 076, *Banco de la República* de Colombia, 2013); Relaciones crediticias y riesgo de contagio en el mercado interbancario no colateralizado colombiano (Temas de Estabilidad Financiera 077, *Banco de la República* de Colombia, 2013); among others.

Ana Maria Yaruro

Economist from Universidad Nacional de Colombia, master in development studies and specialist in social policy for development from the International Institute of Social Studies of The Hague. She is currently linked to Desjardins International Development and *Asomicrofinanzas* working on issues of rural financial inclusion and sectoral research. She also serves as professor of local economic development and development planning at the Universidad de Los Llanos. She has been part of *Banco de la República* and of the technical secretariat of the National Commission of Agricultural Credit. Among her most outstanding publications

are: Financial vulnerabilities of households in Colombia (Borradores de Economía, *Banco de la República*, 2016); The factors affecting the holding of financial products in Colombia (in: M.J. Roa and D. Mejia (eds.)- CEMLA, 2018); and Microcredit in rural and rural scattered municipalities (*Asomicrofinanzas* 2020).

Felipe Clavijo

Master in finance from the London Business School. Holds a master's degree in economics from Universidad de los Andes. He is currently senior analyst at the Financial Stability Department of *Banco de la República* and has been a specialist and analyst for this same area. He has also served as assistant professor of advanced microeconomics and game theory at Universidad de los Andes. Among his most recent publications are: Impacto macroeconómico del cambio climático en Colombia (Ensayos sobre política económica, *Banco de la República*, 2022) and El microcrédito en municipios rurales y rurales dispersos: determinantes de acceso y morosidad (*Asomicrofinanzas*, 2020).

Laura Capera

PhD in economics from the University of Tilburg (Netherlands), master in economics from Universidad de los Andes, and economist from Universidad Nacional de Colombia. She currently works as an assistant professor at the Free University of Amsterdam and is an associate researcher at the Tinbergen Institute. Her teaching activities are concentrated in the fields of corporate finance, sustainability, and banking regulation. She was previously part of the Financial Stability Department of *Banco de la República*. Her research focuses on regulatory and competition analysis in the banking industry, particularly in the microcredit sector. She has published in the Journal of Risk Management of Financial Institutions and in the journal Essays on Economic Policy of *Banco de la República*, among others. Her latest research can be found here: https://lauracapera.com/

Jairo Gómez

Economist with a master's degree in applied economics from Universidad del Valle. He has worked as a professional in the Statistics Department of the Fund for the Financing of the Agricultural Sector (Finagro). He was also linked as a Visiting Researcher for the International Center for Tropical Agriculture (CIAT). He did his internship at the Central Bank of Colombia at the Center for Studies on Production and Sectoral Trade (CEPCO). He has been professor of Fiscal Policy at Universidad del Valle and contractor for the Chamber of Commerce of Cali. He has a publication as co-author of the book: *Transformar lo público: perspectivas sobre la reforma administrativa de Santiago de Cali de 2016*.

Foreword

I am very happy to present this book because it highlights the role of microfinance institutions (MFIs) in the financial inclusion of the most vulnerable population and its impact on the economic development of the country. Through a rigorous analysis, friends and colleagues from *Banco de la República* (the Central Bank of Colombia), the Fund for the Financing of the Agricultural Sector (Finagro), the Free University of Amsterdam, and *Asomicrofinanzas* (the Colombian Association of Microfinance Institutions) show us the evolution of the microcredit market in the last two decades, as well as the main determinants of delinquency in this segment and the impact of this type of loans.

This book is a must-read for those interested in the role of MFIs in the process of financial inclusion in Colombia and in their contribution to the economic development of the country. It is also of interest for the MFIs themselves, who work every day for the most vulnerable population in the country through a diversified portfolio of services and service protocols adapted to this clientele. It is equally important for public policy makers, who can count on the microfinance industry to implement policies focused on the most vulnerable.

Throughout the book you will find evidence of the efforts that MFIs have been making to build a more developed and inclusive country, which has been possible thanks to the openness of regulators and the support of national and international development institutions. In particular, I would like to thank *Banco de la República* and its technical staff for their support for this type of research, which strengthens the microfinance industry.

In the first chapter, you will find a characterization of the microcredit market in Colombia between 2010 and 2020, highlighting the particularities of this type of loans in terms of amount, destination, and term. Likewise, the advances in coverage by MFIs and the most representative economic sectors are highlighted. Also, the main characteristics of microcredit clients and their evolution in the analysis period are underlined.

The second chapter analyzes the dynamics of microcredit disaggregating between the institutions that are monitored by the Office of the Financial Superintendent of Colombia (SFC) and those that are not.

Likewise, the results of a model of the determinants of delinquency of the microcredit portfolio in Colombia are presented, in order to expand the knowledge of the industry on the factors of greater risk for its portfolio.

The third chapter presents a summary of the recent literature on microcredit impact measurements and the results of the analysis on the incidence of poverty and vulnerability among microcredit clients in Colombia. Complementing the above, we present a model that shows the impact of microcredit on GDP per capita by municipality and the well-being of the population.

The fourth chapter describes how the supply of MFIs in different geographical areas has transformed and examines the reactions of credit providers to the entry-exit of new competitors. It also studies the characteristics of local markets that can influence the decisions of financial institutions regarding their network of offices.

Finally, chapter five presents a review of the fifteen institutions affiliated to *Asomicrofinanzas* and who shared their microdata for this work. Throughout the book you will also find five boxes that complement the described analyzes. The topics addressed include the situation of micro-businesses in Colombia, the use of alternative scoring methods, social indicators for the microfinance industry, the supply of micro-insurance by sector institutions, and the role of MFIs in the financial inclusion of migrants.

María Clara Hoyos Jaramillo
Executive President of *Asomicrofinanzas*

Image: courtesy of *Microempresas de Colombia*

CHAPTER 1

Characterization of Microcredit

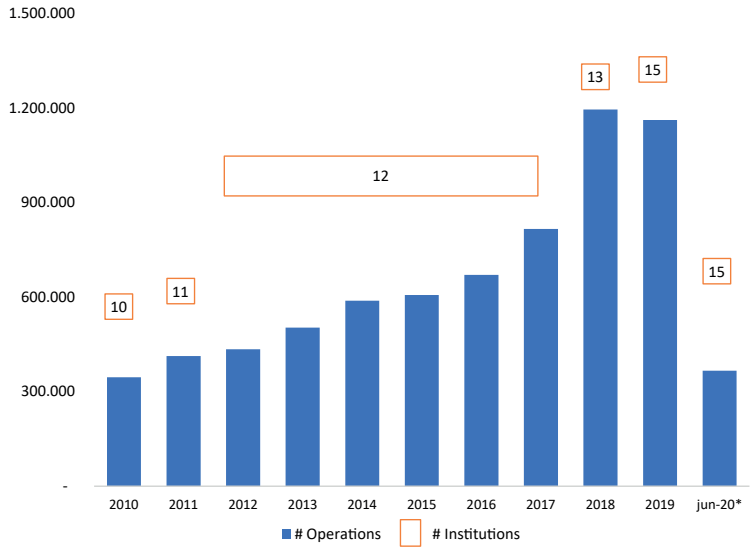
In this chapter, the microcredit market in Colombia and its beneficiaries are characterized based on information reported by the institutions associated to the Colombian Association of Microfinance Institutions (*Asomicrofinanzas*) within the framework of an agreement with *Banco de la República* (the Central Bank of Colombia) and the Fund for Financing of the Agricultural Sector (Finagro). This database is a benchmark in Latin America and reflects the maturity of the microfinance industry in Colombia. Appendix 1.3 describes the variables related to credit operations, customers, and their payment behavior (Tables 1.5, 1.6, 1.7).

In total, there are 7.1 million (m) transactions granted between January 2010 and June 2020 belonging to 3.7 m clients of fifteen institutions of the guild: Eight supervised by the Office of the Financial Superintendent of Colombia (SFC); two, by the Superintendency of Solidary Economy; and six unsupervised. Within the base, four niche banks (*Bancamia*, *Banco W*, *Banco Mundo Mujer* and *MiBanco*), two financial cooperatives (*Cooperativa Financiera de Antioquia* -CFA- and *Confiar*), a financing company (*Crezcamos*), two savings and credit cooperatives (*Microempresas de Colombia* and *Financiera Comultrasan*), and six non-governmental organizations (NGOs) or commercial part-

nerships (*Contactar*, *Corporación Interactuar*, *Finanfuturo*, *Fundación Amanecer*, *Fundación Delamujer*, and *Uni2 Microcrédito*) are included.

Graph 1.1 presents the available data per year and the number of institutions considered. According to *Asomicrofinanzas*, these institutions accounted for 58.2% of operations and 43.2% of the amount of the microcredit market in Colombia as of June 2020. Although *Banco Agrario de Colombia* (BAC) accounts for 41.3% of this portfolio, the majority of its loans correspond to small producer credits and not to microcredit, since the evaluation methodology is associated with the agricultural and rural productive project.

Graph 1.1. Annual distribution of microcredit operations



Source: *Asomicrofinanzas*; authors' calculations.

1.1 Microcredit Market

In order to learn about the dynamics of microcredit, a balanced base[1] was built with the data of the ten institutions that report information since 2010 to 2019.[2] As shown in Graph 1.2a, annual microcredit

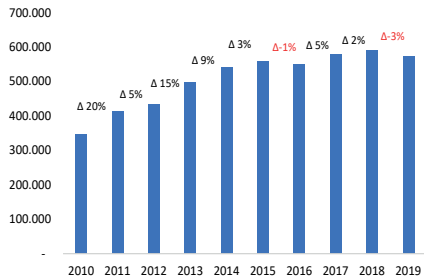
[1] This database accounts for 74% of all database operations and 76% of the recorded amount.

[2] The year 2020 was excluded because the information is not complete.

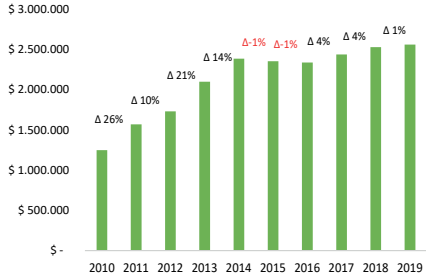
disbursements amounting to $345,921 in 2010 rose to $573,250 in 2019, with an average growth rate of 6.0%. In terms of the amount disbursed, the average annual real growth rate is 8.7%, with its highest levels in 2011 (26%) and 2013 (21%).

Graph 1.2. Growth of the microcredit market

(a) Disbursements



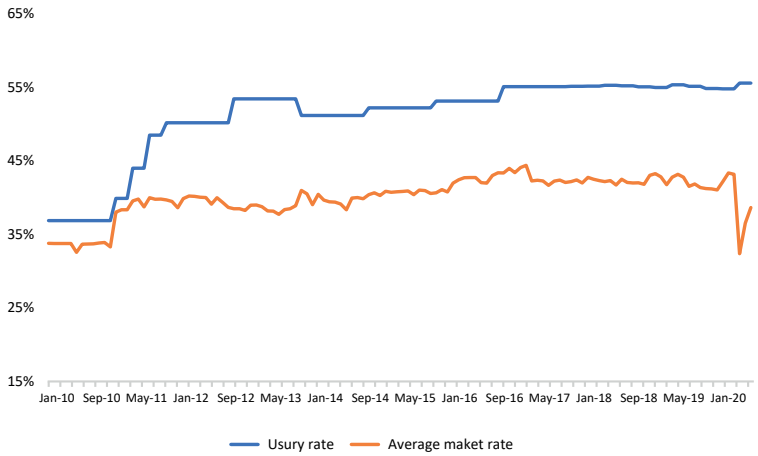
(b) Amount (millions as of December 2021)



Source: *Asomicrofinanzas*; authors' calculations.

As of 2011, the outstanding growth is due, inter alia, to the change in the way the usury rate is measured for these loans. In practical terms, this measure allowed financial institutions to receive greater remuneration for these loans, which, on the one hand, accelerated the entry of new actors as set out in Chapter 5 and, on the other hand, allowed to grant lower value loans that were not previously offered due to their high operational costs. As shown in Graph 1.2b, this change did not imply a substantial increase in the average microcredit and usury market rates. As of November 2011, the margin between the two rates has been above 10%, with an all-time high of 23% (56% vs 32%) in April 2020. Derived from the fall in microcredit placements and the decrease in the rate offered to clients during the most restrictive stage of confinement due to the Covid-19 pandemic.

Graph 1.3. Average rate of microcredit versus usury

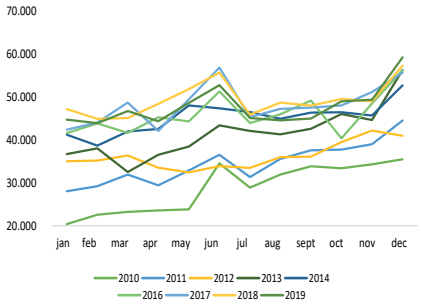


Source: *Asomicrofinanzas*; authors' calculations.

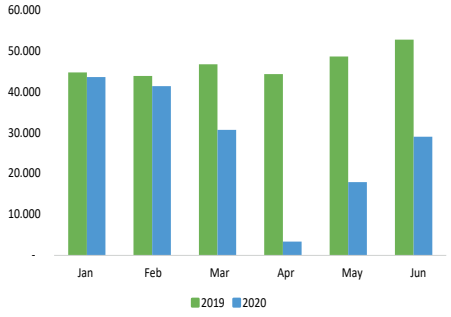
When we analyze the dynamics of the placements of this type of credit, it may be observed that the months of June and December are the most representative, reaching their highest peak in the last month (Graph 1.4a). As shown in Graph 1.4b, the Covid-19 pandemic significantly impacted the dynamics of the sector. While 91,059 microcredits were disbursed in March and April 2019, 34,050 microcredits were placed in the same period in 2020 (lower by 62.6%).

Graph 1.4. Dynamics of microcredit placements

(a) Between 2010 and 2019



(b) Years 2019 and 2020

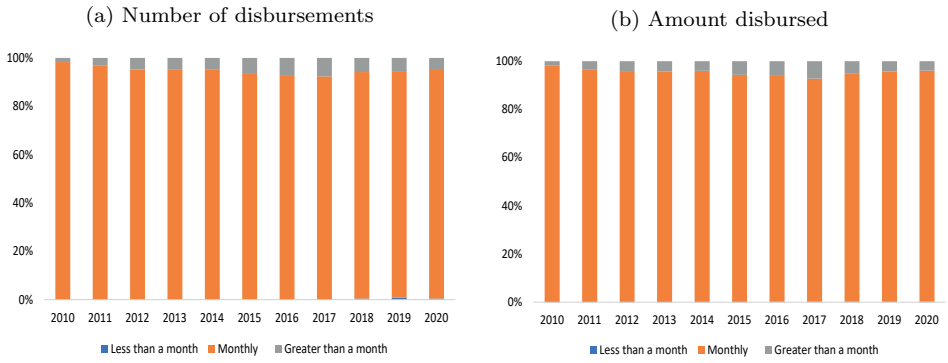


Source: *Asomicrofinanzas*; authors' calculations.

The following data on the distribution of microcredit by type of amortization, term, destination, and economic sectors, among others, correspond to the complete sample (fifteen institutions) and not to the balanced one.

When analyzing the amortization period of the microcredits, it is evident that 94.2% are monthly, followed by 5.5% with periodicity greater than one month, and 0.3% with periodicity less than one month (Graph 1.5a). Among those with periodicity greater than 30 days, the quarterly and semiannual modalities stand out, which can benefit customers in the agricultural and industrial sectors due to their production processes. Among the microcredits amortized in periods less than one month, the fortnightly ones stand out. Although those on a daily basis account for only 0.1% of the total, they are significantly potential in the fight against informal lenders. When disaggregated by disbursed amounts, a similar distribution is observed (Graph 1.5b).

Graph 1.5. Distribution of microcredit by type of amortization

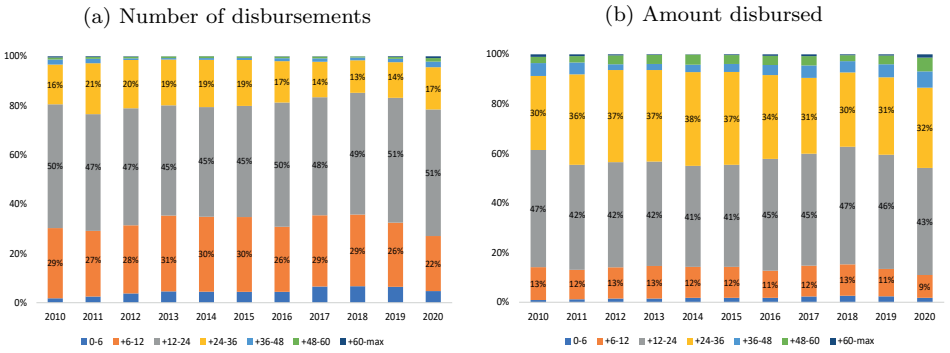


Source: *Asomicrofinanzas*; authors' calculations.

For the total sample, the period of most microcredits ranged from 12 to 24 months (48.3%), 6 to 12 months (28.0%), and 24 to 36 months (16.4%). As of June 2020, there was an increase in the number of microcredits over 36 months, mainly derived from the measures taken by the government and financial intermediaries during the Covid-19 pandemic. One of these measures was the Accompaniment Plan for Debtors

(PAD),[3] which was offered even by unsupervised institutions. By comparing panels A and B in Graph 1.6a, it is evident that credits over two years represent 41.7% of the amount disbursed and 18.5% of the number of placements.

Graph 1.6. Distribution of microcredit by term



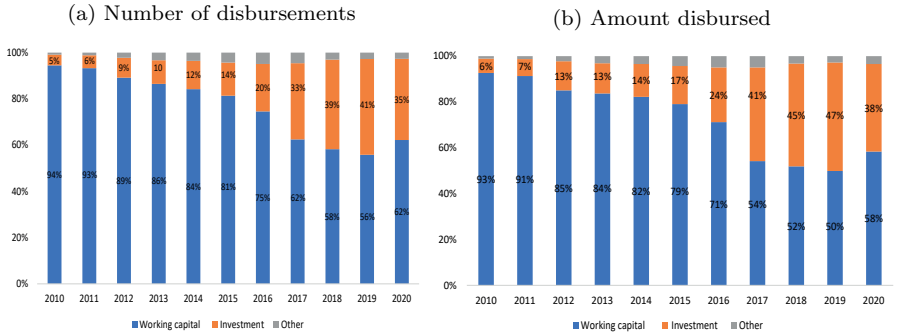
Source: *Asomicrofinanzas*; authors' calculations.

Although the majority of microcredits were used for working capital, their representativeness has been decreasing, and that of microloans for investment increased. While in 2010 5.0% of microcredit operations and 6.0% of the amount disbursed were allocated to investment, in 2020 these percentages amounted to 35% and 38%, respectively (Graphs 1.6a and 1.6b).

The average real amount of credits for working capital ranged from 3.2 in 2017 to 4.1 in 2020 (Graph 1.8). In line with expectations, the average amount of microloans for investment was higher than those for working capital. In real terms, the real average value of these loans ranged from $4.5 m in 2018 to $6.2 m in 2012, when the largest gap between the two destinations was recorded. As shown in Graphs 1.7a and 1.7b, the percentage of credits for working capital has been decreasing, reaching 62% in number of disbursements and 58% in amounts disbursed.

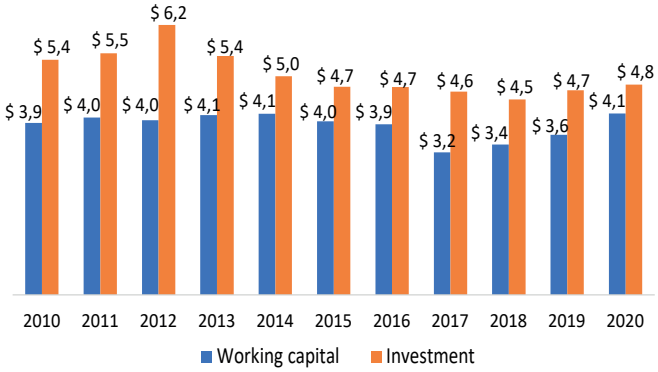
[3] The DAP is a set of measures for financial institutions to manage the financial commitments of debtors in the face of the impact of their income or ability to pay at the juncture (external circulars 007 and 014 of the SFC).

Graph 1.7. Distribution of microcredit by destination



Source: *Asomicrofinanzas*; authors' calculations.

Graph 1.8. Average microcredit amount by destination (December 2021 millions)



Source: *Asomicrofinanzas*; authors' calculations.

Of the total credits for working capital, 48% were granted for a term between 1 and 2 years, followed by 30% for the range of 6 months to 1 year, and 15% between 24 and 36 months. In all, 46% was concentrated in the period between 12 and 24 months, followed by 32% between 24 and 36 months. In terms of loans for investment, 50% of operations and 40% of the amount were concentrated in the range between 12 and 24 months (Table 1.1). It is also noted that 24% of operations corresponded to loans with a term between 6 months and 1 year, and 37% of the amount was concentrated in micro-loans between 24 and 36 months.

In the period analyzed, the representativeness of the commerce or trade sector moved from 52% to 35% in terms of operations, and from 50% to 36% in terms of the amount disbursed (Graphs 1.9a and 1.9b). On the other hand, the agricultural sector gained representativeness, going from 8.0% to 21% of operations, and from 8.0% to 20% of the amount. At the end of the first half of 2020, the services and manufacturing sectors accounted for 29% and 14% of operations; these percentages amounted to 30% and 14% when analyzed by amount.

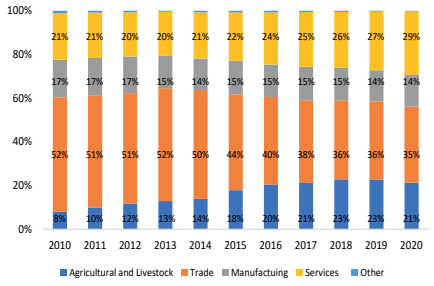
Table 1.1. Distribution of microcredit by destination and term

	Working capital		**Investment**	
	% Operation	**% Amount**	**% Operation**	**% Amount**
0-6	6	3	2	1
+6-12	30	13	24	9
+12-24	48	46	50	40
+24-36	15	32	21	37
+36-48	1	3	2	7
+48-60	0	2	1	5
+60-max	0	0	0	1

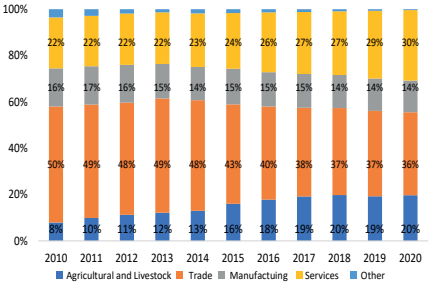
Source: *Asomicrofinanzas*. Own elaboration.

Graph 1.9. Distribution of microcredit by economic sector

(a) Number of disbursements



(b) Amount disbursed

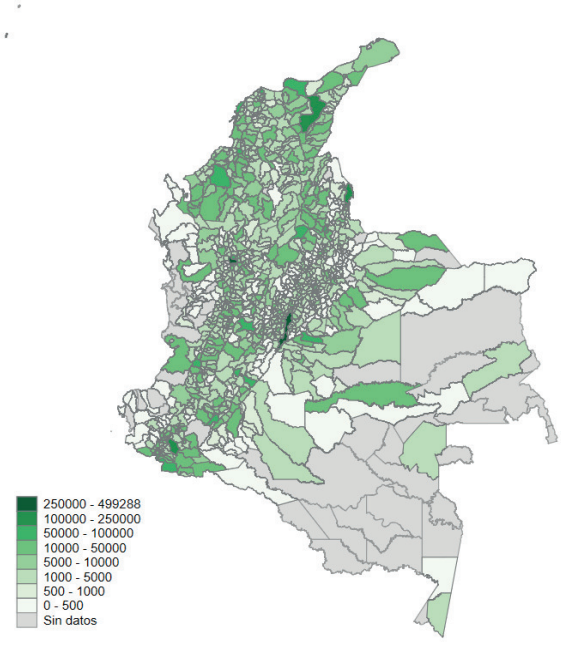


Source: *Asomicrofinanzas*; authors' calculations.

As shown in Graph 1.10, microcredit operations are distributed throughout the national territory, and mainly the Andean and Caribbean

regions stand out. Bogotá, Medellín, Pasto, Cúcuta and Valledupar are the municipalities with the highest number of operations. When analyzing the number of credits per 10,000 inhabitants, it is observed that the most outstanding municipalities are Boyacá (Boyacá), Ancuya, Linares and Potosi (Nariño), and Palmas del Socorro (Santander). On the other hand, within the database are 36 municipalities and 17 departmental *corregimientos*[4] without microcredit operations. As shown in Appendix, Table 1.8, the areas with the greatest access restrictions are Chocó (14), Amazonas (9), Guainía (6) and Vaupés (5).

Graph 1.10. Distribution of microcredit operations 2010-2020, per 10,000 inhabitants



Source: *Asomicrofinanzas*; authors' calculations.

[4] Translators' note: "*corregimiento*" is a term used in Colombia to define a subdivision of Colombian municipalities. According to the Colombian Constitution of 1991 and Decree 2274 of October 4, 1991, a *corregimiento* is an internal part of a Department or province, which includes a population core. It is usually less populated than a municipality. (Constitución Política de Colombia , 1991).

As for the areas with Development Programs with Territorial Focus (PDET), it is observed that the Sierra Nevada-Perijá, Putumayo, and Urabá Antioquieño recorded the highest number of microcredits between 2010 and June 2020, and that Catatumbo, Arauca, and Chocó recorded the lowest levels (Table 1.2). When comparing operations between 2010-2019, the Sierra Nevada-Perijá, Alto Patía, and Norte del Cauca, and Montes de María recorded the largest increases.

Table 1.2. Distribution of microcredit operations by PDET zones

PDET Zones	**Total 2010-2020**	**2010**	**2019**	**Growth 2010-2019**
Sierra Nevada- Perijá	312,524	13,729	52,499	38,770
Putumayo	126,264	3,026	16,511	13,485
Urabá Antioqueño	106,407	6,069	12,748	6,679
Alto Patía and Norte del Cauca	87,546	18	27,873	27,855
Montes de María	83,293	685	16,520	15,835
Bajo Cauca	70,999	4,230	8,035	3,805
Caguán	56,432	1,843	11,818	9,975
South Córdoba	51,740	2,385	6,695	4,310
Mid Pacific	26,088	1,305	2,362	1,057
South Bolívar	24,722	11	5,512	5,501
South Tolima	24,446	0	5,385	5,385
Macarena	23,415	661	4,312	3,651
Pacific and Borders with Nariño	22,328	2,364	2,457	93
Catatumbo	10,454	477	1,031	554
Arauca	5,457	0	1,998	1,998
Chocó	1,000	0	254	254

Source: *Asomicrofinanzas*. Own elaboration.

In this same line, the areas of Sierra Nevada-Perijá, Putumayo, and the Urabá Antioqueño concentrate the largest proportion of the amount disbursed (53%); in contrast, the regions of Catatumbo, Arauca, and Chocó represent only 2.0% (Table 1.3). Between 2010 and 2019, the Sierra Nevada-Perijá, Alto Patía, Norte del Cauca, and Putumayo exhibit the largest increases in the amount placed.

Table 1.3. Distribution of microcredit disbursements by PDET zones

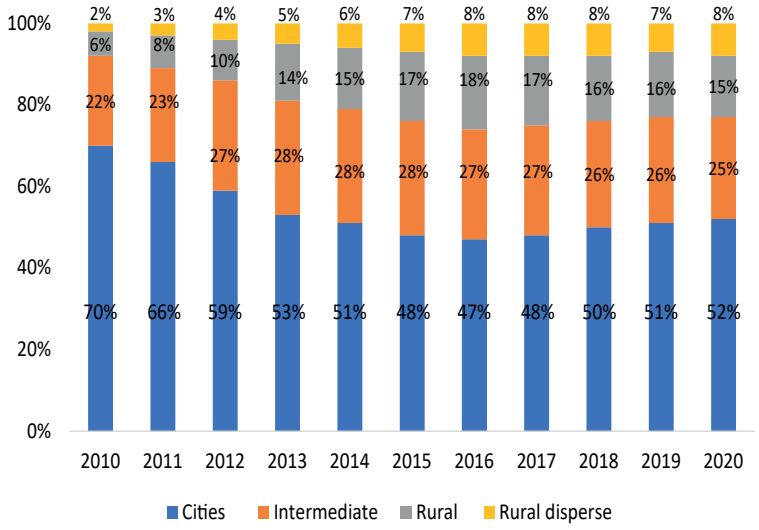
PDET Zones	Total 2010-2020	2010	2019	Growth 2010-2019
Sierra Nevada- Perijá	1,097,831	39,763	186,283	146,520
Putumayo	466,628	11,597	64,704	53,107
Urabá Antioqueño	450,296	25,214	53,133	27,919
Alto Patía and Norte del Cauca	302,469	58	98,421	98,363
Montes de María	236,311	2,076	46,118	44,042
Bajo Cauca	352,934	18,116	38,920	20,804
Caguán	198,665	5,268	44,465	39,197
South Córdoba	171,349	7,436	22,677	15,241
Mid Pacific	102,902	3,990	10,143	6,153
South Bolívar	108,221	48	24,485	24,436
South Tolima	79,540	0	17,302	17,302
Macarena	103,894	2,548	21,458	18,909
Pacific and Borders with Nariño	96,291	6,272	12,729	6,456
Catatumbo	41,487	1,473	4,397	2,924
Arauca	22,777	0	8,099	8,099
Chocó	4,548	0	1,306	1,306

Source: *Asomicrofinanzas*. Own elaboration.

Complementary to the above, the industry has been expanding to scattered rural and rural municipalities (Graph 1.11). While in 2010, 8.0% of disbursements were made in scattered rural and rural municipalities, as of 30 June 2020 this percentage increased to 23%. This is relevant for the country, given that these areas have historically presented the greatest restrictions on access to credit due to both supply and demand factors.

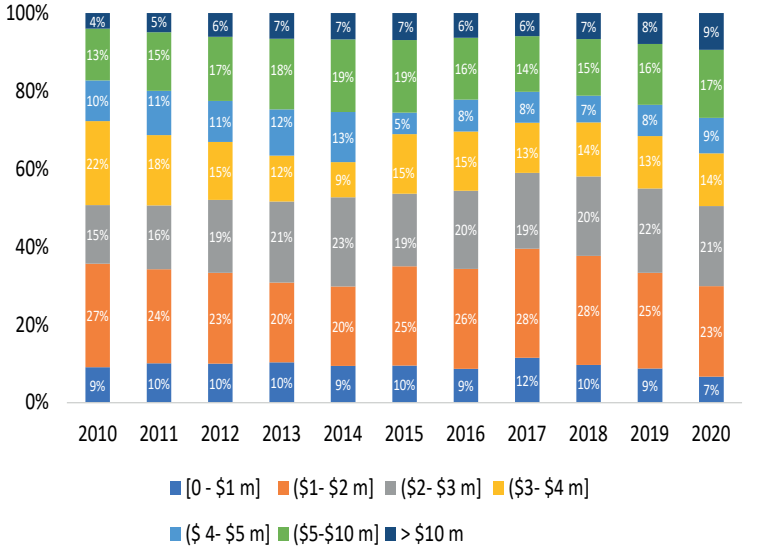
Finally, the distribution of microcredit, in terms of the amount disbursed, shows that most operations are concentrated in the range between $1 m and $2 m (25%), followed by amounts between $2 m and $3 m (20%), and between $5 m and $10 m (16%). Between 2010 and 2019, there was a fall in microcredits between $3 m and $4 m (from 22% to 14%) and between $1 m and $2 m (from 36% to 33%). On the other hand, the proportion of loans over $5 m increased from 17% to 24%, which may be explained by the greater representativeness of investment loans (Graph 1.12)

Graph 1.11. Distribution of microcredit by type of municipality



Source: *Asomicrofinanzas*; authors' calculations.

Graph 1.12. Distribution of microcredit by amount disbursed

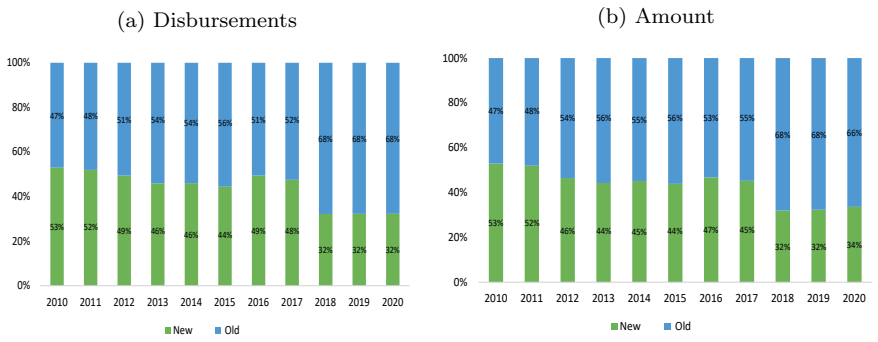


Source: *Asomicrofinanzas*; authors' calculations.

1.2 Microcredit Customers

As mentioned, the database has information of 3.7 m customers, of which 53.5% are women and 42.6% are men. Of the remaining 3.9%, 0.02% correspond to legal persons. The type of person could not be identified in the remaining operations. According to the information reported, 53% of operations in 2010 were granted to new customers, but since 2018 this percentage has been 32% (Graph 1.13a). In terms of the amount disbursed, a similar behavior is observed: in 2010, 53% went to new customers, and in 2020 this percentage was 34% (Graph 1.13b)

Graph 1.13. Distribution of microcredit by type of customer

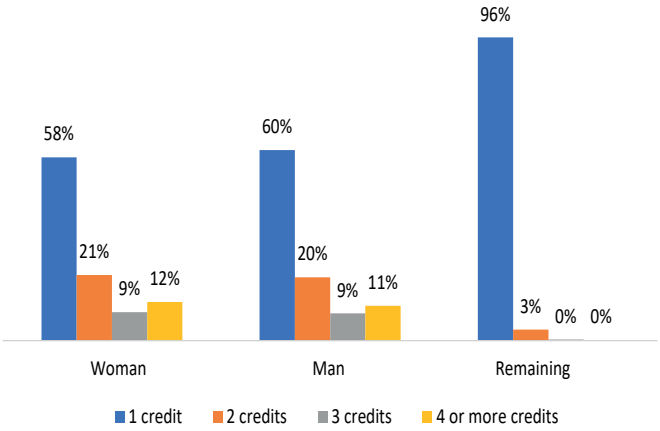


Source: *Asomicrofinanzas*; authors' calculations.

Of the total number of customers, 60% reported one credit per institution, 20% two credits, 8.0% three credits, and 11% four or more. Among female clients, 58% have a single credit, 21% have two, and the remaining 21% have three or more credits (Graph 1.14). In the case of men, percentages are similar to those of women; for the rest (legal and unidentified persons), most clients have only one loan.

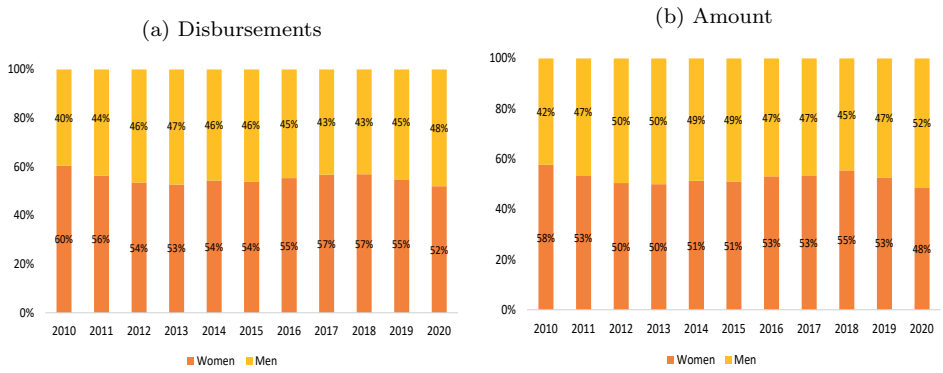
Although the percentage of women is higher than that of men among the 3.7 m clients, the analysis of placements between 2010 and 2020 shows a drop in their participation. In 2010, 60% of the microloans reported were directed to women; in 2020, this figure dropped to 52% (Graph figura 1.15a). In the amount disbursed, there is also a drop in the participation of female clients, from 58% in 2010 to 48% in 2020 (Graph 1.15b)

Graph 1.14. Number of credits per customer type



Source: *Asomicrofinanzas*; authors' calculations.

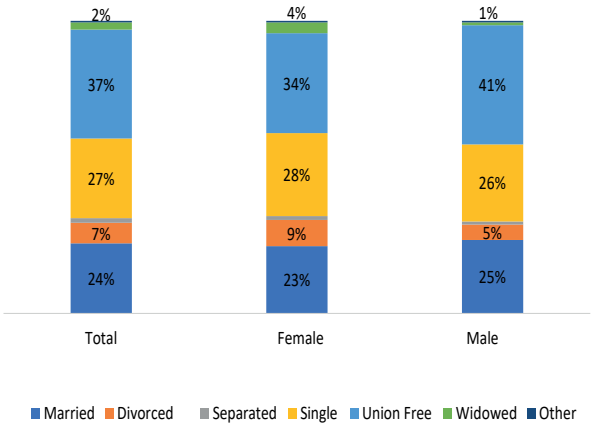
Graph 1.15. Distribution of clients by sex and year



Source: *Asomicrofinanzas*; authors' calculations.

Of all clients, 37% live in a "free union" or de facto marital union, followed by 27% of singles and 24% who are married (Graph 1.16). Regarding the total, a higher percentage of women were registered as divorced or widowed (11% compared to 9.0%), underlining the relevance of mothers who are household heads within the microcredit portfolio. In the case of men, the representativeness of those who live in a free union or are married stands out (66% compared to 61% of the total).

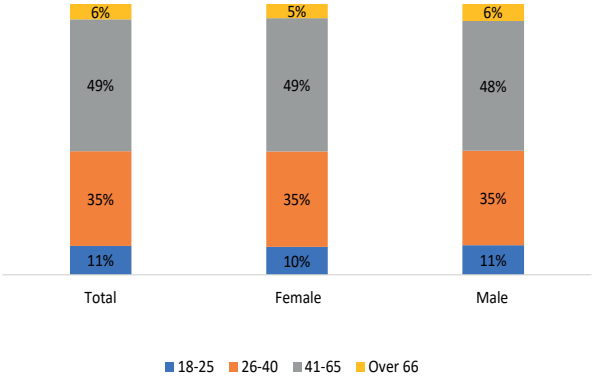
Graph 1.16. Distribution of clients by marital status



Source: *Asomicrofinanzas*; authors' calculations.

As shown in Graph 1.17, 49% of customers are between the ages of 41 and 65, 35% between 26 and 40, 11% between 18 and 25, and the remaining 6.0% over the age of 66. When disaggregated by sex, a similar age distribution is observed. The majority of clients between 41 and 65 years of age live in marital *de facto* union (34%) or are married (30%); the same was observed in clients between 26 and 40 years of age, with 46% and 19%, respectively. Among younger clients (18 and 25 years of age), most are single (56%) or in a *de facto* marital union (34%).

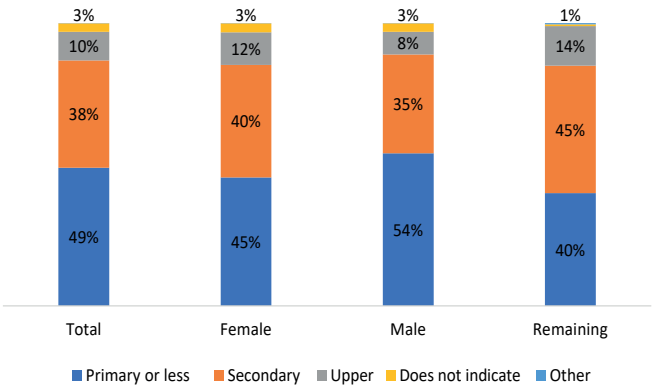
Graph 1.17. Distribution of clients by sex and age range



Source: *Asomicrofinanzas*; authors' calculations.

Regarding the educational level of the clients, the majority have primary education or less (49%), followed by 38% who reported having completed secondary school, and 10% who have higher education (Graph 1.18). When disaggregated by sex, it is evident that a greater number of female clients completed secondary school and their higher education (technical and/or university), which is in accordance with the aggregate figures reported by the Ministry of National Education.

Graph 1.18. Distribution of customers by educational level

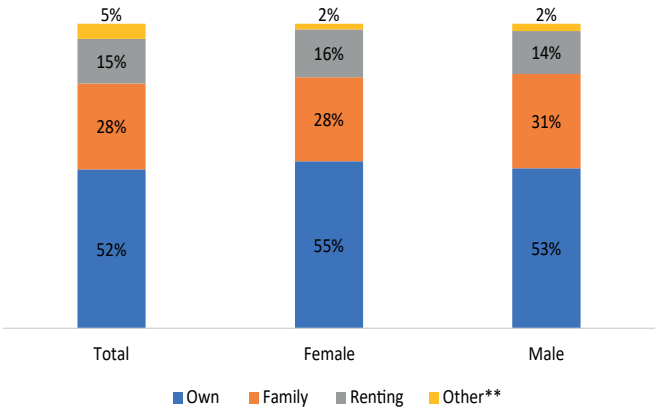


Source: *Asomicrofinanzas*; authors' calculations.

On the other hand, most customers live in their own homes (52%), another 28% live in family homes, and 15% pay rent (Graph 1.19). When compared with men, it is observed that a greater percentage of women pay rent and a smaller one lives in family homes. As explained in Chapter 2, although this variable is relevant to explain the payment behavior of customers, it is essential that the microfinance industry continues to serve customers without this type of collateral but with viable productive projects.

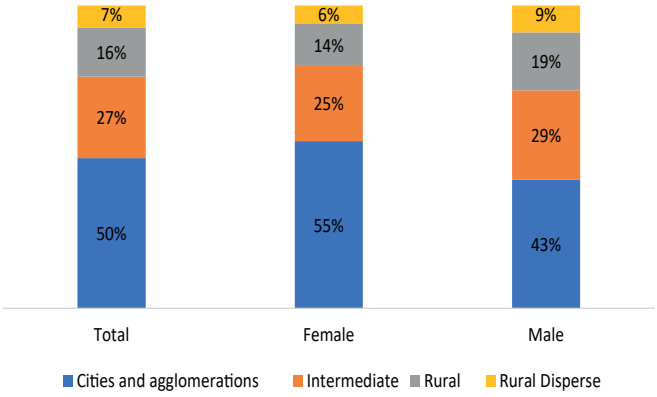
Of the total number of customers, 50% were in cities and agglomerations, 27% in intermediate municipalities, and the remaining 23% in scattered rural and rural municipalities (Graph 1.20). In the case of women, there is a greater participation of cities and agglomerations. Among men, rural municipalities and rural scattered population stand out. This difference by sex could be due to a segmentation of the microfinance industry or to characteristics of the productive sectors in both territories.

Graph 1.19. Distribution of customers by type of housing



Other customers are excluded because for most records there is no housing type information available.
The category *Other* groups businesses, mortgages, no information, or others.
Source: *Asomicrofinanzas*; authors' calculations.

Graph 1.20. Distribution of customers by type of municipality

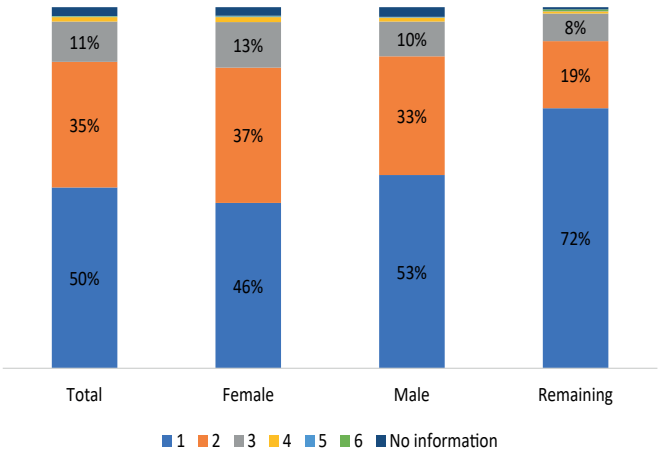


Source: *Asomicrofinanzas*; authors' calculations.

Fifty-six percent of customers have dependents, with an average of two dependents. Of the female clients, 56% have dependents, with an average of 1.8. In the case of men, this percentage rises to 58% with an average of 2.1. Within the category for others, which includes natural persons for whom sex could not be identified and legal persons, 29% report persons in charge, with an average value of 2.6.

As shown in Graph 1.21, 50% of microcredit customers belong to social stratum 1, 35% to stratum 2, and 11% to stratum 3.[5] When disaggregated by sex, it may be observed that a greater number of men belong to stratum 1; in the case of women, a greater participation is evidenced in strata 2 and 3. Within the category for others, the percentage of customers in stratum 1 is 72%, a figure 22% higher than the total.

Graph 1.21. Distribution of clients by socioeconomic stratum



Source: *Asomicrofinanzas*; authors' calculations.

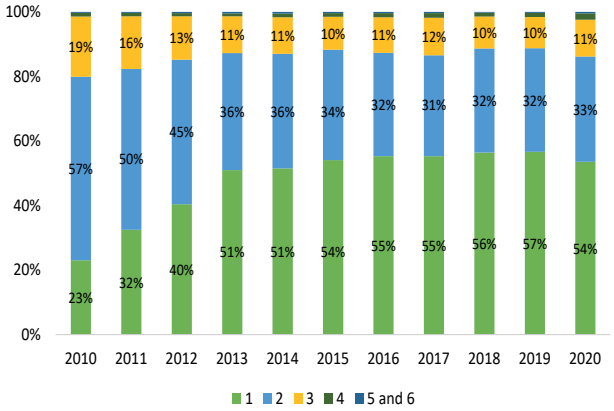
Between 2010 and 2019, the number of customers belonging to socio-economic stratum 1 increased from 23% to 57%, underscoring that the base of the pyramid remains the main market niche of the microfinance industry (Graph 1.22). In stratum 2 and 3, there were 25% and 9.0% drops in representativeness, since 57% and 19%, in their order, moved to 32% and 10%, respectively. The representativeness of strata 4, 5, and 6 remains very low.

When comparing 2019 and the first half of 2020, there is a drop in the representativeness of stratum 1 (from 57% to 54%). This could be associated with the lower appetite for risk of institutions derived from the pandemic; however, more information is required from the

[5] Translators' note: In Colombia, the population is classified in socio-economic strata according to their economic characteristics. The system classifies areas on a scale from 1 to 6, with 1 as the lowest income area and 6 as the highest.

institutions so as to be able to estimate the real impact of the pandemic on the distribution of clients by socioeconomic levels.

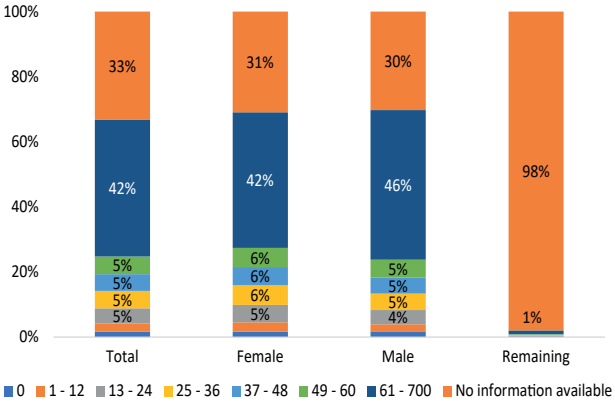
Graph 1.22. Distribution of clients by socioeconomic stratum and year



Source: *Asomicrofinanzas*; authors' calculations.

In addition, 42% of customers have business with more than 5 years of existence, 46% in the case of men, and 42% for women. The average age for the former is 134 months, and for the latter, 115 months. As shown in Graph 1.23, for 33% of the operations this variable is not available, and it is higher in the case of the category for other customers.

Graph 1.23. Distribution of customers by age of their business

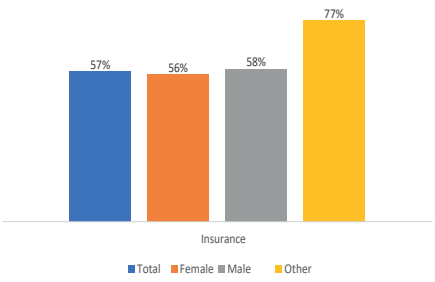


Source: *Asomicrofinanzas*; authors' calculations.

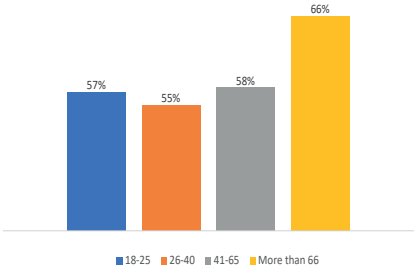
Finally, 57% of the customers have voluntary insurance, 56% of all female customers and 58% for men (Graph 1.24a). In the operations of people who could not be identified by sex or are legal persons, the percentage of insurance holding amounted to 77%. As shown in Graph 1.24b, 57% of customers between the ages of 18 and 25 have insurance; for those between the ages of 26 and 40, the percentage is 55%. In the case of people between 41 and 65 years of age, it is evident that 58% have this type of financial products, while for those over 66 years of age, the level rises to 66%.

Graph 1.24. Distribution of clients by insurance holding

(a) Disbursements



(b) Amount (Millions as of december 2021)



Source: *Asomicrofinanzas*; authors' calculations.

1.3 Appendix

Table 1.4. Municipalities or departmental *corregimientos* without microcredit operations

Department	**Municipalities**	***Corregimientos***
Amazonas	Puerto Nariño	El Encanto, La Chorrera, La Pedrera, La Victoria, Miriti - Paraná, Puerto Alegría, Puerto Arica and Puerto Santander
Arauca	Cravo Norte	
San Andrés and Prov.	Providencia	
Bolivar	San Jacinto del Cauca	
Boyacá	Cubará, La Victoria and Pisba	
Caquetá	Solano	
Cauca	Guapi, López and Santa Rosa	
Chocó	Alto Baudó, Bagadó, Bajo Baudó, Bojayá, El Cantón del San Pablo, El Litoral del San Juan, Juradó, Medio Baudó, Medio San Juan, Nuquí, Río Iro, Río Quito, San José del Palmar and Sipí	
Guainía		Barranco Minas, Cacahual, La Guadalupe, Pana Pana, Puerto Colombia and San Felipe
Guaviare	Miraflores	
Meta	Mapiripán and San Juanito	
Nariño	El Charco, La Tola and Roberto Payán	
Norte de Santander	El Tarra and Pamplonita	
Vaupés	Caruru and Taraira	Pacoa, Papunaua and Yavaraté
Vichada	Cumaribo	

Source: *Asomicrofinanzas*. Own elaboration.

Table 1.5. Customer-related variables

No	VARIABLE	DATA	LONG	DESCRIPTION
1	CUSTOMER ID	Integer		Single ID to identify the customer, different from the citizenship ID card. (This is not necessarily the internal client's code. It is the code that an anonymous customer would be given and would be followed in time).
2	GENDER	Character	3	Customer gender (M: Male = 0, F: Female = 1)
3	AGE	Integer		Customer Age (Years)
4	DEPT-BUSINESS	Character	100	Department where the customer's business is located.
5	CITY-BUSINESS	Character	100	City where the customer's business is located.
6	DEPT-HOME	Character	100	Department in which the customer lives.
7	HOME-CITY	Character	100	City where the customer lives.
8	PERSON-JOB	Integer		Number of people/employees in charge
9	NUMBER-CHILDREN	Integer		Number of children
10	STRATUM	Integer		Customer's socio-economic stratum
11	MARITAL-STATUS	Character	200	Client's marital status (Married, Single, Divorced, Widowed, De Facto Union)
12	TYPE-HOUSING	Integer		Customer's type of housing
13	PROPERTY-HOUSING	Integer		1. Own (already paid) 2. Own (paying for it) 3. Leased 4. Of a family member 5. Wasteland 6. Other
14	STUDY-LEVEL	Integer		Customer's Education Level (Basic, High School, Technical, University, Graduate, None)
15	ECON-ACTIVITY	Character	250	Customer's economic activity
16	AGE-BUSINESS	Integer		Age of the business (months)
17	EXPERIENCE-ACT	Integer		Customer's time of experience in the activity developed (months)
18	CUSTOMER-TYPE	Character	100	Customer Type (NEW, RENEWAL)
19	CLIENT-INSURANCE	Integer		Dummy indicating if client 1: Has insurance, 0: if not
20	TYPE-INSURANCE	Integer		Credit, life, funerary, against theft or robbery, etc.
21	MPIO-CODE	Integer		DANE code of the municipality where the customer's business is located.
22	CLASSIFICATION	Character	14	DANE code of the municipality where the customer's business is located: City or agglomeration, Intermediate, Not Available, Rural or Rural Disperse.

Source: *Asomicrofinanzas*. Own elaboration.

Table 1.6. Credit-related variables

No	VARIABLE	DATA	LONG	DESCRIPTION
1	CREDIT-CODE	Character	20	Single code to identify the credit
2	CUSTOMER ID	Integer		Single ID to identify the customer, different from the citizenship ID card. (This is not necessarily the internal client's code. It is the code that an anonymous customer would be given and would be followed in time).
3	CLASS-PORTFOLIO	Character	50	Credit Portfolio Class Name (COMMERCIAL, MICROCREDIT)
4	DATE-GRANTED	Date		Date on which the credit was granted.
5	DUE DATE	Date		Date on which the credit expires.
6	AMOUNT-CREDIT	Integer		Value of the credit granted in pesos.
7	NUMBER-INSTALLMENTS	Integer		Number of credit installments
8	TYPE-TERM	Character	2	Credit term type (M: Monthly, A: Annual, B: Bimonthly, D: Daily, S: Semi-annual, T: Quarterly)
9	TERM	Integer		Credit Term Number (Months)
10	TYPE-PROCEDURE	Character	100	Type of procedure (RESTRUCTURING, ROLLOVER, NEW REQUEST OF UNIFICATION, RENEWAL, NEW REQUEST, UNIFICATION, USE OF BALANCE, NEW USE OF BALANCE).
11	ECONOMIC-DESTINATION	Character	100	Economic destination of the credit.
12	TARGET MARKET	Character	50	Description of the objective market for the credit. (RURAL, URB.)
13	MARKET-SUBTYPE	Character	100	Credit Market Subtype Description (COMMERCIAL, SERVICES, PRODUCTS, AGRO-LIVESTOCK)
14	AGR-IND	Character	2	Dummy indicating if the credit is agricultural-livestock (YES = 1 - NO = 0)
15	IND-SOLIDARY DEBTOR	Character	2	Dummy indicating if the credit has a solidary debtor (YES - NO)
16	VALUE-SHARE	Integer		Value of the credit installments.
17	VALUE-GUARANTEE	Integer		Value of the credit guarantee.
18	RATE-ANNUAL EFFECTIVE INTEREST	Decimal		Value of the credit interest rate.
19	FEE-COMMISSION	Decimal		Value of the fee (Value or Rate)
20	DELINQUENCY-RATE	Decimal		Value of the delinquency rate.
21	FNG-TYPE	Character	2	Dummy indicating if the credit has a guarantee from the National Guarantee Fund (N: No - S: Yes+E14)
22	TOTAL-ASSETS	Integer		Total customer's assets.
23	TOTAL-PAS	Integer		Total customer's liabilities.
24	TOTAL-ASSETS	Integer		Total customer's equity
25	TOTAL-GROSS INCOME	Integer		Total customer gross income.
26	TOTAL-EXPENSES	Integer		Total customer's expenses
27	TOTAL-ADDITIONAL INCOME	Integer		Total customer's additional revenue.
28	TOTAL-SALES	Integer		Total Sales
29	COST-SALES	Integer		Total cost of sales.
30	LIQUIDITY-AVAILABILITY	Integer		Available Liquidity (Sales-Expenses)
31	SEQUENCE-IND	Integer		Dummy indicating the number of credits owned by the customer (1: Corresponds to the first credit - 2: to the second credit, etc.)
32	OFFICE-NAME	Character	200	Office to which the credit belongs.
33	REGIONAL	Character	100	Regional branch to which the credit belongs.
34	OFFICE TYPE	Character	100	The office type to which the credit belongs.

Source: *Asomicrofinanzas*. Own elaboration.

Table 1.7. Variables related to credit behavior

No	VARIABLE	DATA	LONG	DESCRIPTION
1	CREDIT-CODE	Character	20	Single code to identify the credit.
2	DAYS-DELINQUENCY	Integer		Number of days that the credit is overdue.
3	STATUS-PORTFOLIO	Character	50	Written-off or in force.
4	BALANCE-CAP	Number	100	Credit Capital Balance.
5	DATE-CONTROL	Date		Credit follow-up date.

Source: *Asomicrofinanzas*. Own elaboration.

Table 1.8. Municipalities or departmental *corregimientos* without microcredit operations

Department	**Municipalities**	**Departmental *corregimientos***
Amazonas	Puerto Nariño	El Encanto, La Chorrera, La Pedrera, La Victoria, Miriti - Paraná, Puerto Alegría, Puerto Arica and Puerto Santander
Arauca	Cravo Norte	
Archipelago of San Andrés and Providencia	Providencia	
Bolívar	San Jacinto del Cauca	
Boyacá	Cubará, La Victoria and Pisba	
Caquetá	Solano	
Cauca	Guapi, López and Santa Rosa	
Chocó	Alto Baudó, Bagadó, Bajo Baudó, Bojayá, El Cantón del San Pablo, El Litoral del San Juan, Juradó, Medio Baudó, Medio San Juan, Nuquí, Río Iro, Río Quito, San José del Palmar and Sipí	
Guainía		Barranco Minas, Cacahual, La Guadalupe, Pana Pana, Puerto Colombia and San Felipe
Guaviare	Miraflores	
Meta	Mapiripán and San Juanito	
Nariño	El Charco, La Tola and Roberto Payán	
Norte de Santander	El Tarra and Pamplonita	
Vaupés	Caruru and Taraira	Pacoa, Papunaua and Yavaraté
Vichada	Cumaribo	

Source: Own elaboration.

Micro-Businesses in Colombia

Microfinance institutions (MFIs) play an essential role in leveraging micro-business owners, who usually suffer from credit constraints due to the lack of guarantees, the low amounts they demand, and the difficulty to verify their financial information. These challenges are addressed with the microcredit technology, which enables the financing of micro-business owners' needs for working and investment capital. Thus, to the use of informal mechanisms where financial conditions are less favorable and have large security risks, is reduced.

To enrich the knowledge of the microcredit industry about its target market, below are the results of the Microbusiness Survey of the National Administrative Department of Statistics (DANE) for the years 2019 and 2020. In this survey, micro-businesses are defined as economic units with a maximum of nine employees that develop a productive activity of goods or services with the aim of obtaining an income.

Currently, there is information available of close to 80,000 micro-businesses identified through the Large Integrated Household Survey (GEIH). This category includes employers and self-employed workers who meet the criteria for being (potential) micro-business owners. The information has national coverage: Twenty-four main cities with their metropolitan areas, municipal headlands, and scattered populated and rural centers.

The survey consists of ten modules and about 307 questions (Table 1.9). First, it includes the identification of the observation unit, economic classification, the reason for its creation, and its location. Secondly, it asks about the employed personnel, the degree of formalization of the productive unit, and the use of information and communication technologies. Finally, there are questions related to costs, expenses, assets, income, and expectations of the productive unit.

Table 1.9. Modules of the micro-business survey

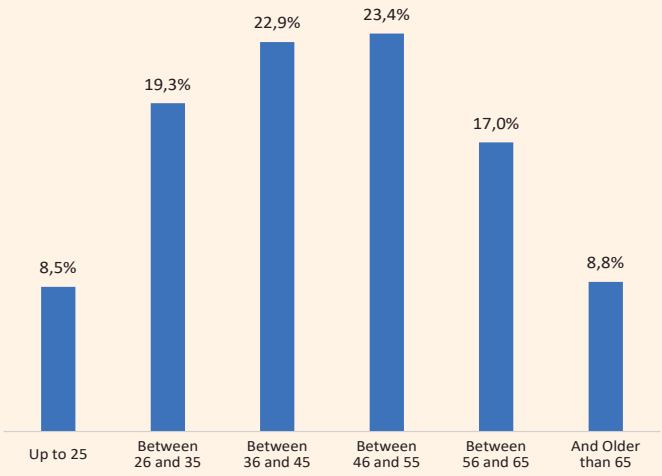
Identification of housing-home-person and micro-business
Economic classification of the micro-business
Reason for the creation of the micro-business
Location
Employees
Characteristics of the micro-business and formalization
Information and communication technologies
Costs, expenses, or assets
Sales or Revenue
Adaptive Expectations

Source: DANE

Of the total 20 million people employed in 2020, according to the GEIH, 4.9 m corresponded to self-employed micro-businesses and 0.5 m to micro-businesses by employers, for a total of 5.4 m.[6] Seventy-one-point four percent of these productive units were in headlands and the remaining 28.6% in populated centers and rural dispersed areas. About half of these owners are between the ages of 36 and 55, with those between 26 and 35 years of age also standing out (Graph 1.25). In terms of their educational level, 45% completed secondary school, 37.4% reported elementary school or lower, 10.2% have a university degree, and 7.4% completed a technical or technological degree.

[6] Due to the limited availability of information, within the total national domain, the departments of Amazonas, Arauca, Casanare, Guainía, Guaviare, Putumayo, Vaupés, and Vichada are not included.

Graph 1.25. Age distribution of micro-business owners in 2020

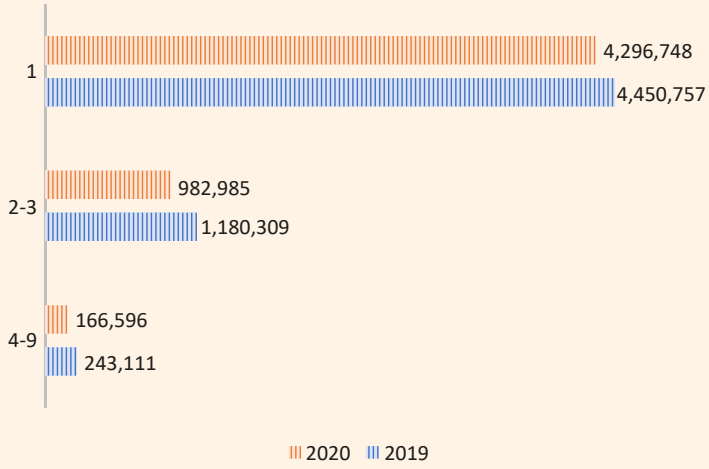


Source: DANE

When disaggregated by sex, 36.3% were women and 63.7% were men. Of the total of 2.0 m of women-owned micro-businesses, 78.6% were located in headlands and 21.4% in populated centers and scattered rural areas. In the case of men, there was a lower participation of the headlands (67.3%) and a higher representativeness of the populated centers and scattered rural areas (32.7%). Sixty-one-point seven percent of the owners of these micro-businesses identified themselves as the household head and 19.2% as the partner. Of the remaining 19.1%, 11.8% identify as offspring of the household head and 6.7% as other relatives.

Comparing the results of 2019 and 2020, there was a 7.3% decrease in the total micro-businesses as a result of the COVID-19 pandemic and the isolation measures enforced to prevent the spread of the virus. This fall was more pronounced in dispersed rural areas and populated centers (9.8% compared to 6.2% in the headlands), and in women owners (10.6% compared to 5.3% for men). As shown in Graph 1.25, micro-businesses that employed between 4 and 9 people recorded the largest annual fall (31.5%), since they fell to 166,596 from 243,111. The decrease of those employing between 2 and 3 people was 16.7%, and for those employing only their owner was 3.5%.

Graph 1.26. Micro-businesses according to the number of employees



Source: DANE

At the end of 2020, most micro-businesses were located in the sectors of commerce, motor vehicle and motorcycle trade and repair (1.5 m), and in the sectors of agriculture, livestock, hunting, forestry, and fishing (1.2 m), which together represent 49% of total micro-businesses (Table 1.10). Likewise, the manufacturing industry, accommodation, and food services, artistic, entertainment, recreation, and other service activities with more than 500,000 active micro-businesses (30% of the total) stand out. With respect to 2019, those with the greatest drops in sales were manufacturing (47.0%) and artistic, entertainment, recreation, and other service activities (34.4%).

The transport and storage sectors, construction and real estate activities, and professionals and administrative services were below 500,000 micro-establishments, which together account for 19% of the total. The least representative sectors are human health and social assistance, education, and mining activities (Table 1.11).

Table 1.10. Distribution of micro-businesses by major economic sectors, in 2020

	# micro-businesses	% participation
Commerce, trade and repair of motor vehicles and motorcycles	1,469,387	27
Agriculture, livestock, hunting, silviculture, and fishing	1,177,051	22
Manufacturing industry[a]	549,374	10
Accommodation and food services	544,821	10
Artistic activities, entertainment, recreation, and other activities	524,678	10

a: Manufacturing industry includes collection, treatment and disposal of waste, and recovery of materials.

Source: DANE

Table 1.11. Distribution of micro-businesses by other economic sectors (2020)

	# micro-businesses	% participation
Transportation and storage	461,987	8.5
Construction	322,023	5.9
Real estate, professional, and administrative services activities	225,053	4.1
Information and communications	45,639	0.8
Mining	44,982	0.8
Education	43,090	0.8
Human health and social assistance activities	37,679	0.7
No information	566	0

Source: DANE

When inquiring about the main reasons for the creation of the businesses, 33.0% identified them as a business opportunity in the market, and another similar percentage (32.3%) stated that they had no other income alternative (Graph 1.27). These two reasons explain the two most common types of micro-businesses: Those with a vocation for growth generated by opportunity, and those created by necessity without much potential for growth and job creation. It is essential that micro-credit institutions differentiate between both types, given the differences between the products demanded and the associated risks.

Graph 1.27. Primary reason for business creation

* "Others" includes managing schedules, pleasure, exercising household activities, displacement, and search for independence.
Source: DANE

As shown in Graph 1.28, more than 2.4 m micro-businesses are 10 years old or over, representing 45.0% of the total. Between 2019 and 2020, businesses between 1 and less than 3 years old and those 10 years old or more recorded the greatest falls, since they went from 1.0 m and 2.6 m to 856,000 and 2.5 m, respectively. These data are key for the industry since one of the elements of micro-credit scoring is the age of micro-businesses and/or the experience of micro-entrepreneurs in the activity.

Graph 1.28. Age of micro-businesses

Source: DANE

Although more than 60% of micro-businesses have existed for more than 5 years, a high degree of informality is observed in these economic units, which is measured through three variables, namely: The possession of the Single Tax Registry (RUT), registration at the Chamber of Commerce, and contributions to health and pension of the General Social Security System. At the end of 2020, 76.5% of micro-businesses did not have their RUT, 92.3% in populated centers and scattered rural areas, and 70.2% in municipal headlands. The level of informality is even greater when considering the register at the Chamber of Commerce, since only 11.4% reported having it. This percentage is lower in populated centers and scattered rural areas (3.0%) compared to municipal headlands (14.8%).

In addition, 88.5% did not contribute to health or pension, and only 7.3% do so to both. In populated centers and scattered rural areas, this percentage rose to 97.0% and in the municipal headlands to 85.1%. One of the reasons for this low level of formalization may be the increase in labor costs, as well as the difficulty in doing these procedures. Although many of these procedures can be done virtually, only 30.6% of micro-businesses stated having access to and using the Internet. In the case of the headlands, the recorded percentage was 38.8%, while in populated centers and scattered rural areas it was 10.1%.

According to the results of the 2019 Financial Inclusion Module, the main form of payment accepted by micro-businesses is cash, which was cited by 98.5% of the respondents. In order of importance, bank transfers and online payments follow, with 7.1%; installment invoices, 3.6%; and checks, 2.2%. On the other hand, 25.1% of micro-businesses saved in the previous year,[7] and their main use of these savings was to cover personal and household expenses (health, education, travel, etc.), as well as those of the business when income is not sufficient (Graph 1.29). When inquiring about the savings, most did so in their homes (73.3%), in a financial institution (20.1%), or through a savings group (2.9%).

Graph 1.29. Uses of money saved

Source: DANE

Regarding access to credit, 81.2% of micro-businesses did not borrow money in the previous year. When comparing the municipal headlands (81.1%) and the populated centers and scattered rural areas (81.3%), no significant differences were observed. When investigating the reasons for not applying for a loan, the majority of respondents indicated that they *did not need it* (41.3%), *they were are afraid of debt* (32.5%), or *that they did not meet requirements such as guarantees, solidary debtors, guarantees, and/or bondholders* (13.4%) (Graph 1.30). These results

[7] Among those who did not save, 96.9% said that they didn't have enough to do so.

are similar to those found by Castro *et al.*, (2020), in which 41% of micro-enterprises reported that they do not demand credit because they do not need them and another 33% for fear or aversion.[8]

Graph 1.30. Reasons not to apply for a credit

Source: DANE

This could suggest that there is a market to explore for the microfinance industry, but that strategies should be differential. The fact that a high percentage of respondents state that "they do not need credit" or "are afraid of debt" accounts for the high level of self-exclusion, which may be limiting growth opportunities of these productive initiatives. Thus, the MFIs must consider comprehensive strategies that do not only offer credit but also support services, and in which the offer of financial services is differential and according to the needs of each segment.

The 18.8% who did apply for a loan went mainly to a regulated financial institution (72.1%) and to "drop-by-drop" lenders (14.2%). The approval rate of these applications was 89.9%, with 90.2% in the municipal headlands and 89.2% in populated centers and scattered rural areas. Regarding the use of these resources, 71.1% stated that they invested in the business,

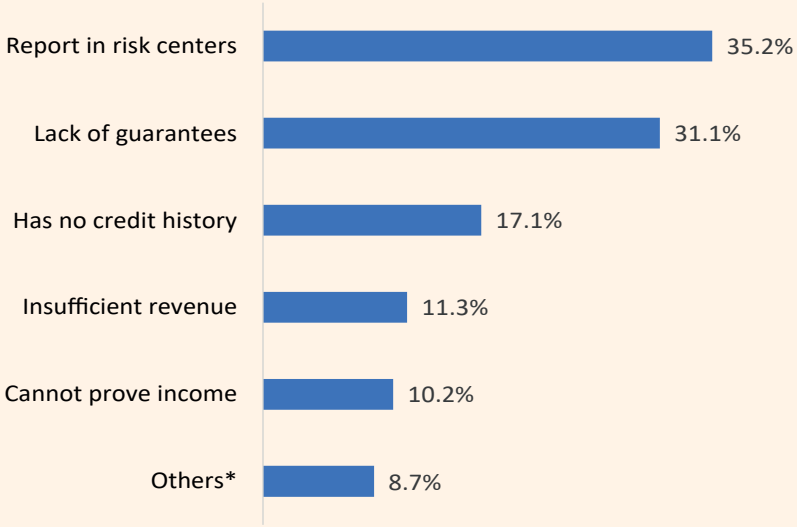
[8] Additionally, the 2018 Financial Inclusion Demand Study of the Office of the Financial Superintendent of Colombia (SFC), Banca de las Oportunidades (BDO) and the Development Bank of Latin America (CAF), highlights that 72% of micro-entrepreneurs reported that they do not have loans because they do not need them.

11.5% used them for personal expenses, and 17.4% for both. Those who invested in the business used it to purchase raw materials and cover operating expenses (86.1%), purchase or lease machinery and equipment (10.7%), or for remodeling to improve productive capacity (9.6%).

The reasons listed by the 10.1% who were denied the loan include negative reports in risk centers, lack of guarantees (guarantor or guarantee), and no credit history (Graph 1.31). When comparing the municipal headlands with populated centers and dispersed rural areas, it is evident that negative reports in risk centers are the most important for the former, and for the latter, lack of guarantees. These results could guide the review of the scoring for microfinance institutions, in order to serve micro-entrepreneurs with an acceptable credit risk profile that continue to be excluded from the formal market, mainly in rural areas of the country.

The data exposed on micro-businesses in Colombia are public and freely accessible to the entire microfinance industry. This information, disaggregated geographically, can provide fundamental input for prospecting exercises and to improve the attention to current and potential customers.

Graph 1.31. Reasons for not obtaining the requested credit



The category "Others*" includes advanced age, guarantor appears as reported, and change of residence.
Source: DANE

Image courtesy of *MiBanco*

CHAPTER 2

Determinants of Microcredit Delinquency

2.1 Introduction

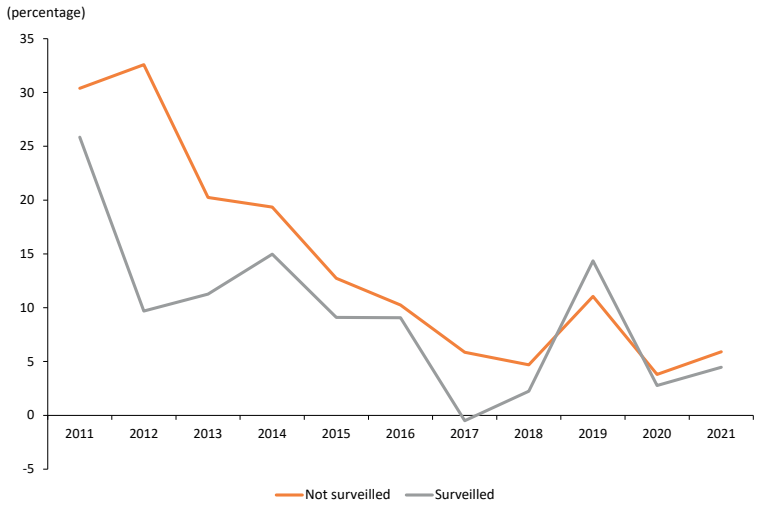
Firstly, this chapter analyzes the dynamics of microcredit disaggregating between the institutions under are surveillance by the Office of the Financial Superintendent of Colombia (SFC) and those that are not, using the information that *Asomicrofinanzas* collects monthly from its affiliates. Secondly, the results of a model of the delinquency determinants of the microcredit portfolio in Colombia are presented, in order to expand the industry's knowledge on the factors of greater risk for their loan portfolios.

As shown in Graph 2.1, the gross microcredit portfolio of institutions surveilled and not surveilled by the SFC has performed similarly since 2011.[1] Both groups exhibited a slowdown until 2017; in 2018, those under surveillance began to show recovery, and those unmonitored did so in 2019. This recovery slowed down during 2020 due to the

[1] *Banco Agrario de Colombia* (BAC) is excluded from the microcredit portfolio because the agricultural loans granted by this bank correspond mainly to loans to small agricultural producers in the terms defined by the National Commission for Agricultural Credit (CNCA). According to current regulations, BAC loans are classified as microcredits due to their value, but not by the methodology used in their granting process.

Covid-19 pandemic, but from 2021 onwards there has been a slight improvement in the dynamics of this type of loans for both supervised and unsupervised institutions.

Graph 2.1. Average annual growth of the institutions' microcredit portfolio



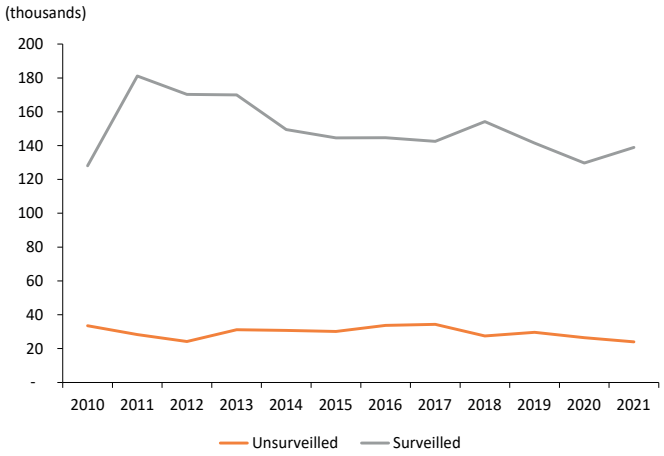
Source: *Asomicrofinanzas*; authors' calculations.

When comparing the average number of debtors between surveilled and unsurveilled institutions, it is evident that the former concentrate a higher percentage during the entire period analyzed (Graph 2.2). From 2013 to 2021, the average number of microcredit debtors for institutions not surveilled by the SFC has remained relatively stable. However, in the other group, this figure has been presenting a decreasing trend since 2011, which accentuated in 2020 during the health emergency due to Covid-19.

Regarding the Non-Performing Loan indicator (NPL), there is an increasing trend from 2011 to 2016 in unsurveilled institutions; regarding surveilled entities, there is an increase until 2013, then a sustained improvement until 2015, and then a rebound until 2017. After these years, the NPL in both types of institutions decreased but deteriorated again with the health crisis. This happened to institutions not surveilled by the SFC in 2020, and to surveilled ones in 2021, reaching the highest level observed since 2010. As of December 2021,

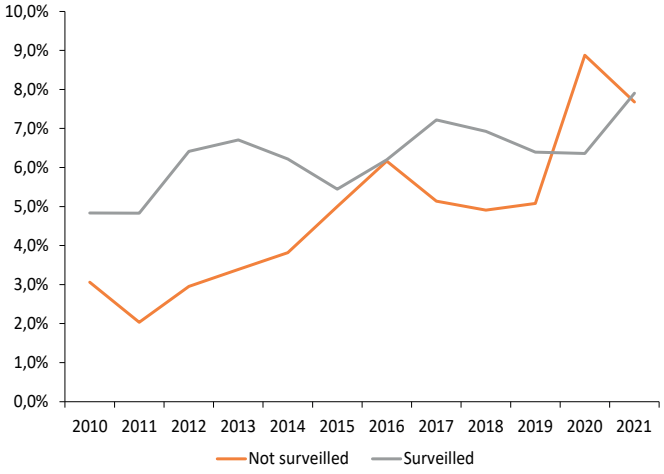
the NPL showed an improvement in unsurveilled institutions, but it is still above the levels recorded before the pandemic (Graph 2.3).

Graph 2.2. Average number of debtors of the microcredit portfolio, by type of institution



Source: *Asomicrofinanzas*; authors' calculations.

Graph 2.3. Non-Performing Loan indicator of the microcredit portfolio



Source: *Asomicrofinanzas*; authors' calculations.

Despite the increase in the NPL during 2020 and 2021, the effects of the health crisis derived from Covid-19 were partially mitigated by the instructions given by the SFC as well as by the agreements reached with clients to ensure their economic recovery as long as they were up to date with their current debts. As mentioned in Chapter 1, these measures were implemented not only by surveilled institutions, but also by the unsurveilled ones.

The main measure taken by the SFC was to allow institutions to grant grace periods to debtors who could not continue to pay their obligations without affecting their credit score.[2] Its implementation had a positive impact on the balance of the current portfolio: in addition to containing its deterioration, it introduced a positive effect because it allowed the reclassification of the portfolio balance of debtors who, as of 29 February 2020, were in arrears between thirty to sixty days as non-delinquent. With the end of these measures and due to the persistence of the affectation of debtors on account of the extension of preventive isolation measures, the SFC generated a second stage of measures to ensure structural solutions to debtors and called them the Debtor Assistance Plan (*Plan de Acompañamiento a Deudores* in Spanish - PAD-).[3] The PAD provided institutions and their borrowers with tools that enabled them to redefine the conditions of their credits according to their new economic realities. This program was in effect for one year starting 01 August 2020.

In order to enrich the analysis on the payment behavior of micro-credit customers, a summary of the recent literature on the subject is presented below, as well as a model estimated by the authors based on the database described in Annex 1 of Chapter 1. The main results of this chapter reveal that women, young people, low-income debtors, those who do not have a permanent partner, those who have more dependents, and those who live in the Caribbean, Pacific, and Orinoquía regions have a higher probability of incurring in delinquency episodes.

This analysis is key since, as Altman and Sabato (2013), have shown in a US market study, small and medium-sized firms differ from

[2] Measures given through the issuance by the SFC of External Circulars 007 and 014 of 2020.

[3] The PAD was implemented with the SFC's expedition of the External Circular 022 of 30 June 2020.

large ones in terms of credit risk. In fact, a barrier for microfinance institutions is the scarce or non-reliable information regarding the financial health of the target population for this type of credit. For this reason, the institutions must come closer to the micro-entrepreneur to try to collect personal information that allows them to infer whether it may be a good or bad debtor. This information includes variables on the socio-economic conditions of the entrepreneur, his/her experience, and the type of activity developed, among others. Cornée (2017) supports this, having proved that for a French cooperative specialized in microcredit, credit scores built from this type of information predict default events better.

Based on the above, microcredit requires to incorporate a microcredit methodology different from that of regular commercial loans, for which it is relevant that the institutions providing this type of loans constantly monitor the determinants of delinquency of their debtors in order to further develop tools for proper credit risk management associated with this portfolio.

2.2 Bibliographic Review (Summary)

In Colombia, research has been done on the determinants of delinquency in the microcredit portfolio. Clavijo (2016) uses information from a Colombian micro-financial institution (MFI) and concludes that the socioeconomic variables of the debtor at the time the credit is granted (e.g., age, gender, number of dependents, socio-economic stratum, and type of housing) are crucial to explain the probability of default in this portfolio.

Estrada and Hernández (2019) complemented this work through a similar empirical exercise based on the credit information as of December 2017 for fifteen MFIs. The authors include other variables related to the level of poverty and rurality of the debtor and some related to the institutions (for example, if they are niche banks or part of the solidarity sector). They found that microcredit customers below the poverty line are less likely to incur in delinquency and that the fact that a microcredit is granted by a niche bank or by an institution belonging to the solidarity sector, versus one granted by a universal bank, results in a lower probability of presenting arrears.

In addition to these two papers, Clavijo *et al.*, (2020) studied the determinants of delinquency specifically for loans placed on micro-entrepreneurs who carry out their activity in rural municipalities and rural scattered areas. They use the same database as Estrada and Hernández (2019), adding categorical variables that indicate whether the credits were granted in the same municipality where the debtor develops his/her productive activities and whether the MFI collects qualitative information from the client (for example, his/her social circle's perception of him/her) and uses strategies during the origination and/or amortization of the loan to prevent the clients from incurring in arrears.

These authors found, among other things: (i) that micro-businesses developed in municipalities with Territorial Approach Development Programs (PDET in Spanish) are more likely to default; (ii) that having an MFI office or a mobile credit advisor in the same municipality where the micro-entrepreneur develops his/her activities reduces the probability of delay in the payment of the installments; and (iii) that the loans approved by institutions that use qualitative information in their processes and that employ mechanisms during the amortization process to prevent their clients from incurring in arrears show a lower probability of default.

2.3 Data Analysis

The database used to estimate the model of delinquency determinants for the microcredit portfolio contains 1,326,357 observations, which include information on the sociodemographic characteristics of debtors with ongoing loans as of June 2020 and details of their payment behavior. The sample includes loans granted between January 2010 and June 2020 from the fifteen institutions participating in this study.

When analyzing the distribution of the sample of credits by geographic region,[4] in June 2020, it may be seen that MFIs in Colombia

[4] The Caribbean region includes the departments of Atlántico, Bolívar, Cesar, Córdoba, La Guajira, Magdalena, Sucre and San Andrés; the Andean region, the departments of Antioquia, Boyacá, Caldas, Cundinamarca, Huila, Norte de Santander, Quindío, Risaralda, Santander and Tolima; the Pacific region, the departments of Chocó, Cauca, Nariño and Valle del Cauca; the Orinoquía region,

focus on financing people, households, and micro-enterprises in the Andean, Caribbean, and Pacific regions. These account for approximately 87% of the loans granted.

On the other hand, Table 2.1 shows the disaggregation by type of municipality; that is, of the total credits, 16% were granted in municipalities classified as rural, and 84% in urban areas.[5] When analyzing the performance of the loans, it can be observed that 24% of the obligations granted in rural areas have had episodes of delinquency.[6] For those in urban areas, this percentage is of 26%. When analyzing delinquency by region, it is observed that the Amazon and Bogotá show the best behavior, in contrast to the Caribbean and Pacific regions.

Table 2.1. Percentage of granted and past due loans, by political region

Region	**Total loans**		**Past due loans**	
	Rural	**Urban**	**Rural**	**Urban**
Amazonía	1%	2%	15%	20%
Andean	7%	37%	22%	23%
Caribbean	5%	22%	25%	31%
Orinoquía	1%	4%	28%	27%
Pacific	3%	14%	29%	29%
Bogotá	0%	6%	0%	18%
Total	**16%**	**84%**	**24%**	**26%**

Source: *Asomicrofinanzas*. Own elaboration.

the departments of Arauca, Casanare, Meta and Vichada; the Amazon region, the departments of Amazonas, Caquetá, Guainía, Guaviare, Putumayo and Vaupés; and finally, due to its importance, the city of Bogotá was left as a separate region.

[5] It was not possible to classify 0.3% of the observations in either of the two categories (rural or urban).

[6] An episode of delinquency occurs when a loan is more than 30 days past due.

Table 2.2 shows the average number of dependents,[7] the debtor's experience in the activity carried out,[8] and the business age[9] of the total sample, the group of loans that has never been delinquent, and the group of past due loans.[10] As can be seen, the average number of people who depend economically on the debtor is between 1 and 2 for the three samples analyzed, while for experience in the activity and business age, the average of delinquent customers is lower than that of debtors who never registered arrears in the payment of their financial obligations, values that are also statistically different.[11]

Table 2.2. Mean difference test

	Total	**No Delinquency**	**Delinquency**	**Test**	**N**
Variable	Media	Media	Media		
Number of dependents	1,13	1,13	1,16	$\text{Prob} > \lvert z \rvert = 0,000$	2,8m
	(-1,16)	(1,15)	(1,21)		
Experience in the activity	5,9	7,07	1,33	$\text{Prob} > \lvert z \rvert = 0,000$	1,7m
	(9)	(9,4)	(4,7)		
Business age	11,9	12,1	10,9	$\text{Prob} > \lvert z \rvert = 0,000$	2,6m
	(8,9)	(9)	(8,7)		

The values in parentheses illustrate the standard deviation.
m=millions.
Source: *Asomicrofinanzas*. Own elaboration.

As for age,[12] the variable was divided into three categories that classify the debtor as young if s/he is between 18 and 30 years of age,

[7] Three-point six percent of the observations did not have values for this variable.

[8] Fifty-nine-point one percent of the observations did not have values for this variable.

[9] Seventeen-point four percent of the observations did not have values for this variable.

[10] Time of experience in the activity refers to the number of years during which the client has been performing its economic activity; business age refers to the number of years of operation of the business for which the microcredit was granted has been operating.

[11] In this section, the statistical difference of means between groups for various (non-categorical) variables used is evaluated with the Unpaired t-Student method, which tests the null hypothesis that the population means related to two independent random samples of an approximately normal distribution are equal (Altman and Sabato , 2013; Armitage and Berry , 1994).

[12] Zero-point zero two percent of the observations did not have values for this variable.

adult if s/he is between 30 and 60 years old, and elderly if s/he is over 60 years old. It is observed that the largest proportion of microcredit debtors are adults (69%), followed by young people (17%) and elderly people (14%). In delinquency, adults have a significantly higher proportion of delinquent loans than the other age ranges (67%), followed by young people (21%) and older adults (12%). These differences prove to be statistically significant (Table 2.3).[13]

Table 2.3. Statistical test for the variable age

Age	**Participation**		**Statistical Test**	**N**
	Total	**In Delinquency**		
Young	17%	21%	Pearson $\chi^2 = 9.300$	498.438
Adults	69%	67%		2.016.669
Older Adults	14%	12%	Prob $> \|z\| = 0,000$	419.686

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

Regarding gender,[14] 54% of the credits analyzed were given to women. As shown in Table 2.4, men had a percentage of delinquency that was 6 percentage points (pp) lower than that that exhibited by women (47%). On the other hand, it may be inferred from Table 2.5 that almost all loans (97%) are granted to individuals of lower strata (1, 2, and 3), and the difference in the incidence of arrears between these categories is statistically significant.

Table 2.4. Statistical test for the variable gender

Gender	**Participation**		**Statistical Test**	**N**
	Total	**In Delinquency**		
Female	54%	53%	Pearson $\chi^2 = 344,13$	1.591.787
Male	45%	47%	Prob $> \|z\| = 0,000$	1.331.602

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

[13] In this section, the statistical difference in delinquency between the categories of the various dummy variables used is evaluated using the *Pearson* test.

[14] Zero-point seventy-six percent of the observations did not have information for this variable.

Table 2.5. Statistical test for the socioeconomic stratum variable

Strata	Participation		Statistical Test	N
	Total	In Delinquency		
1	57%	54%	Pearson $\chi^2 = 2600$	1.668.897
2	31%	33%	Prob $> \|z\| = 0,000$	904.082
3	10%	10%		284.003
4	1%	1%		30.137
5	0,2%	0%		5.182
6	0,1%	0%		2.764

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

On the other hand, 63% of loans were granted to couples, whether married (29%) or in a *de facto* union (34%).[15] It stands out that about 30% of the loans were approved to single individuals. With regard to delinquency, the data reveals that people in a *de facto* marital union have a higher percentage of delinquency (38%), and those separated and widowed have a lower proportion of delinquent loans (1.0%; Table 2.6).

Table 2.6. Statistical test for the marital status variable

Marital Status	Participation		Statistical Test	N
	Total	In Delinquency		
Married	29%	20%	Pearson $\chi^2 = 44000$	844.299
Divorced	3%	4%	Prob $> \|z\| = 0,000$	93.700
Separated	3%	1%		88.140
Single	29%	35%		845.422
De facto union	34%	38%		991.277
Widowed	2%	1%		66.004

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

[15] Zero-point twenty-three percent of the observations did not have information for the marital status variable.

Looking at the clients' education level,[16] it may be seen that MFIs focus their efforts on providing resources to people who have not studied a professional or technical career. In fact, almost half of loans in the sample were given to people with elementary or a lower level of education, and only 11% went to debtors with university or higher education. It is noteworthy that those loans approved to individuals with high school or lower education present the highest percentage of delinquency (Table 2.7).

Table 2.7. Statistical test for the educational level variable

Educational level	**Participation**		**Statistical Test**	**N**
	Total	**In Delinquency**		
Elementary or less	49%	45%	Pearson $\chi^2 = 5900$	1.422.449
High School	39%	44%	Prob $> \|z\| = 0,000$	1.128.859
University or higher	11%	11%		322.581

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

When analyzing the type of housing[17] in which the individuals who were granted the loans of the sample live, it may be seen that 57% live in their own home, 28% in a family-owned home, and 14% in a rented one. Regarding the performance of loans, those granted to individuals with their own homes have the highest percentage of delinquency (48%), followed by those living in a family-owned home (32%; Table 2.8).

[16] Four-point thirty-five percent of the observations did not have information for the education level variable.

[17] Zero-point ninety-three percent of the observations did not have information for the housing type variable.

Table 2.8. Statistical test for the variable housing property

Housing Property	Participation		Statistical Test	N
	Total	In Delinquency		
Rented	14%	19%	Pearson $\chi^2 = 28000$	414.286
Company	0,2%	0%	Prob $> \|z\| = 0,000$	5.282
Family owned	28%	32%		818.620
Own	57%	48%		1.662.873

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

Regarding the economic sector,[18] it is noted that 35% of the credits were granted to people belonging to the trade sector, of whom 37% have more than 30 days of default, followed by the services sector (26%), of which 22% are delinquent; and the agricultural sector (25%) that registered the second highest delinquency (27%; table 2.9). Finally, the industrial sector represents 14% of the loans granted, with a default of the same percentage.

Table 2.9. Statistical test for the economic sector variable

Economic Sector	Participation		Statistical Test	N
	Total	In Delinquency		
Agricultural	25%	27%	Pearson $\chi^2 = 2100$	207.426
Trade	35%	37%	Prob $> \|z\| = 0,000$	289.330
Industrial	14%	14%		113.767
Services	26%	22%		212.953

Non-parametric statistical test of differences in delinquency between categories.
Source: *Asomicrofinanzas*. Own elaboration.

[18] Forty-six-point eight percent of the observations did not have information for the variable economic sector. The agricultural sector includes the following classifications: Agriculture, agribusiness, agriculture, livestock and minor species, transformation and agribusiness, and complementary activities. The services sector considers these categories: general services, professional services, domestic employee, operator, office assistant, financial, consumption, education, non-economic, non-agricultural projects, and transport. Finally, the industrial sector considers the following classifications: Mining, production, primary production, construction, and housing.

Tables 2.10 and 2.11 show that the average loan amount granted by surveilled MFIs is greater than the one granted by unsurveilled MFIs by approximately COP 700,000 and that the interest rate is about 5 pp higher in unsurveilled MFIs. Between groups (with and without delinquency), statistical tests showed differences between the means of these variables for a confidence level of 1.0%. On the one hand, it may be observed that the average amount of the non-delinquent sample is higher for both surveilled and unsurveilled institutions. On the other hand, the interest rate recorded by delinquent loans is lower than that of the non-delinquent sample for both types of institutions.

Table 2.10. Amount of credit and interest rate for surveilled institutions

Variable	**Total**	**Non delinquent**	**Delinquent**	**Test**
	Mean	Mean	Mean	
Credit Amount (COP)	4.815.941	5.057.132	4.143.494	Prob $> \|z\| = 0,000$
	(5.478.101)	(5.746.481)	(4582197)	
Interes rate (%)	38,92	39,26	37,96	Prob $> \|z\| = 0,000$
	(6,61)	(7,09)	(4,92)	

The values in parentheses illustrate the standard deviation.

Source: *Asomicrofinanzas*. Own elaboration.

Table 2.11. Amount of credit and interest rate for unsurveilled institutions

Variable	**Total**	**Non delinquent**	**Delinquent**	**Test**
	Mean	Mean	Mean	
Credit Amount (COP)	4.134.202	4.343.516	3.467.593	$Prob > \|z\| = 0,000$
	(4,579,331)	(4,844,211)	(4582197)	
Interes rate (%)	43,77	44,02	42,98	$Prob > \|z\| = 0,000$
	(6,04)	(6,47)	(4,27)	

The values in parentheses illustrate the standard deviation.

Source: *Asomicrofinanzas*. Own elaboration.

2.4 Econometric Model, Estimation Methodology, and Results

The main econometric model has the following specification:

$$Y_i = X_i^{'}\beta + Z_i^{'}\delta + \epsilon_i \tag{2.1}$$

Where: Y_i: A binary dependent variable that takes the value of 1 if microcredit i has recorded an episode of delinquency (more than 30 days of arrears) during the period analyzed, and 0 otherwise.

$X_i^{'}$: A vector containing all observations of the explanatory variables of each microcredit in the sample, at the time of granting the loan to the debtor.

$Z_i^{'}$: i.Vector containing the information of the control variables of each loan at the time of its origin.

ϵ_i: Regression error term.

Most of the explanatory variables are associated with the debtor. They are gender, age, civil status, education level, type of housing, number of dependents, socioeconomic stratum, a proxy of rurality, and region where the microcredit was granted to the debtor. Finally, the initial credit amount and the annual effective interest rate are included as control variables.

The model is estimated using the *Probit* methodology for four different delinquency levels, which are determined according to the SFC classification for the microcredit portfolio.[19] The first category is overdue portfolio, in which credits with 31 to 60 days of arrears are classified. The second is a portfolio of appreciable risk, which contains all those loans that have incurred into 61 to 90 days of arrears. The third one is the significant risk portfolio, which includes loans with a delinquency between 91 and 120 days. The fourth category is unrecoverable portfolio, which classifies all obligations that exhibit more than 120 days of arrears.

According to the above, the dependent variable takes the value of 1, if:

- The credit once presented a level of delinquency of more than 30 days (first estimation).

[19] Basic Accounting and Financial Circular (External Circular 100 of 1995). Chapter II. Annex 1.

- The credit once presented a level of delinquency of more than 60 days (second estimation).
- The credit once presented a level of delinquency of more than 90 days (third estimation).
- The credit loan once presented a level of delinquency of more than 120 days (fourth estimation).

Tables 2.12 and 2.13 present the results of the estimation for each of the four delinquency levels. In particular, Table 2.13 quantifies the relationship of each of the explanatory variables with the probability that a credit will record any of the four episodes of arrears analyzed. It can be seen that, although the four estimations have low values of the pseudo R^2, all of them present values of the LR Statistic that allow to reject the null hypothesis that the estimated parameters of all the variables are statistically equal to zero as a whole. Additionally, it may be appreciated that the vast majority of the estimated parameters of all explanatory variables are statistically significant to 1.0% confidence in all models. Next, the results of each of the explanatory variables are analyzed.

The estimations allow us to specify that the debtor's gender is a determining variable in the probability of delinquency in the four levels analyzed. In general, it is observed that women are less likely to enter into arrears than men. These results are consistent with Estrada and Hernández (2019), and can be explained because women are more likely to plan their expenses and inform credit institutions when they borrow above their payment possibilities (Banco Mundial , 2013).

On the other hand, age was significant for all levels of delinquency. In particular, the likelihood of default decreases as the debtor's age increases, in each of the specifications. In other words, clients classified as older adults have a lower probability of incurring in default. Nannyonga (2000); Roslan and Karim (2009); and Nawai (2010) point out that older debtors are usually wiser and more responsible than younger ones, so it would be expected that the older the debtor, the lower their likelihood of defaulting. Additionally, in the models, the variable age squared is incorporated, whose positive and significant coefficient indicates that as the age of a person increases, his/her probability of

presenting episodes of delinquency also increases, but at some point, it begins to decrease.

The socio-economic stratum of the debtor indicates that the higher it is, the lower the probability of belonging to the categories of more than 30-, 60-, and 90-days delinquency, which is intuitive, because the debtors of higher strata have more purchasing power and have higher value goods that they can sell in case they do not have enough resources to pay the debt. Despite this result, the experience of recent years has shown that microcredit, when used adequately, can be a key driver for the growth of the lower strata (Werling , 2018).

Regarding the rurality of the debtor, the estimations reveal that the fact of belonging to scattered rural areas, rural[20] areas, or to municipalities classified as intermediate,[21] decreases the probability of incurring into any level of delinquency *vis-a-vis* living in a city. As for marital status, the results of the estimations show that debtors who do not have a permanent partner have a greater probability of recording episodes of delinquency than borrowers who do. This can be derived from the fact that the permanent partner may serve as financial support in case of not having enough resources to pay the debt.

In the case of educational level, although the existing bibliography (Chowdhury , 2009; Fundación BBVA and MicroFinanzas , 2017; Werling , 2018) sustains that higher levels of education allow debtors to understand more complex information, maintain important business records, perform financial analysis, cash flows and, generally speaking, make better business decisions, it is also true that the majority of the population with microcredits is made up of individuals with elementary education at most. Likewise, the fact that the debtor owns his/her home versus living on rent increases the probability of not incurring into episodes of delinquency. This may be related to the fact that although microfinance institutions do not generally require housing as

[20] Rural dispersed: Refers to municipalities and non-municipalized areas (ANM) that have small headlands and low population density (less than 50 inhabitants/km2).

[21] Intermediates: Refers to regionally significant municipalities with access to various goods and services. They are characterized by having between 25,000 and 100,000 inhabitants in the headlands, or, despite having smaller headlands, have high population density (more than 10 inhabitants/km2).

collateral or guarantee, it does have an effect on customers' cash flow which entails a better payment capacity, thus reducing the likelihood of non-compliance. This same result is obtained when analyzing family and business housing.

The results also show that the number of dependents is positively correlated with the probability of delinquency at most levels. The above can be explained due to the fact that the more dependents a debtor has, the greater the financial responsibilities s/he acquires and, therefore, the less available resources s/he has to pay his/her financial obligations.

On the other hand, the loans granted to debtors living in the Caribbean, Pacific, and Orinoquía regions reflect a higher probability of default at most risk levels, compared to the Andean region. On the other hand, loans originated in the Amazon region and Bogotá register a lower probability of default than those approved in the Andean region in two or three of the delinquency categories. Finally, the estimations show that the probability of incurring into any episode of delinquency decreases both for high values of credit and for loans with higher interest rates, which is striking given the inverse relationship between both variables.

Table 2.12. *Probit* estimation of the four models

	(1)	(2)	(3)	(4)
Variables	**Over 30 days**	**Over 60 days**	**Over 90 days**	**Over 120 days**
Female	-0,0721***	-0,0135***	-0,0693***	-0,118***
	(0,00260)	(0,00444)	(0,00460)	(0,00331)
Age	-0,0204***	-0,0128***	-0,0187***	-0,0138***
	(0,000590)	(0,00100)	(0,00103)	(0,000750)
Age2	0,000191***	0,000137***	0,000187***	0,000114***
	(6,37e-06)	(1,08e-05)	(1,11e-05)	(8,19e-06)
Middle stratum	-0,0704***	-0,149***	-0,147***	0,0516***
	(0,00407)	(0,00719)	(0,00764)	(0,00517)
High stratum	-0,102***	-0,257***	-0,178***	0,0332
	(0,0235)	(0,0453)	(0,0450)	(0,0297)
Rural	-0,113***	-0,0635***	-0,131***	-0,0931***
	(0,00387)	(0,00672)	(0,00708)	(0,00493)

Continues

Scattered rural	-0,106***	-0,0372***	-0,0836***	-0,138***
	(0,00526)	(0,00909)	(0,00966)	(0,00690)
Intermediate	-0,0885***	-0,0448***	-0,0799***	-0,0905***
	(0,00320)	(0,00547)	(0,00563)	(0,00407)
Single	0,0809***	0,0111**	0,0402***	0,106***
	(0,00272)	(0,00466)	(0,00485)	(0,00347)
High school	0,0234***	0,125***	0,153***	-0,0649***
	(0,00282)	(0,00485)	(0,00508)	(0,00362)
University or Higher	0,0519***	0,173***	0,202***	-0,0739***
	(0,00451)	(0,00746)	(0,00769)	(0,00583)
Company housing	-1,020***	-0,999***	-0,863***	-0,822***
	(0,0369)	(0,119)	(0,103)	(0,0467)
Family housing	-0,187***	-0,150***	-0,150***	-0,0909***
	(0,00383)	(0,00640)	(0,00650)	(0,00469)
Own housing	-0,309***	-0,166***	-0,223***	-0,317***
	(0,00362)	(0,00601)	(0,00625)	(0,00457)
# of dependents	0,0378***	-0,00619***	0,00822***	0,0701***
	(0,00116)	(0,00207)	(0,00212)	(0,00143)
Caribbean	0,269***	0,246***	0,377***	0,121***
	(0,00319)	(0,00559)	(0,00577)	(0,00396)
Pacific	0,164***	0,301***	0,355***	-0,172***
	(0,00356)	(0,00581)	(0,00611)	(0,00485)
Orinoquía	0,147***	0,225***	0,251***	-0,0477***
	(0,00601)	(0,00979)	(0,0105)	(0,00810)
Amazonía	-0,100***	0,0890***	0,188***	-0,276***
	(0,00819)	(0,0141)	(0,0144)	(0,0114)
Bogotá	-0,183***	0,0202*	-0,130***	-0,375***
	(0,00613)	(0,0105)	(0,0125)	(0,00889)
Interest rate	-0,0368***	-0,0449***	-0,0447***	-0,00509***
	(0,000214)	(0,000373)	(0,000391)	(0,000275)
Log (Credit Amount)	-0,245***	-0,150***	-0,217***	-0,235***
	(0,00175)	(0,00293)	(0,00308)	(0,00226)
Constant	5,115***	2,484***	3,565***	2,991***
	(0,0329)	(0,0555)	(0,0578)	(0,0417)
Pseudo R^2	0,0491	0,0542	0,0694	0,0485
Statistic LR $\chi^2(26)$	68.102,26	21.958,21	26.252,45	37.169,75
Prob $> \chi^2$	0,0000	0,0000	0,0000	0,0000
Number of observations	1.214.064	1.214.064	1.214.064	1.214.064

Standard errors in parentheses. *** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$

Source: *Asomicrofinanzas*. Own elaboration.

Table 2.13. Marginal effects of the explanatory variables on the probability of delinquency episodes analyzed

Variables	(1) Over 30 days	(2) Over 60 days	(3) Over 90 days	(4) Over 120 days
Female	-0,0227***	-0,000974***	-0,00439***	-0,0184***
	(0,000818)	(0,000321)	(0,000291)	(0,000517)
Age	-0,00643***	-0,000926***	-0,00119***	-0,00216***
	(0,000186)	(7,25e-05)	(6,51e-05)	(0,000117)
Age2	6,02e-05***	9,95e-06***	1,18e-05***	1,78e-05***
	(2,01e-06)	(7,78e-07)	(7,05e-07)	(1,28e-06)
Middle stratum	-0,0222***	-0,0108***	-0,00930***	0,00806***
	(0,00128)	(0,000520)	(0,000484)	(0,000809)
High stratum	-0,0320***	-0,0186***	-0,0113***	0,00519
	(0,00740)	(0,00327)	(0,00285)	(0,00464)
Rural	-0,0355***	-0,00460***	-0,00831***	-0,0146***
	(0,00122)	(0,000486)	(0,000448)	(0,000771)
Scattered rural	-0,0334***	-0,00269***	-0,00529***	-0,0216***
	(0,00166)	(0,000658)	(0,000612)	(0,00108)
Intermediate	-0,0279***	-0,00324***	-0,00506***	-0,0141***
	(0,00101)	(0,000395)	(0,000357)	(0,000636)
Single	0,0255***	0,000806**	0,00255***	0,0166***
	(0,000857)	(0,000337)	(0,000307)	(0,000542)
High school	0,00738***	0,00906***	0,00970***	-0,0101***
	(0,000888)	(0,000350)	(0,000321)	(0,000566)
University or Higher	0,0163***	0,0125***	0,0128***	-0,0116***
	(0,00142)	(0,000539)	(0,000486)	(0,000911)
Company housing	-0,322***	-0,0723***	-0,0547***	-0,129***
	(0,0116)	(0,00859)	(0,00651)	(0,00729)
Family housing	-0,0589***	-0,0109***	-0,00951***	-0,0142***
	(0,00121)	(0,000462)	(0,000412)	(0,000732)
Own housing	-0,0975***	-0,0120***	-0,0141***	-0,0495***
	(0,00114)	(0,000434)	(0,000395)	(0,000711)
# of dependents	0,0119***	-0,000448***	0,000521***	0,0110***
	(0,000365)	(0,000150)	(0,000134)	(0,000223)
Caribbean	0,0868***	0,0176***	0,0250***	0,0213***
	(0,00105)	(0,000422)	(0,000416)	(0,000710)
Pacific	0,0512***	0,0227***	0,0230***	-0,0249***
	(0,00114)	(0,000485)	(0,000448)	(0,000666)

Continues

Orinoquía	0,0456***	0,0158***	0,0146***	-0,00752***
	(0,00194)	(0,000802)	(0,000734)	(0,00124)
Amazonía	-0,0283***	0,00545***	0,0103***	-0,0371***
	(0,00223)	(0,000930)	(0,000917)	(0,00127)
Bogotá	-0,0498***	0,00116*	-0,00509***	-0,0471***
	(0,00157)	(0,000608)	(0,000441)	(0,000880)
Interes rate	-0,0116***	-0,00325***	-0,00284***	-0,000796***
	(6,71e-05)	(2,52e-05)	(2,33e-05)	(4,29e-05)
Log (Credit Amount)	-0,0771***	-0,0109***	-0,0137***	-0,0367***
	(0,000548)	(0,000209)	(0,000191)	(0,000349)
Number of observations	1.214.064	1.214.064	1.214.064	1.214.064

Standard errors in parentheses. *** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$
Source: *Asomicrofinanzas*. Own elaboration.

Finally, in order to check the performance of the model, ROC[22] curves were built for each of the specifications. It may be concluded from the curves that the explanatory variables have a good ability to predict the probability that the individuals in the sample incur into delinquency. This statement is derived from the fact that the area below the curves is greater than 0.65 for all specifications[23] (Graph 2.4).

2.5 Conclusions

The *Probit* methodology used in this section allows us to conclude that the socioeconomic variables of the debtor at the time the loan is granted, such as age, gender, number of dependents, stratum, rurality, marital status, and type of housing are statistically relevant to explain the probability of default.

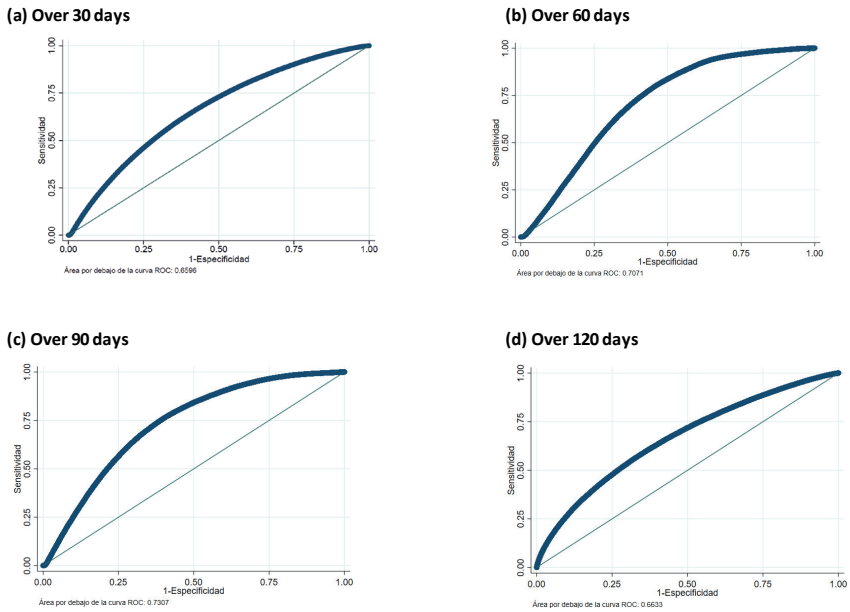
In particular, we found that the greater the number of dependents at the time of originating the loan, the greater the probability that

[22] The ROC curve is a statistical tool used in the analysis of the discriminant capacity of a dichotomous diagnostic test. That is, a test based on a decision variable, whose objective is to classify the individuals from a given population into two groups: One that presents an event of interest and another that does not.

[23] The area under the ROC curve (AUC) can be interpreted as the probability that, for a couple of individuals, one in arrears and the other not, the test classifies them correctly.

the debtor falls behind in the payment of his/her obligations. This effect is also observed for male debtors, single, or those who carry out their activities in municipalities considered as urban. As for age, both models state that younger debtors are more likely to fall behind in paying their obligations than adults. In contrast, high-strata or home owning borrowers are less likely to incur into episodes of delinquency.

Graph 2.4. ROC curves for each of the specifications



Source: *Asomicrofinanzas*; authors' calculations.

Finally, this study also found statistical evidence that the probability of default differs depending on the region in which the credit is granted. The results of the estimations show that loans approved in the Caribbean, Pacific, and Orinoquía regions show greater probability of default than those originating in the Andean region.

Alternative Scoring Methods

Chapter 2 of this book concluded that the probability of non-compliance or default for microcredits is explained by the characteristics of the clients (sex, age, socioeconomic stratum, and educational level) and their geographical location (rural/urban and regions). In addition, recent literature has highlighted that customers' cognitive characteristics, personality traits, and social media behavior influence their payment behavior. This box presents some studies that estimate the effect of these variables, as well as some alternative scoring models where they are included.

Default Probability Models

First, the work of Giannatale *et al.*, (2015) stands out. They estimated a binomial model using information from a Mexican microfinance company where the delinquency status was explained in terms of variables such as the cognitive abilities of the clients, their aversion to risk, degree of persistence and commitment to the objectives (Grit), their intertemporal preference, and level of schooling. This information was collected through a survey of 2,475 customers, from which the variables described were calculated (Table 2.14).

Among the results, the most persevering and committed to their goals have a lower probability of default, and those who value the present more want to end their debts on time, so they tend to delay less. Additionally, it stands out that the amount of indebtedness of the customers is lower when their preference to receive payments in the future is higher and their schooling levels are lower.

Giannatale *et al.*, (2020), on the other hand, estimate the relationship between the probability of an individual paying a microcredit on time (dependent variable) and the following explanatory variables: Sociodemographic characteristics, persistence and commitment (Grit), refinancing incentives, cognitive skills, and financial education. The data used for this research correspond to clients of the same financial institution referred to by Giannatale *et al.*, (2015). Table 2.15 describes the socio-demographic and financial education variables. The same definitions from Table 2.14 were used for the other two variables.

Using a weighted orderly logistic model,[24] the authors found that people over 35 years of age with higher Grit levels and preference for the present are more likely to show no delays in loan payments. According to the authors, this is explained because customers with greater preference for the present have more incentives to pay their debts quickly. Contrary to expectations, the results suggest that cognitive characteristics are inversely related to the timely payment of microcredits, and that refinancing incentives do not play a key role.

Finally, Roa (2022) underscores that the reviewed studies highlight the key role of consciousness and its sub-facets, especially the propensity to plan and self-control, in making desirable economic and financial decisions. It also points out that further research should be carried out on the impact of personality traits on the acquisition of products and payment of debts.

Alternative Scoring Methods

Considering the importance of non-traditional variables within the probability of customer default, alternative scoring methods employing psychometric tests, behavioral questions, and looking at the performance

[24] This model is suitable for ordinal dependent variables such as the one used for this study (high or low delinquency), in which the distance between adjacent categories of explanatory variables is unknown.

of users in social networks have begun to be developed. In this regard, Arráiz *et al.*, (2015) studied the effectiveness of the use of psychometric tests to detect credit risk and increase access to credit for small business owners in Perú. The tool analyzed was developed by the Business Finance Laboratory (EFL), where measurements of the clients' personalities are considered (Costa and McCrae , 1992) five-factor model, an assessment of their intelligence (a component of the Wechsler Adult Intelligence Scale), and an assessment of their integrity (adapted from Bernardin and Cooke , 1993).

To measure the personality of the clients, the following dimensions were assessed: Neuroticism (emotional stability), extroversion, awareness, openness to experience and pleasantness. Regarding intelligence, measurements included the individual's capacity to adapt to the world and face challenges efficiently. Finally, the integrality variable was built based on indirect questions about the honesty and integrity of people. The results conclude that psychometric testing can reduce credit portfolio risk when used as a secondary screening mechanism for entrepreneurs with a credit history. For unbanked entrepreneurs, the use of the tool can increase access to credit without increasing portfolio risk.

Simumba *et al.*, (2018) propose a scoring model for small unbanked farmers in Cambodia based on the characteristics of the context and socio-demographic characteristics of the target group. This model was structured to facilitate the credit process of one institution that operated through a virtual platform and a mobile application.

To develop the model, the risks that may affect the payment behavior of debtors were identified based on a workshop conducted with 11 employees of an agribusiness operating in the areas of interest. The 79 risks identified were classified into the following categories: Unexpected personal problems, lack of experience in the agricultural sector or capital required for the operation, climatic or marketing risks, data fraud, and the level of trust between farmers and users of the credit platform, among others.

From the above, three indicators were developed for the financial scoring model. The first one denotes the risk of data fraud; the second one, the interaction (as an indicator of trust) between farmers and users of the credit platform; and the third one, the income-generating capacity of farmers. Results prove that these three indicators—particularly the first two—are suitable to make the decision to grant a credit or not.

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On the other hand, Pérez (2019) estimated the probability of default for the clients of a Colombian fintech that grants low-amount loans, using the digital footprint of the clients and the conditions of the loan as explanatory variables. Using a logistic regression method, the author finds that the predictive power of the proposed model is similar to the one obtained based on the data of the Credit Bureau. In the case of clients without credit history, the results exhibit a greater predictive power than that calculated with the traditional financial institution's scoring model.

Regarding the digital footprint of users on the Fintech platform, Pérez (2019) suggests that the probability of default varies according to the time spent by people to fill out the credit form and the time at which they do it, as well as the operating system used. Likewise, she highlights that there is a significant difference between the default of people who include their surname in their email and/or fill their first and last name with initial capital letter at the beginning of each word vis-a-vis those who use lowercase or uppercase exclusively.

Finally, López (2022) highlights the role of artificial intelligence in granting microcredits to the most vulnerable populations through two case studies with the Fintechs Tala and Branch. Tala operates in Kenya, Mexico, the Philippines, and India and provides loans of up to USD $500 through a mobile app. The author points out that credit scoring includes information related to the type and operating system of the cell phones used at the time of the application, their interaction with the application (the time spent on each page, if they really read the terms and conditions, mistakes when writing biographical information or which other applications do they have on their phones) as well as the payment history of their cell phone bills (if applicable).

Branch offers loans starting at USD $50 in Mumbai, Nairobi, Nigeria, and Tanzania through a mobile app that users must install on their cell phones. In this case, the decision to grant credit is made using call logs, SMS, social media contact lists, photos, videos, and other digital content.

This information can be a fundamental input to improve the risk management models for the microfinance industry, allowing for greater financial inclusion of the population without credit history and serving vulnerable segments with growth potential. All this process must be directed in accordance with the rules of protection for personal data and the rights of the financial consumer.

Table 2.14. Description of explanatory variables in Giannatale *et al.*, (2015)

Explanatory variables	**Description**
Cognitive abilities	Are measured based on the question proposed by Frederick (2005):
	A bat and a baseball have a total cost of $110 pesos. The bat costs $100 pesos more than the baseball. How much does the baseball cost?
Risk aversion	To measure this variable, three literature standard questions were used:
	1) Suppose you earned $1,000 pesos from participation in a batch. You can invest some of that money and earn three times the amount you decide to invest if when tossing a coin you get a sun or lose the amount invested if you get the eagle. What amount of the $1,000 pesos would you invest? **2)** A bat and a baseball cost $110 pesos in total. The bat costs $100 pesos more than the ball. How much does the ball cost? **3)** If you got $1,000 from participating in a batch and had to choose between two payment alternatives: Which of the following would you choose?

Continues

GDegree of Persistence and Commitment to Objectives (Grit)	This variable is constructed based on two dimensions. For each case, the customer must evaluate whether the statement describes him/her as: 5, very good; 4, good; 3, more or less good; 2, not so good; 1, not good.
hline	**Passion for long-term goals** **1)** New projects or ideas distract me from projects or ideas I had before. **2)** I was focused on an idea or project for a short time, but then I lost interest. **3)** I often set myself a goal, but then I try to fulfill a different goal. **4)** I find it difficult to keep my attention on projects that last beyond a few months to finish. **Perseverance in the effort 2.4 7** **1)** Obstacles do not discourage me. **2)** I am a hard worker. **3)** I am a disciplined worker.
Intertemporal preference	It is measured based on two hypothetical questions: **1)** If you got $1,000 from participating in a batch and had to choose between two payment alternatives, which of the following would you choose? Option 1: That you'd be given $1,000 pesos in a month. Option 2: That you'd be given $1,100 pesos in two months. **2)** If you obtained $1,000 pesos from participating in a batch and had to choose between two payment alternatives, which of the following would you choose? **Option 1**: To be given $1,000 pesos in a year and a month (i.e., thirteen months). **Option 2**: To be given $1,100 pesos in one year and two months (i.e., fourteen months).
Level of schooling	is measured with the following question: What is the last school grade you took? (For example: sixth grade or seventh grade)

Table 2.15. Description of explanatory variables in Giannatale *et al.*, (2020)

Explanatory variables	**Description**
Sociodemographic Characteristics	To measure this variable, the following questions were used:
	1) What is the last school grade you took? (For example: Sixth grade or seventh grade). **2)** Which of the following applies to your civil status? Single, de facto union, Married, Divorced, and Widowed. **3)** Which of the following groups of people depend on you? Underage Yes How many? () None () Older adults Yes How many? () None ()
Financial Education	To measure this variable, two questions were used: **1)** Imagine that you deposit $1,000 pesos into a savings account at the beginning of the year with a guaranteed interest of 2.0% per year and the account has no maintenance costs. Also, suppose that you do not withdraw money from that account. How much money would you have in the account after one year, including interest payments? **2)** When prices fall, I can buy fewer goods and services with the same income. True or False?

Image courtesy of *Bancamía*

CHAPTER 3

Poverty and Vulnerability of Microcredit Customers

This chapter presents a summary of recent literature on microcredit impact measurements, as well as the results of a descriptive analysis on the incidence of poverty and vulnerability among microcredit clients in Colombia. A theoretical and empirical model of the impact of microcredit on overcoming poverty in Colombian municipalities is also presented. Although the results of both exercises underscore the positive impact of microcredit on the population at the base of the pyramid, its scope is limited and would be enhanced by public and private sector actions for the benefit of this population.

3.1 Literature Review

The literature on the impact of microcredit can be divided into two main branches: on the one hand, the microeconomic one, which measures changes at the level of beneficiaries, and, on the other hand, a more recent one focused on the macroeconomic effects of this type of loan. Within the first group, the methodologies used correspond mainly to randomized controlled trials, time difference estimators, and differences in differences models. For the second group, it is common to find panel or general equilibrium models based on macroeconomic and/or financial variables.

Within the microeconomic literature, studies such as those by Lensink and Pham (2012); Banerjee *et al.*, (2015a); Dahal and Fiala (2019); and, García and Lensink (2019), have focused on assessing the impact of microcredit on micro-entrepreneurs' income and earnings, consumption levels, and quality of life.

According to the estimations made by Lensink and Pham (2012), microcredit has a positive impact on the profits of Vietnamese rural entrepreneurs, which is explained by an increase in the productivity of the labor force and because it allowed households to assume greater risks. Similarly, Banerjee *et al.*, (2015a), find that microcredit has a positive impact on assets and earnings of Indian micro-entrepreneurs, but not on their consumption levels. The authors also highlight that microcredits improve household consumption decisions, allowing them to finance purchases of durable goods for their businesses or homes, sacrificing consumption of tempting or leisure goods.

On the other hand, Banerjee *et al.*, (2015b) conclude that, according to six microcredit impact assessments made in Bosnia and Herzegovina, Ethiopia, India, Mexico, Mongolia, and Morocco, this type of loan has a positive link to business investments, micro-entrepreneurs' employment and their access to other financial products and services. Similarly, they highlight that microcredit has expanded the scope of choice of beneficiaries, which has resulted in greater freedom and possibly also well-being. Finally, they suggest that the impact is modest or zero on other variables such as health, education, consumption, and female empowerment.

Analyzing eight controlled trials on the impact of microcredit on clients' well-being, Dahal and Fiala (2019) point out that the effects are modest or zero on client well-being, but significant in terms of corporate income and profits. Quoting Field *et al.*, (2016), the authors suggest that in order to improve the impact of microcredit on customers, it is necessary to ease its conditions, encourage greater business investment, and use microfinance to build social capital, as well as to expand into the rural sector, where there are greater restrictions on access to formal financing.

Also, García and Lensink (2019) present a summary of 18 evaluations made to microcredit programs offering non-financial services such as the strengthening of social and soft skills, entrepreneurial skills,

and technical assistance. Overall, the authors conclude that most non-financial services increase customer awareness in the aforementioned dimensions, but do not always induce behavioral changes.

Among the articles analyzed are those by Gine and Mansuri (2014); Karlan and Valdivia (2011); and, Sayinzoga *et al.*, (2016), who not only find greater business knowledge in the clients of financial institutions, but also positive results in terms of their income and profits. Regarding health variables, studies such as Karlan *et al.*, (2017) found positive effects of health training on clients' knowledge on malaria, HIV, and AIDS, but no improvements in their behaviors. Finally, Pane (2021); and, Faraizi *et al.*, (2013), analyze the impacts of microcredit through qualitative methodologies. Faraizi *et al.*, (2013) found that microcredit has a positive effect on the economic life of female beneficiaries, but it does not empower them or promote their freedom. Pane (2021), on the other hand, recognizes the importance of microcredit in women's economic independence and greater freedom to make decisions. However, it emphasizes that the context, understood as the set of pre-existing social and cultural norms, is fundamental to ensure that access to greater economic resources induces greater empowerment. Regarding the impact of microcredit from the macroeconomic point of view, the literature has focused on studying its effect on variables such as well-being, economic growth, inequality, and poverty. Within this field are the works by Ahmed and Kitenge (2022); Donou-Adonsou and Sylwester (2015); and, Gomes and Freitas (2019).

Ahmed and Kitenge (2022) found a positive impact of microcredit on the well-being of the population by analyzing a sample of 108 countries between 2005-2015. In this study, microcredit is measured by the average loan per debtor and the percentage of female borrowers, and well-being is quantified by growth in gross national per capita income and household consumption.

Comparing the effects of microcredit with those of Official Development Assistance (ODA), Lacalle-Calderón *et al.*, (2015) point out that the former has a positive and significant effect on economic growth through private investment, while the latter does not. For the estimates, the authors used an unbalanced panel of 67 countries for the period from 2001 to 2011.

On the other hand, Raihan *et al.*, (2017) found a positive impact of microfinance on the GDP of Bangladesh due to its direct impact on the production of goods and services by the beneficiary sectors and the indirect effect on capital stock, its relative price, and its impact on productivity.

In turn, Lopatta and Tchikov (2015) emphasize that the performance of the microfinance industry contributes directly to economic growth through an increase in the purchasing power of customers and indirectly through an increase in investment and the global participation rate. Similarly, Donou-Adonsou and Sylwester (2015) found a positive impact of microcredit on economic growth, human capital, and total factor productivity for a sample of 71 developing countries.

On the other hand, Imai *et al.*, (2012) found that countries with a higher per capita microcredit portfolio tend to have lower poverty rates. These results were verified using two models: A cross-sectional model with data from 48 countries for 2007, and a panel model for 61 countries in 2003 and 2007. The authors point out that this relationship is maintained when the poverty rate is replaced by the poverty gap and the poverty gap squared, suggesting that microfinance not only reduces the incidence of poverty but also its depth and severity.

In the same vein, Agbola *et al.*, (2017) found a positive impact of microfinance on poverty reduction and well-being in the Philippines. Gomes and Freitas (2019) also noted that such loans reduce poverty indicators, based on data from 11 developing countries in Southeast Asia. Finally, the results of Hermes (2014) indicate that the number of active microcredit borrowers and the value of loans are negatively correlated with income inequality in the country.

Despite the scholarly efforts to understand the impact of microcredit, especially at the microeconomic level, significant challenges are evident in its interpretation given the difficulty of generalizing results. As illustrated, many of the works are based on randomized controlled trials in particular settings, whose sample scope is limited to draw general conclusions. Secondly, the academic critique of traditionally used methods such as propensity score matching and first-generation differences in differences[1] is highlighted, emphasizing the need to continue researching the subject.

[1]For more detail, see (Roth *et al.* , 2022)

3.2 Poverty and Vulnerability of Microcredit Clients

In this subsection, we present a descriptive analysis of the incidence of poverty and vulnerability among microcredit clients and its variation among those with more than one loan of this type. As long as there is information available on loans rejected and the reasons for this decision, it will be possible to estimate robust impact models that contribute to understand the impact of this type of loan. Additionally, all financial institutions are required to update the financial information of clients at the time of granting a new loan, as it remained constant in some cases.

Poverty is a multidimensional phenomenon that manifests itself not only in the lack of income and assets, but also in the lack of access to public goods and in limitations to choose a desired life. In this sense, indicators of monetary and multidimensional poverty are estimated globally, with the former being the most frequent given the availability of information.

Monetary poverty is traditionally measured by a basic basket of food and non-food goods defined as the poverty line. A household or person who cannot afford it with its/his/her per capita income is defined as poor. On the other hand, multidimensional poverty is based on five dimensions, namely educational conditions, the situation of children and youth, work, health, and the conditions of housing and public utilities.

This chapter estimates monetary poverty among microcredit clients using the threshold defined by DANE and the per capita income of microcredit clients (Table 3.1). For the calculation, the observations that did not report information on dependents and income were excluded, as well as those with income equal to zero. Since there is no other information available on other household members' income, poverty incidence results may be overestimated.

As shown in Graphs 3.1a and 3.1b, 65% of microcredit operations were allocated to poor clients, who accounted for 49% of the total disbursement. When vulnerable clients are identified, i.e., those with per capita income twice above the poverty line, percentages of 49% and 72% are observed, respectively. Within the period analyzed, 2018 recorded the highest levels of both poor (75%) and vulnerable (90%)

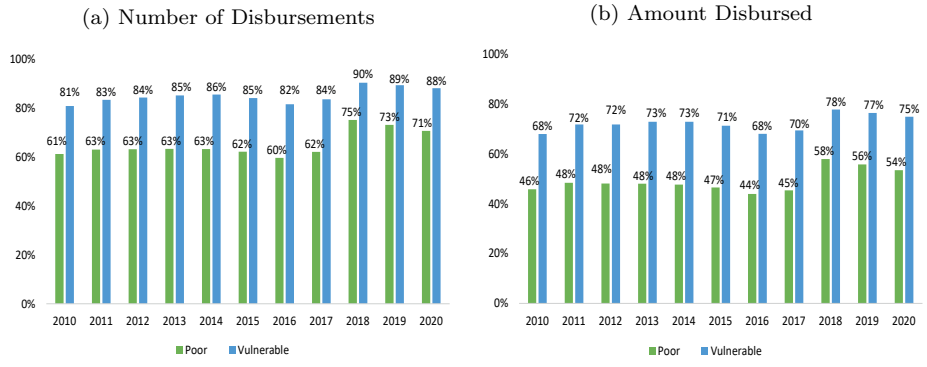
customers. This highlights that the microfinance industry remains focused on the people at the base of the pyramid, who normally have restrictions to access traditional banking.

Table 3.1. Poverty thresholds

	Monetary Poverty	**Vulnerability**
2010	$187.063	$374.126
2011	$194.696	$389.392
2012	$202.083	$404.166
2013	$206.091	$412.182
2014	$211.807	$423.614
2015	$223.638	$447.276
2016	$241.673	$483.346
2017	$250.620	$501.240
2018	$316.815	$633.630
2019	$327.674	$655.348
2020	$331.688	$663.376

Source: DANE. Own elaboration.

Graph 3.1. Percentage of disbursements by customer's financial situation

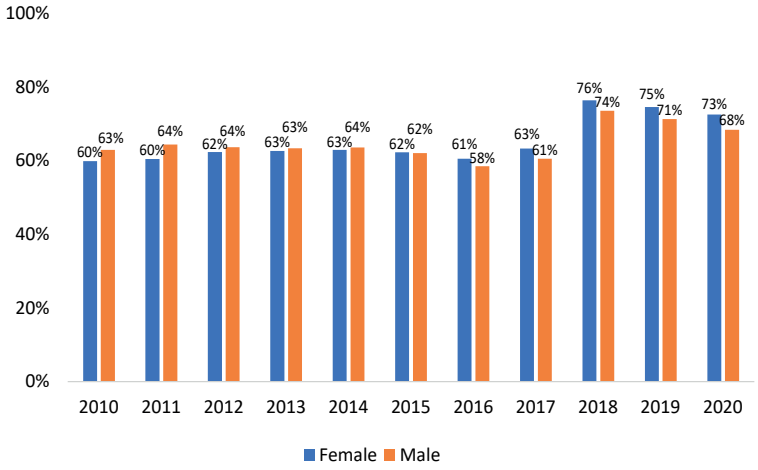


Source: *Asomicrofinanzas*; authors' calculations.

Of the total loans granted to women, around 65% were concentrated on those classified as poor. Within the period analyzed, the maximum

value was recorded in 2018 (76%) and the minimum in 2010 and 2011 (60%). Similarly, 65% of the operations recorded by men were destined to those classified as poor, with a maximum level of 74% in 2018 and a minimum of 58% in 2016 (Graph 3.2).

Graph 3.2. Operations to poor clients disaggregated by sex



Source: *Asomicrofinanzas*; authors' calculations.

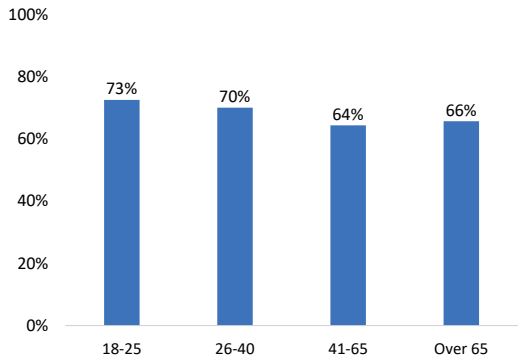
When disaggregated by age group for the period 2010-2020, it stands out that the majority of operations addressed to people aged between 18 and 25 correspond to poor customers (Graph 3.3). In the case of customers of ages 26 to 40, the percentage of poor people stands at 70%, while for those over 65 it stands at 64%. Finally, of the total number of customers between 41 and 65 years old, which represent 49% of the total operations, 64% were classified as poor.

Analyzing the distribution of disbursements by clients' civil status, no significant differences between the incidence of poverty for the period from 2010 to 2020 stand out. Among clients who live in a de facto union or are married, the percentage of poor clients amounted to 70.2% and 64.6%, respectively. In the case of single persons, the incidence of poverty stood at 66.4%.

As the level of education of clients increases, the incidence of poverty is lower. Among clients with elementary education, the percentage of poor people between 2010 and 2020 was 70%, while for those with

secondary school it was 64%, and for those with a higher level it was 60%. Contrary to expectations, the poverty rate is higher in the operations of clients with their own housing (68%) and family housing (68%), compared to those living on rent (62%).

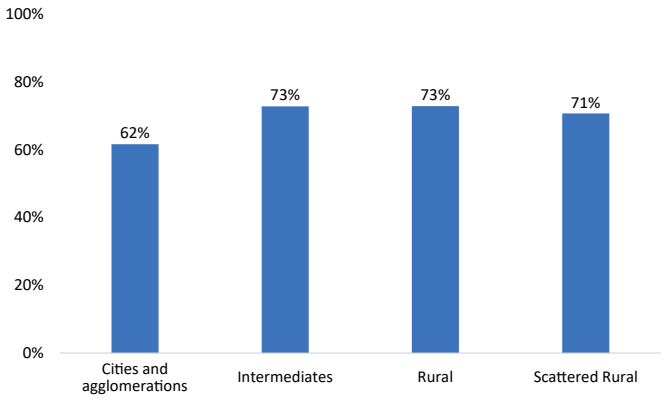
Graph 3.3. Operations to poor clients disaggregated by age group



Source: *Asomicrofinanzas*; authors' calculations.

As shown in Graph 3.4, the representativeness of the poor within the operations of intermediate and rural municipalities stood at 73%. This percentage was 71% for scattered rural municipalities and 62% for cities and agglomerations. On the other hand, of the total operations in PDET regions, 70% went to people classified as poor.

Graph 3.4. Operations to poor clients by type of municipality

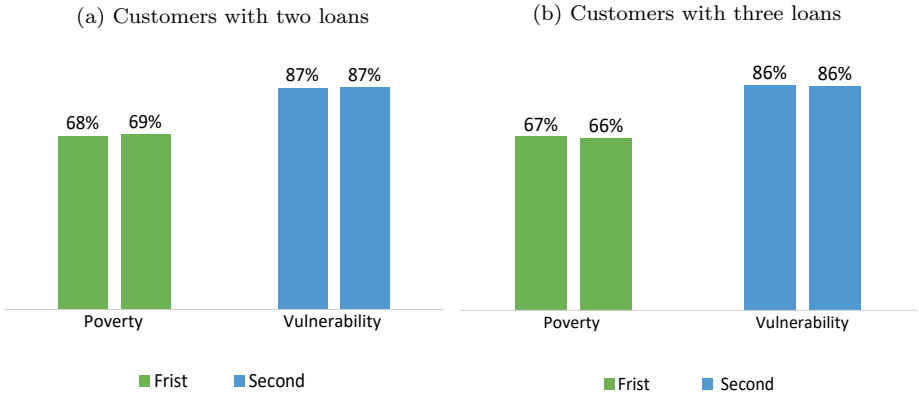


Source: *Asomicrofinanzas*; authors' calculations.

To assess the change in poverty and vulnerability of microcredit customers, the sample is divided between those who have two, three, four, and five loans. Based on the above, the incidence of poverty is compared between the first microcredit and the second, the first and third, and so on.

According to Graph 3.5, the poverty rate of microcredit customers begins to decrease as of the third loan (moving from 67% to 66%), with the largest change between the first and fifth credit (from 67% to 64%). On the other hand, the vulnerability rate is reduced from the fourth loan (from 86% to 85%), being higher in those clients with five loans (from 87% to 85%).

Graph 3.5. Percentage of disbursements by customers' financial condition



Source: *Asomicrofinanzas*; authors' calculations.

The results presented are a first approximation to the measurement of the impact of microcredit and its intensity (number of loans) within the incidence of poverty and vulnerability. The ideal for this type of exercise is to compare people who received treatment (microcredit) with those who did not, and to differentiate between those who have received a more intense treatment (greater number of microcredits). As long as there is more information available, it will be possible to refine this type of analysis.

Despite the limitations noted, it can be preliminary concluded that the incidence of microcredit on poverty and vulnerability rates is modest.

In fact, authors such as Oltenau (2019) highlight that the impact of this type of loans should be measured in their ability to help households and micro-entrepreneurs manage their liquidity and the irregularity of their income. Finally, it underscores the need for comprehensive government actions that enhance the micro-entrepreneurs' growth capacity and the role played by microcredit in their financial balance sheets.

3.3 Relationship between Microcredit and Poverty

This section has two parts: First, the concept of microcredit and the reasoning about its importance in poverty reduction are defined; secondly, the results of a model that incorporates microcredit as an explanatory variable of poverty reduction at the municipal level are presented. This intends to argue theoretically and empirically the impact of microcredit on overcoming poverty in Colombia.

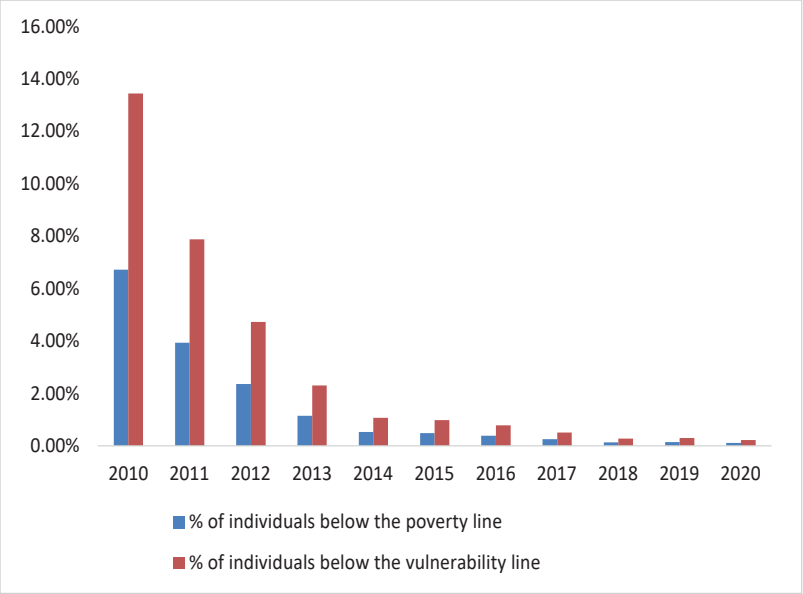
The fight against poverty contains public policy strategies that diverge between regions depending on their contextual characteristics. In a country like Colombia, where informal employment exceeds half the population (as evidenced by the informal employment survey conducted by the National Administrative Department of Statistics (DANE) and the Unobserved Economy Sector (ENO)[2] according to which it represents 24.4% of the total output and 29.9% of added value), it is essential to think of public and private projects that benefit the economic growth of this part of the population, therefore increasing the well-being of the entire Colombian society.

Microcredit is defined as the set of small loans granted to low-income population who have restricted access to traditional banking loans because they do not have assets to place as collateral and because information about their projects is deficient (Banco de la República *et al.* , 2010). This has been a focus of government attention in recent decades due to its impact on the enterprises of the most vulnerable and on the per capita income of a region or country. Graph 3.6 shows the effect of microcredit on the evolution of the number of individuals below the poverty and vulnerability line, showing that the acquisition

[2] This includes economic operations carried out by informal, underground, and illegal units or by those that are part of household production for their own final consumption DANE (2020a); and Rodríguez (2010).

of microcredits considerably reduces the percentage of individuals in conditions of poverty and vulnerability.

Graph 3.6. Microcredit customers in poverty



Source: *Asomicrofinanzas*; authors' calculations.

Microcredits have not only shown their positive effect in the context of the country, but also in all Latin American, Caribbean, and other developing countries. In Bolivia and Peru, for example, they have shown high levels of profitability, efficiency, and solvency. These countries have been characterized by the accumulation of experiences of experts from all over the world, accompanied by changes in banking regulation, which has allowed unconventional lenders that operated as non-profit organizations to become formal financial intermediaries, notably improving access to financial markets and long-term livelihood opportunities for the poorest. Rodríguez (2010).

In this sense, BancoSol (Bolivia) stands out, which closed 2021 with a total of 296,372 borrowers, achieving the largest market share with 21.1% (Escobar , 2021). Also, Grameen Bank (Bangladesh) began lending a total amount of USD 1,100 to a total of 42 people (in 1976) and reached a figure of approximately USD 7 million to a total of 6

million poor people (in 2008), of which 97% of the loans were granted to women (Gutiérrez , 2015), and Banco Mundo Mujer (Colombia), whose total income at the end of 2021 was COP $652.9 mm, of which COP $529.3 mm were distributed among customers, funders, collaborators, suppliers, shareholders, and the State (Melo de Velasco , 2021). These are just some of the world's microfinance institutions (MFIs) that have had a positive impact on poverty reduction by granting microloans for entrepreneurship purposes.

Likewise, institutions such as the Central Bank of Colombia, Finagro, and the Ministry of Agriculture in their study on the situation of microcredit in Colombia (Banco de la República *et al.* , 2010) and different authors such as Manrique *et al.*, (2017) in their study on the impact of microcredit on rural poverty in the municipalities of Tunja and Samacá, Colombia; and Rodríguez (2010) in his thesis "Microcredit: A look at the concept and its development in Colombia," have demonstrated scientifically and empirically the usefulness of microcredit as a social medium for the improvement of the quality of life of its customers. In conclusion, microcredit is an important factor in poverty reduction. For this reason, and in light of the literature presented above, the following hypothesis is formulated:

H1: Microcredit increases per capita income in Colombia.

3.3.1 Explanatory Variables

Employment: The creation of more jobs is directly related to the number of companies present in a specific region. According to the report on Micro, Small and Medium Enterprises (MSMEs) in Latin America published by the Economic Commission for Latin America and the Caribbean (ECLAC), micro, small, and medium-sized enterprises represent 99% of formal enterprises, and 61% of formal employment is generated by enterprises of that size (Dini and Stumpo , 2020). This highlights the importance of these actors in reducing poverty through the generation of employment and improved levels of productivity.

However, the importance of micro-enterprises to the current economy has evolved gradually. A report by the International Labour Organization (ILO) on the contributions to employment by self-employed

workers published in 2019 shows that in 2013 employment in low-income and low-middle-income countries was provided at its highest proportion by large enterprises, and then in 2019 it was offered to a greater extent by micro-enterprises and self-employed workers.

This new labor dynamics necessarily modifies the criteria for choosing the objectives of the public policies in every government and turns microcredit into a central—although not the only—axis in the generation of *faster and more continuous economic growth, which at the same time may be inclusive and sustainable* (Dini and Stumpo , 2020).

In Colombia, according to the size of the company measured by the value of its assets, it is evident that the set of new productive units is made up mainly of microenterprises (99.5%), followed by small enterprises (0.4%), and the rest is found in medium and large companies (0.03%) (Confecámaras , 2021). At the same time, according to the Unified Business and Social Registry (RUES), 52.2% of the companies created between January and December of 2021 were incorporated by creating at least one job, and even after the pandemic generated by COVID-19, as per the results of the Survey of the Chambers of Commerce for monitoring the impact of COVID-19 on the business sector, it is evident that 81.6% of the MSMEs have between 2 and 10 employees in their payroll.

Additionally, Libertank's analysis of DANE's report on monetary difficulties by departments in 2021 shows that poverty and the number of companies by regions have an inversely proportional relationship. In other words, the greater the number of companies, the lower the poverty rate (Rico , 2022), pointing out that the new trend of micro-employment not only contributes to the creation of new jobs, but also generates innovation and economic development that help stabilize the economy and thus reduce poverty (Domínguez *et al.* , 2021). Considering all the above, the following hypothesis is formulated:

H2: Employment contributes to increasing per capita income in Colombia.

Education: The relationship between poverty and education has been treated from different perspectives according to the social or scientific approach. In order to identify the magnitude of the impact of education on poverty reduction, the human capital theory will be used

to establish a quantitative relationship between the level of income and an individual's years of education.

The human capital theory establishes this relationship as follows: A greater education generates greater potential productivity of the labor force, and consequently, greater potential income for workers (Bazdresch , 2001). This suggests that, theoretically, government or private investment in the generation of higher quality educational institutions will increase the likelihood of obtaining better jobs and, therefore, higher income levels.

However, DANE's press release on multidimensional poverty in Colombia (2020) shows the social and economic integrality necessary to reduce poverty to a greater extent. Although illiteracy decreased nationwide by 0.9% and 2.9% in populated centers and dispersed rural areas, this was not enough to reduce the aggregate indicator of multidimensional poverty, as it increased by 0.6 percentage points vis-a-vis 2019. Education is a factor that influences poverty reduction, but it must be complemented by the provision of basic public utilities, public policies focused on entrepreneurship, expansion of labor demand, and other actions that promote economic growth with equal conditions. Considering all the above, the following hypothesis is formulated:

H3: Education contributes to increasing per capita income in Colombia.

GDP: The Gross Domestic Product of a country is defined as the market value of all final goods and services produced using the production factors available within a country in a given period (Banco de la República , 2022). If the GDP of one economy is higher than that of another economy, it can be said that the first is richer than the other in terms of the production of final goods and services. However, the global GDP of a country is not a suitable indicator to measure its well-being, as it depends on the number of inhabitants (Bankinter , 2016).

The presence of high inequality among the inhabitants of a country causes the quality of life of a large part of the population to be deteriorated, despite the high GDP of the region. This happens because wealth is concentrated in a specific sector of society. In Colombia, for example, in 2019, prior to the pandemic, the level of inequality measured by the

Gini coefficient (0.53), was the highest of the OECD countries and, additionally, it was also the second highest in the region, surpassed only by Brazil. And, worse still, the Covid-19 crisis has further increased inequality, pushing the Gini coefficient to 0.54 in 2020 and dragging around 3.6 million more people into poverty (Banco Mundial , 2021). This suggests that, despite the fact that Colombia's GDP has increased 6.8% in 2020 compared to 2019 (DANE , 2021), this has not been expressed in greater well-being for the entire population due to the great inequality present in the country. Therefore, the aggregate GDP of each municipality has been taken as a dependent variable in order to establish a proxy of inequality with respect to the per capita GDP. An inversely proportional relationship between the aggregate GDP and the per capita GDP can be observed in the model showing that there is an increase in the aggregate income of the municipality; however, the majority of the population perceives the same conditions of well-being as before or vice versa, therefore, a real decrease in the level of poverty in the community cannot be established. In conclusion, the following hypothesis is formulated:

H4: Higher GDP contributes to increase the per capita income in Colombia.

3.3.2 Methodology

The database has cross-sectional data on 344 municipalities in Colombia from 2011 to 2020. The municipalities used are classified as *cities* and *intermediates*. During the econometric process, a regression was performed for municipalities classified as *rural* and *rural dispersed*, but due to the lack of data and to their variability, only the first had to be used. Additionally, the variables were not significant and the signs of the relationship between the explanatory variables and the variable explained were not as expected. These results are probably explained by the lack of information in the rural and rural dispersed municipalities of the country.

Table 3.2 presents the description of the explanatory variables and their respective sources of information, and Table 3.4 shows the descriptive statistics of each variable and the variance inflation factor (VIF),

which measures the correlation and the strength of the correlation between the predictor variables of the regression model. As may be seen, the VIF is less than 5, which suggests that there is a moderate correlation between the predictor variables, i.e., the multi-colineality is not high and, therefore, there are no problems when adjusting and interpreting the proposed model.

Table 3.2. Variables of the estimations

VARIABLE	DESCRIPTION	SOURCE
GDP per capita	Municipal GDP / No. inhabitants per municipality	DANE
Microcredit	Value of microcredits per municipality	Asomicrofinanzas
Employment	Number of micro-enterprises per municipality	Confecámaras
Education	Central Government transfers for education	DNP
GDP	Municipal Production	DANE

We will consider the municipal per capita GDP as a dependent variable. For the purposes of the study, we assumed this variable as a proxy to the poverty measurement since there were no poverty data by municipality. The per capita GDP measures the income per inhabitant in each municipality. If it increases as a result of the variations in explanatory variables, poverty is reduced. The higher the level of income, the greater the purchasing power, and, consequently, better well-being and quality of life. Table 3.3 shows the names of the variables within the model and the expected sign for each of them in relation to the per capita GDP.

Table 3.3. Explanatory variables

		Name in the model	Expected sign
Explanatory	Microcredit	Loan	(+)
	Employment	Micro-enterprise	(+)
	Education	Education	(+)
	GDP	GDP	(+)
Dependent	Per capita GDP	GDP_{PC}	(+)

Table 3.4. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	VIF
Microcredit	344	4.640,54	12.912,02	0,10	297.365,74	2,08
GDP	344	1.923,49	12.301,10	19,57	243.835,89	1,15
Education	344	27.820,81	120.286,66	53,36	2.378.885,31	3,26
Micro-enterprise	344	5.867,40	40.796,09	10,00	1.148.605,00	2,69

Source: *Asomicrofinanzas, DANE, Confecámaras, and DNP*; authors' calculations.

The impact of microcredit on poverty reduction is measured by analyzing the value of loans by municipality and their effect on per capita GDP of each municipality. The proposed model investigates the impact of the value of the microcredit loan, controlling by the investment in education, the aggregate GDP, and the number of companies per municipality in the increase of the per capita GDP.

The general empirical model is given by:

$$PIB_{PC_{it}} = \beta_0 + \beta_1 PIB_{it} + \beta_2 \ln(\text{Educación})_{it} + \beta_3 \ln(\text{Créditos})_{it} + \beta_4 \ln(\text{Microempresa})_{it} + \epsilon_{it} \quad (3.1)$$

Where $GDP_{PC_{it}}$ it is the per capita GDP in the municipality i and in time t and is the dependent variable measured by the value (in millions of pesos) of the final goods and services produced in each municipality. The measures of the dependent variables are explained in Table 1.

To analyze the aforementioned impact, a panel data model will be estimated using the combined ordinary least squares method, fixed effects, random effects, and first differences. The advantage of treating the data as a database with panel data characteristics is that it allows to control the model by specific individual unobserved factors that do not vary in time and that could cause bias of the omitted variable, i.e., correlation between unobserved and observed variables (the exogeneity assumption $\epsilon(\varepsilon|x) = 0$ is not met).

Therefore, each estimation methodology will control the issue of bias caused by omitted variable and a more effective estimation will be obtained in each of the coefficients. Besides, as we already saw, the VIF is within the tolerance range of multi-colineality, so the statistical inference is valid.

However, to choose the estimation methodology that best suits the characteristics of our database, a series of statistical tests will be carried out that will allow to choose the best econometric model, thus obtaining the best approximation of the population parameters. Then, the assumptions of non-serial correlation in the residuals, homocedasticity, and normality will be validated to check if it is possible to have a valid statistical inference or not. Graph 1 shows the results obtained for each of the possible models.

Annex 1 shows the statistical tests and econometric steps necessary to choose the best estimation model. The final results show that for our database, the best way to calculate the estimated coefficients is through the fixed effects method.

3.3.3 Empirical Results

Now let's look at the results of the estimated coefficients corrected with robust errors to heterocedasticity and serial correlation in residuals. Table 3.5 shows the estimation of the panel data model with fixed effects.

First of all, all coefficients are significant and have the expected sign. Each independent variable positively affects the dependent variable, which in this case is the per capita GDP. As for our variable of interest, that is, the value of microcredits in each municipality, it may be observed that it is highly significant, and the more the amount of microcredits in the economy is increased by one percentage point, the higher the per capita GDP per municipality will be, thus improving each individual's well-being considerably.

On the other hand, obtaining microcredit for the creation of microbusinesses also affects the per capita GDP positively. However, the impact of micro-enterprises compared to the value of loans is lower. Establishing public policies focused on the generation of microcredits in an integral way, that is, with the corresponding accompaniment for managing financial assets could multiply the effect of the microenterprises variable on per capita GDP. Let us remember that inequality in Colombia is quite high. In this context, the distribution of wealth through entrepreneurship becomes a viable option, even more so when this phenomenon is increasingly frequent. The variable aggregate GDP

has the least effect on per capita GDP, although it is also significant and has the expected sign.

Table 3.5. Estimation of the panel data model with fixed effects

	Dependent variable: $GDP_{PC_{it}}$
	FE
GDP	0.0002^{*}
	(0.0001)
ln(Education)	1.546^{**}
	(0.652)
ln(Loan)	0.883^{***}
	(0.105)
ln(Microenterprise)	0.626^{***}
	(0.130)

Standard errors in parentheses.
*** $p < 0,01$, ** $p < 0,05$, * $p < 0,1$
Source: *Asomicrofinanzas, DANE, Confecámaras and DNP*. Own elaboration.

3.4 Annex 1

3.4.1 Choice of the Model

Hausman test: Which is better: fixed effects or random effects? This test is based on the assumption that the random effects model is more efficient because it can model the serial correlation that exists in the composite error of the regression. Therefore, the null hypothesis tells us that the models are statistically equivalent and due to its efficiency, we choose random effects, while the alternative hypothesis assumes fixed effects as the best estimation model.

The results of the Hausman Test are as follows:

```
[language=R]
Hausman Test
data:  GDP_PC ~ GDP + log(Education) + log(Loans) +  ...
chisq = 51.462, df = 4, p-value = 1.787e-10
alternative hypothesis: one model is inconsistent
```

As the p-value is small, the null hypothesis is rejected in favor of the alternative, that is, the models are not statistically equivalent and, therefore, we choose the fixed effects model. Another way to choose the fixed effects model as the best estimation model for our database is from the theoretical point of view. The random effects model assumes that the fixed effect or unobservable heterogeneity that captures all time-constant unobservable effects (ai) is not correlated with any explanatory variable in all periods. However, accepting this assumption in practice is highly unlikely. Normally, not all the explanatory variables of the dependent variable are included and, therefore, some unobservable variables remain in the error term that obviously correlate with the explanatory variables of the model. For this reason, we accept that it is better to estimate our model with fixed effects, since it does assume the correlation between ai and the explanatory variables.

Wooldridge First Difference Test: Which is better: first differences or fixed effects? Case in which the first differences estimator is preferred over fixed effects: Theoretically, the first difference estimator is preferred when the idiosyncratic error (in level) u_{it} behaves like a random walk. When differentiating the equation, it would result in that Δu_{it} no longer

has serial correlation, i.e., $\text{cov}(\Delta u_{it}, \Delta u_{is}) = 0$, so the first difference estimator would be more efficient than that for fixed effects.

Case in which the fixed effects estimator is preferred over the first differences estimator: Theoretically, the fixed effects estimator is preferred when the idiosyncratic error u_{it} does not show a serial correlation, that is, when $\text{cov}(u_{it}, u_{is}) = 0$. Let's take a look at the test results when the null hypothesis is equal to fixed effects, i.e., $corr(U_{ij,U_{ij-1}}) = 0$:

```
[language=R]
Wooldridge's first-difference test for serial correlation in panels
data:  plm.model
F = 20.996, df1 = 1, df2 = 1956, p-value = 4.893e-06
alternative hypothesis: serial correlation in original errors
```

Como el p-value es menor a 0.05 existe evidencia para rechazar la hipótesis nula y, por lo tanto, se prefiere estimar la regresión con el modelo de primeras diferencias. Resultados del test cuando la hipótesis nula es igual a primeras diferencias, es decir, $\text{cov}(\Delta u_{it}, \Delta u_{is}) = 0$:

```
[language=R]
Wooldridge's first-difference test for serial correlation in panels
data:  plm.model
F = 0.11773, df1 = 1, df2 = 1956, p-value = 0.7316
alternative hypothesis: serial correlation in differenced errors
```

As the p-value is greater than 0.05, there is no evidence to reject the null hypothesis and, therefore, it is preferred to estimate the regression with the first differences model. As may be seen, the results to choose between one model or the other are inconclusive. In the Hausman Test, the fixed effects model is chosen, and in the Wooldridge test, the first differences model is chosen; therefore, it is impossible to choose which one is more efficient. However, in this type of situation and in the development of public policy, the most commonly used estimator is the fixed effects one.

3.4.2 Validation of Assumptions

Heterocedasticity test: The Breusch Pagan test is used for the heterocedasticity of fixed effects estimators and the following result is obtained:

```
[language=R]
studentized Breusch-Pagan test
data:  Fixed_BU_C
BP = 52.839, df = 4, p-value = 9.21e-11
```

Null hypothesis: Homocedasticity; Alternative Hypothesis: Heterocedasticity.

When rejecting the null hypothesis, it is concluded that all the residuals of the model present heterocedasticity and, therefore, their standard errors must be corrected with robust errors to heterocedasticity. If the heterocedasticity present in the residuals of the model is not corrected, there could be errors in the calculation of the matrices corresponding to the estimators and, therefore, efficiency and reliability in the regression results would be lost. Breusch-Godfrey test for p-order autocorrelation: The Breusch-Godfrey test is used for serial autocorrelation of fixed effects model errors and the following result is obtained:

```
[language=R]
Breusch-Godfrey test for serial correlation of order up to 1
data:  Fixed_BU_C
LM test = 1950.4, df = 1, p-value < 2.2e-16
```

Null hypothesis: No serial correlation; alternative hypothesis: Presence of serial correlation

When rejecting the null hypothesis, it is concluded that the model errors present serial correlation and, therefore, their standard errors must be corrected with robust errors to the serial correlation. Correction of standard errors by robust errors to heterocedasticity and serial autocorrelation:

As we observed in the previous results, there is heterocedasticity and serial auto correlation in the residuals of the model. The method of standard error correction through robust errors to heterocedasticity and serial auto correlation is used to return to homocedastic errors without presence of serial correlation. All this is done in order to make statistical inferences and obtain totally valid results for the economic analysis.

After performing the correction, we obtained the following estimators (whose values are quite similar to those obtained before the insertion of the robust errors to heterocedasticity and serial auto correlation):

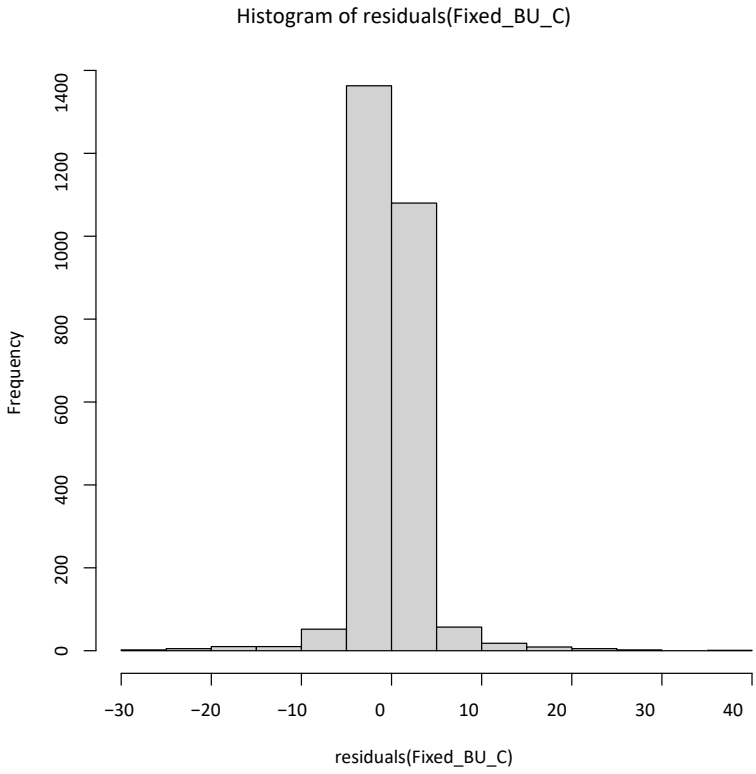
```
[language=R]
t test of coefficients:
Estimate Std. Error t value  Pr(>|t|)
GDP                   0.00019348 0.00011615  1.6658   0.09590 .
log(Education) 1.54583269 0.65187722  2.3714   0.01781 *
log(Credit)     0.88304640 0.10515412  8.3976 < 2.2e-16 ***
log(Micro-enterprise) 0.62612858 0.13016902  4.8101 1.607e-06 ***
---
Signif. codes:  0 *** 0.001 ** 0.01 * 0.05 . 0.1   1
```

Error normality check: To verify this assumption, first, we will make a histogram of the residuals to see if they have a similar behavior to the one expected from a normal distribution:

The histogram shows us a very similar distribution to the normal distribution, that is, a trend line in the shape of a bell. However, we will perform two more tests to see if the estimated regression actually meets the assumption of normality. First, we will use a qq-plot to see the normality of residuals (a qq-plot graph allows to compare the behavior/distribution of the residuals with respect to a theoretical normal distribution. That is, the theoretical quantiles are compared with the samples). Then, we will perform the Jarque-Bera test to reaffirm the visual arguments for the validation of the assumption.

Graphically, it may be seen that the residuals do not exhibit a normal distribution because there are data that are grouped toward the center on the dotted line, but in the distribution tails they are considerably far from the theoretical line for normality. Jarque- Bera Test: This test allows us to check if residuals have a normal behavior or not. Let us see the results:

Graph 3.7. Error Distribution

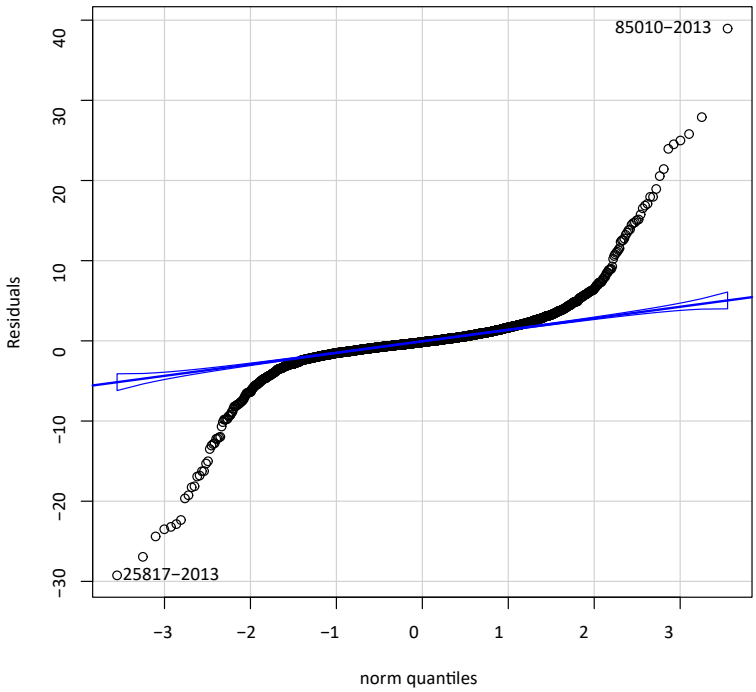


Source: *Asomicrofinanzas*; authors' calculations.

```
[language=R]
Jarque Bera Test
data:  residuals(Fixed_BU_C)
X-squared = 65670, df = 2, p-value < 2.2e-16
```

Although the histogram gives us indications of compliance with the assumption of normality, the Jarque-Bera test and the quantile graph refute the null hypothesis of normality, suggesting that the assumption is not met in this case. However, it should be noted that standard errors and statistical inferences are asymptomatically valid, although the errors are not normal, that is, when N, the number of observations, tends to infinity. In this case, this condition is met, as the sample used to estimate the impact of microcredit on poverty reduction can be enlarged as we increase the number of observations in the database.xsxs

Graph 3.8. Behavior of residuals



Source: *Asomicrofinanzas*; authors' calculations.

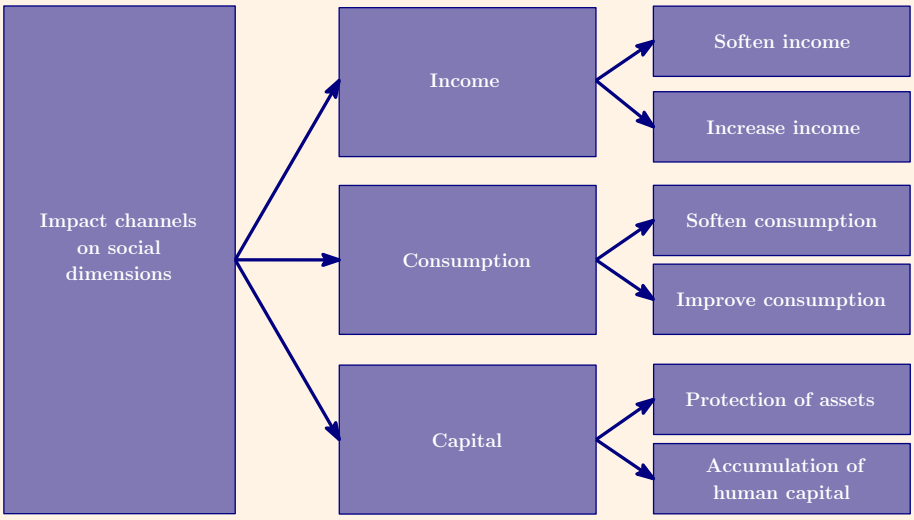
Social Indicators for the Microfinance Industry

At a global level, microcredit has been recognized as a fundamental tool for the financial inclusion of the most vulnerable and the growth of both their income and productive units. The following is a summary of the *Handbook of Social Indicators for Microfinance Institutions in Colombia* prepared by *Asomicrofinanzas*, *Farmer to Farmer*, and *Partners of the Americas*, supported by the United States Agency for International Development (USAID) and Banco de la República (the Central Bank of Colombia), with the aim to contribute to the analysis of social measures of microcredit and encourage institutions to adopt some of the suggested indices.[3]

Although the results of Chapter 3 of this book account for the impact of microcredit on customer income, they do not allow to quantify the impact on other variables such as consumption, capital, and assets of customers due to the availability of information. According to *Asomicrofinanzas et al.*, (2021), these last variables allow to quantify the comprehensive impact of microcredit, as they account for its role in softening consumption for the most vulnerable, protecting their assets, and managing risks in a better way (Graph 3.9).

[3] Special thanks to the volunteers of the Farmer-to-Farmer program, Adria M. Vargas Santos and Ángela María Jimenez Peñuela for leading this project.

Graph 3.9. Hypothesis about the channels of microcredit impact



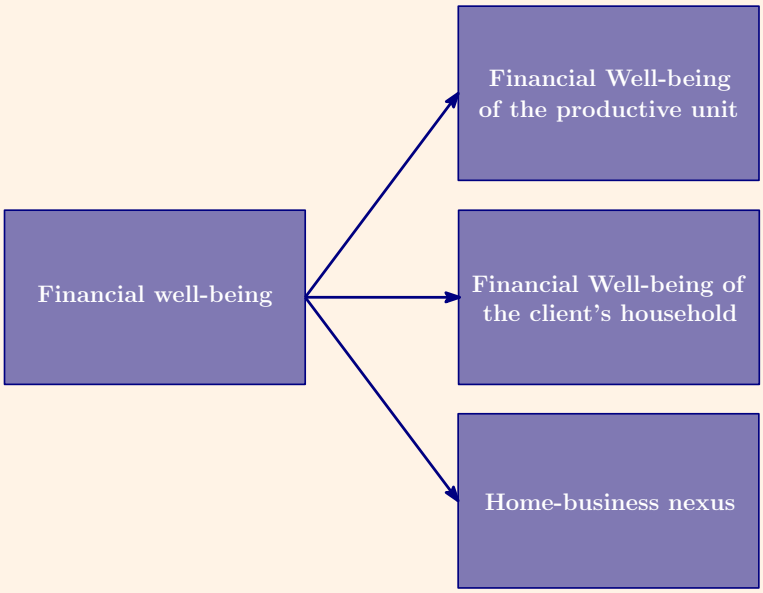
Source: *Asomicrofinanzas et al.,* (2021). Own elaboration.

The *Handbook of Social Indicators for Microfinance Institutions in Colombia* suggests that the impact could be measured considering three dimensions: (i) financial well-being; (ii) resistance to adverse shocks; (iii) improvements in the conditions of the production unit and the client's household. Below are the elements to be evaluated within each of these dimensions. The choice of indicators to be replicated will depend on the availability of information of the financial institutions, the characteristics of their customers, and the nature of the organization.

Financial Well-Being

The financial well-being dimension assesses the role of institutions that offer microcredit in regard to the clients' capacity to respond to a crisis and/or turn their life plans into reality. As shown in Graph 3.10, financial well-being consists of three indices with the same weight within this dimension: (i) financial well-being of the productive unit; (ii) financial well-being of the client's household; (iii) home-business nexus.

Graph 3.10. Financial well-being



Source: *Asomicrofinanzas et al.,* (2021). Own elaboration.

The first one measures the financial well-being of the productive unit through information related to the businesses' balance between income and expenses, its resilience against external shocks, and its saving habits. Table 3.6 includes some of the questions that could be used to measure the items described. The response options and their positive (+), negative (-), or neutral weighting within the dimension are also presented.

The second one analyzes the financial well-being of the client's household through questions related to household's financial management, its level of expenses and indebtedness, the power of decision over household finances, and access to financing or external support. Table 3.7 includes some of the questions that could be asked to measure the topics described, answer options, and their rating.

Table 3.6. Questions to measure the financial well-being of the financial unit

Question: In the last 12 months, have you been able to cover every month all of the usual or daily costs of the business with the revenue obtained?	**Question:** If your business no longer generated revenue, how long would it be able to keep operating with its reserves?	**Question:** Which of the following statements best describe you in relation to savings in your business activity?
Answer options and rating:	**Answer options and rating:**	**Answer options and rating:**
- Yes (1) - No (-1) - Does not know or does not respond (0)	- Less than 1 month (-2) - 1-3 months (-1) - 4-6 months (1) - 7-12 months (1) - Over a year (2)	- I regularly save a fixed percentage of my monthly earnings (2) - I save what is left at the end of the month with no fixed plan (1) - I do not save because I spend as much or more than my income (0) - I do not save because I prefer to spend money than saving for the future (-1) - Does not know or does not respond (0)

Source: *Asomicrofinanzas et al.,* (2021). Own elaboration.

Table 3.7. Questions to measure the financial well-being of the client's household

Household finances	**Power of decision Household finances**	**Access to financing or external support**
Question: How worried are you about being able to cover the expected expenses entirely?	**Question:** Within your household who is responsible for managing daily expenses?	**Question:** How would you cover an unexpected need?
Answer options and rating: - Not worried at all (2) - Somewhat worried (1) - Very concerned (0)	**Answer options and rating:** - Me (1) - My partner (1) - My partner and I (1) (1)	**Answer options and rating:** - Business reserve fund or personal savings (2) - Reduce basic home expenses (-1)
	- Me and another household member (1) - Nobody (0)	- Delay a planned expense (-1) expense (-1) - Sell something you own (-1) - Work overtime, take an extra job, earn extra money (1)

Continues

Household finances	**Power of decision Household finances**	**Access to financing or external support**
		- Request Government support (0) - Ask for help or borrow from family, friends, or the community (1) - Pawn something you own (-1) - Get an informal loan (-1) - Get a personal loan from financial institutions (2) - Use a Line of Credit or an authorized overdraft (1) - Utilizar la tarjeta de crédito para un adelanto en efectivo (1)

Source: *Asomicrofinanzas et al.,* (2021). Own elaboration.

Finally, the third one relates the level of independence between the productive unit and the client's household. The lower this level, the greater the customers' vulnerability. As shown in Table 3.8, the required questions account for the location of the business, the financial records of the business/household, and the use of inputs and outputs.

Table 3.8. Questions to measure the home-business nexus

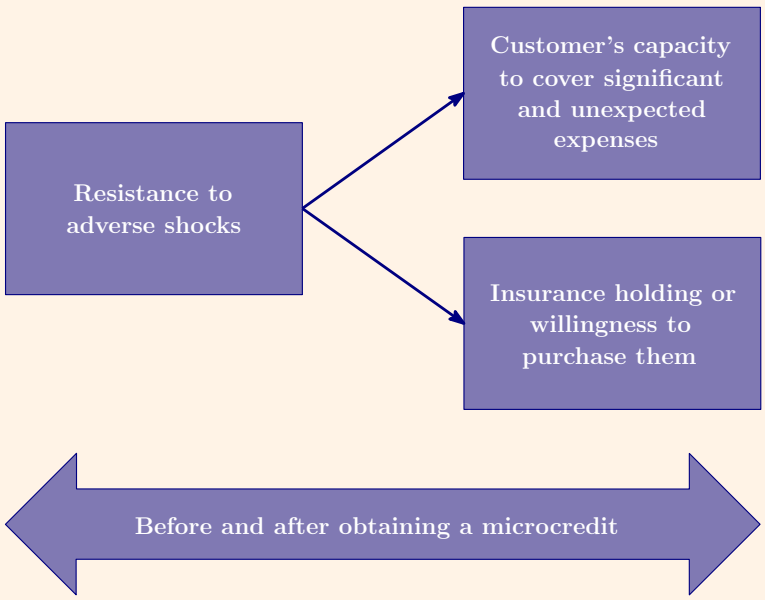
Question	**Answer options and weighting**
Does your business operate in a separate space from your home?	Yes (1); No (0)
Are the inputs and products of the business used for household consumption or vice versa?	Yes (1); No (0)
Is the income and expense registration of your business handled separately from the income and expenses of your home (using different budgets and/or accounts)?	Yes (1); No (0)
If you have formal financial products (credit and savings), do you have separate financial products for home and business?	Yes (1); No (0)

Source: *Asomicrofinanzas et al.,* (2021). Own elaboration.

Resilience to Adverse Shocks

The purpose of the second dimension is to measure whether holding a microcredit increases the resistance of customers to adverse shocks. As shown in Graph 3.11, the client's capacity (before and after receiving a microcredit) to cover significant and unexpected expenses, as well as their perception of insurance ownership or willingness to purchase them, is analyzed here. Table 3.9 presents the questions that clients with more than two credits within the financial institution should be asked.

Graph 3.11. Resistance to adverse shocks



Source: *Asomicrofinanzas et al.*, (2021). Own elaboration.

Table 3.9. Questions to measure adverse shock resistance

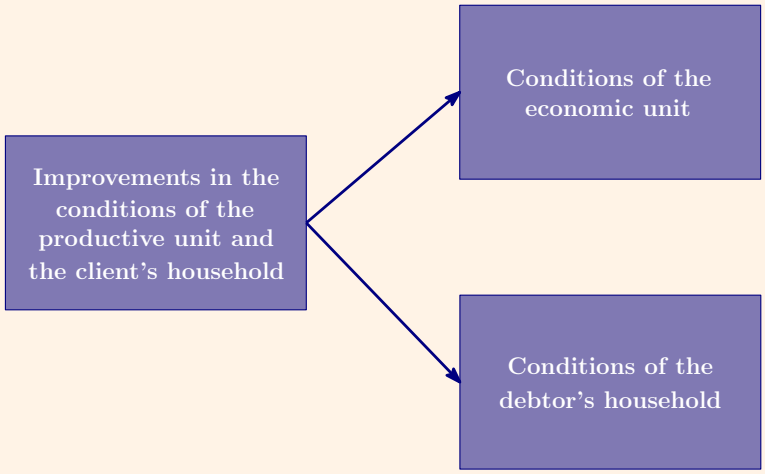
Question	**Answer Option and Weighting**
If you faced a significant and unexpected expense tomorrow, would you be able to cover it fully without having to ask for a loan that you would have to repay?	Yes (1); No (0)
Have you done anything to ensure that you could cover an unexpected expense in its entirety, without resorting to a loan that you would have to repay?	Yes (1); No (0)
Have you thought about doing anything to ensure that you could cover an unexpected expense in its entirety without resorting to a loan that you would have to repay?	Yes (1); No (0)
How worried are you about being able to fully cover unexpected expenses?	Not concerned at all (2). Somewhat concerned (1). Very concerned (0).

Source: *Asomicrofinanzas*, own elaboration.

Improvements in the Conditions of the Productive Unit and the Client's Household

The third dimension investigates on improvements in the conditions of the productive unit and the households of customers with access to microcredit (Graph 3.12). Regarding the conditions of the economic unit, the use of the loan and the real or expected impact in relation to the short-term investments made, productivity, and income are investigated (Table 3.10). As for household conditions, the customers' perception of the impact of microcredit on their consumption of basic and long-term goods, as well as on improving their decision-making, is analyzed.

Graph 3.12. Improvements in the conditions of the productive unit and the client's household



Source: *Asomicrofinanzas et al.*, (2021). Own elaboration.

Given the integrality in the issues addressed and the diversity of the indicators presented, this handbook constitutes a tool to measure the impact of microfinance institutions. This type of exercises is key to understanding the role of the microcredit industry in the care of the lowest income and vulnerable population.[4] In this way, changes in public and sectoral poli-

[4] In fact, the pilot results of an exercise carried out by *Asomicrofinanzas et al.*, (2021) based on this Handbook stress the importance of microcredit to improve the conditions of the customer's economic unit and to protect customers from shocks.

cies that enhance the impact of microcredit on its final beneficiaries can continue to be promoted.

Table 3.10. Questions to measure adverse shock resistance

	Answer options: 1 very little, 4 very much
Economic Unit: Do you consider that microcredit...	
...has improved your business income, given that you were able to address an emergency in your business?	1 to 4
...has improved your business income, given that you were able to invest in improvements for your business?	1 to 4
...has improved your business income, given that you were able to expand your business?	1 to 4
...has allowed you to invest and make your business more productive?	1 to 4
Customer Household: Do you consider that microcredit...	
...has helped you to improve your food diet?	1 to 4
...has prevented any family member from interrupting their studies?	1 to 4
...has provided you with access to the health care system or medication?	1 to 4
...has helped you get out of very high-interest debt (informal financing)?	1 to 4

Source: *Asomicrofinanzas et al.,* (2021). Own elaboration.

Image courtesy of *Microempresas de Colombia*

CHAPTER 4

Competition in the Microcredit Market

4.1 Introduction

Higher levels of market competition have been traditionally associated with higher levels of consumer wellbeing. Economic theory states that the presence of active or potential competitors produces higher incentives for innovation and reduces the possibility of charging excessive margins for the provision of a product or service. In the banking sector, specifically in the microfinance market, the analysis of market competition has been broadly addressed both in the academic field as well as in policy design, given that the efficient provision of loans for micro-enterprises plays a central role in strengthening economic activity in disadvantaged areas and fighting against poverty.[1]

Regulations applying to microcredit providers and the ability of these providers to adapt technological innovations to their business models influence changes in market structure and the degree of competition. To measure the effects of these changes on consumer wellbeing, it is necessary to identify entity differentiation mechanisms and how they can be translated into higher intermediation margins or increases in volume and variety of the financial services available for micro-

[1] To review more recent evidence, see Cull and Morduch (2017).

entrepreneurs. In this chapter, we will take a step in this direction by analyzing how financial institutions change their loan terms when new competitors enter local markets.

Most market competition indicators use aggregated information at the national level, using the underlying assumption that all consumers have the same degree of access to all microcredit providers. Consequently, the behavior of aggregated market shares and interest rates is interpreted as the direct outcome of client preferences in the face of a set of homogeneously available services. Although this approach could be useful to describe aggregated sector tendencies, ignoring differences in terms of the available local supply of loans can eventually lead to erroneous conclusions regarding the degree of competition within the sector and the price-elasticity of the local demand of microcredits.[2]

Until now, the analysis of competition in the microcredit sector has been detached from the evolution of the infrastructure for access to financial services throughout the national territory. However, the size and distribution of branching networks are key elements of differentiation for financial institutions, so the analysis of their recent evolution is the first step to analyze the market power of institutions participating in the microcredit sector.

In this chapter we describe how the supply of financial products in different geographical areas has transformed, in terms of the number and type of providers. Furthermore, we examine the reactions of credit providers operating in local markets vis-à-vis the entry-exit of new competitors. Likewise, we carry out an empirical analysis that describes how the characteristics of local markets can influence the decisions of financial institutions regarding their branching networks.

Many recent empirical studies show that, despite significant progress in developing alternative customer service channels, such as banking correspondents and virtual platforms, 'brick-and-mortar' branches remain vital in the credit market (Anenberg *et al.* , 2008; Dore and Traci , 2018). Financial consumers tend to show a preference for financial

[2] For example, the low elasticity of demand in the face of changes in the interest rate of a particular bank could be due to limited access by potential customers or lack of information about those changes. Failure to identify the mechanisms behind the demand reaction can lead to erroneous pricing/access policies for credit providers at the local level.

service providers with local presence close to their physical location, because this allows them to reduce transactional costs and increases the probability of a loan approval, since the institutions with in-site branches have more information on the financial situation of local potential clients (Agarwal , 2010). As a result, the demand and supply of financial services, as well as the intensity of competition between credit providers, may vary throughout the national territory, depending on the distribution of their branches.

To develop our empirical analysis, we use a data base provided by microcredit providers associated with *Asomicrofinanzas*, that includes characteristics of the loans granted between 2010 and 2020, as well as of the clients and productive projects financed. The characteristics of the loans and the customers registered in this database are described in detail in chapter 1 of this book. This information is complemented with that published by the Colombian Office of the Financial Superintendent (SFC) and Banca de las Oportunidades about the location of branches, bank correspondents and number of employees of microcredit institutions in Colombia.

To do this, the chapter is divided into six sections, including this introduction. The second section explores the characteristics of financial institutions participating in the microcredit market. Next, we describe the local microcredit supply in geographic markets, defined by the proximity of neighboring municipalities. The fourth section examines the changes of institutions associated with the entry of a new microcredit provider into the local market. The fifth section analyzes in detail the changes in the characteristics of loans granted by some of the most important institutions in the microfinance sector after the entry of a competitor at the local level. Finally, the last section collects the conclusions of the exercise.

4.2 Financial Institutions in the Microcredit Sector

The first step of this analysis is to identify the financial institutions that participate in the microcredit market. In recent years, many financial institutions have expanded their loan portfolio to include services within

the microcredit category.[3] Microcredit providers are understood here as those institutions that allocated more than 0.1% of their loan portfolio in this category, as reported as of December 2020. Based on this definition, we found 73 microcredit providers in Colombia (Appendix 4.7).

These institutions differ substantially in their degree of specialization in this niche market. To facilitate the presentation of results, this chapter defines three categories of microcredit providers. The first category, called microfinance institutions (MFIs), is composed of private institutions that exhibit a high degree of specialization in microfinance, which is measured from the participation of microcredit in its loan portfolio (greater than 30%). Some of these institutions began their corporate path as non-governmental organizations or as cooperatives in the solidarity sector but have migrated in recent years to a business model that places them within the scope of surveillance of the SFC.

The second category consists of institutions that are not specialized in microfinance (non-MFIs), but that offer microcredits regularly within their service portfolio. In this group there are banks with a wide portfolio of services for households and businesses, as well as smaller financial institutions, supervised by the SFC or the Superintendency of Solidary Economy (SES), which may specialize on offering either consumer or commercial loans.

Banco Agrario, a public bank focused on the agricultural sector, is categorized separately because the financing and insurance characteristics of the loans granted, as well as the economic considerations that determine the opening or closing of its branches, may be different from those applicable to the other microcredit providers. As of December 2020, the loans granted by this bank that could be considered microcredits, according to the loan size criterion, represented 46.3% of its portfolio.

[3] The increase of microcredit providers has been particularly pronounced since 2011, when there was a substantial increase in the usury rate applicable to this type of loan. The calculation of the usury interest rate in the micro-credit category was modified by the SFC in September 2010, given that, from a fixed level (33.4%), it started to be calculated as 1.5 times the reference bank interest for micro-credit.

Table 4.1. Number of competitors and participation in microcredit disbursements by type of institution (2020)

Institution	Number of institutions			Amount of disbursements			Number of disbursements		
	MFI	Non-MFI	Public	MFI	Non-MFI	Public	MFI	Non-MFI	Public
Banks	5	4	1	41.6	10.9	20.7	46.6	5.8	12.9
Coop. Solidarity Sector	8	27	0	2.7	4.7	0	1.9	4.5	0
Foundations and NGOs	20	0	0	16.7	0	0	26.7	0	0
Monitored by the SFC	1	5	0	0.1	2.5	0	0.1	1.7	0

[a] This table presents the number of competitors in the microcredit market according to their type and level of specialization in this niche market. Microfinance institutions (MFIs) are those with a microcredit share of more than 30% of their loan portfolio as of December 2020. Institutions not specialized in microcredit (non-MFIs) offer microcredit but exhibit a lower degree of specialization in this niche market. The share of microcredit in the portfolios of these institutions is less than 30% but greater than 0.1%.

[b] The institutions belonging to each category can be found in Appendix 1.

[c] Sources: SFC, Office of the Superintendent of Solidarity Economy, *Asomicrofinanzas* and Banca de las Oportunidades.

Table 4.1 presents the number of competitors in the categories indicated above, according to the information reported as of December 2020. In that year, 34 MFIs were identified. Five were banks specialized in microcredit and 20 were foundations and NGOs. Banks and microcredit NGOs had the largest shares in the number and amount of disbursements granted in 2020. In turn, non-MFI banks, as well as the public bank, had a substantially larger share of the total value of disbursements, suggesting that, on average, these institutions grant larger loans to their clients.

4.3 The Local Microcredit Supply

As argued above, entrepreneurs and consumers tend to choose financial services providers that are closer to their geographic location. In the deposit market, technological innovation has partially reduced the competitive advantage of financial institutions with physical branches, due to the introduction of virtual platforms through which consumers can conduct a wide variety of transactions. However, in the credit market, the presence of a physical branch is still important because it facilitates obtaining information of the client and his or her productive project.

It is worth noting that several institutions in the microcredit sector have banking correspondents and mobile agents that allow them to facilitate transactions and carry out monitoring activities through visits to productive projects of active and potential customers located in rural areas. However, these agents often have a direct connection to a local branch and are not authorized to make credit decisions, so their activity remains closely linked to the presence of a traditional branch.

In relation to the demand for financial services, recent experience aligns with what has been observed in the international context. The information provided by the Financial Services Demand Survey, published by the SFC, confirms that virtual channels and non-bank correspondents are more important in the deposit market than in the credit market, because they have a greater added value when it comes to facilitating payments and transactions. In addition, recent efforts to integrate these services into the credit supply have had more efficient results in the credit card and other consumer credit segments, where

the number of customers who demand these products through virtual channels has grown significantly.

In this regard, Clavijo *et al.*, (2020) finds that many customers in the microcredit segment are not fully familiar with alternative transactional channels, which are sometimes perceived as less reliable. In addition, in rural areas of the country with high demand for microcredit, the use of digital channels is limited by the still insufficient level of connectivity.

The role of branching networks is of crucial importance for the supply of microcredits because information about the viability of the productive project or the ability of the client to pay must in many cases be obtained from informal sources that require credit agents from financial institutions to move even to the location of the productive project. Agarwal (2010); and, Hollander and Verriest (2016), have shown that this information is of vital importance for the approval of commercial credits, so both financial institutions and consumers have incentives to establish credit relationships near the location of their branches.

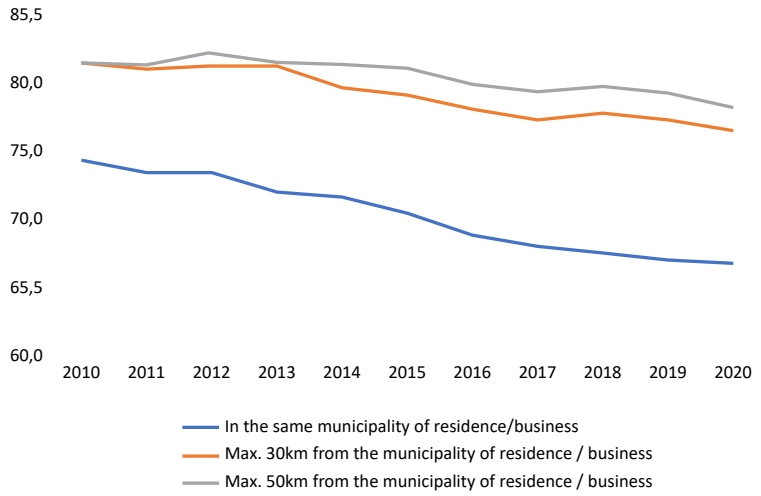
Additionally, branching networks allow loan providers to obtain concrete information about the specific economic, cultural, and institutional characteristics of the geographic market they serve. This can be very useful in determining the level of operational risk and the intensity of competition that may be experienced by other agents established in the local market.

Since financial institutions can use their branching networks as a differentiating element that allow them to obtain some monopoly power at the local level, in addition to reducing the costs of obtaining information about productive projects, the optimal structure of interest rates and other charges may depend significantly on the size and distribution of their branching networks (Bellucci *et al.* , 2013; Degryse *et al.* , 2008).

The Information of *Asomicrofinanzas*, in conjunction with that published by the SFC and Banca de las Oportunidades, allows us to characterize the local offer of microfinance services for different geographical markets. Although the exact location of the client cannot be known with the available information, the database identifies the municipality where the debtor resides (or has established his productive

project), as well as the municipality where the branch of the credit institution that granted the microcredit is located. Based on this information, it was found that in 2020, 66.9% of customers obtained funding through financial institutions that had active branches in the municipality of residence (or where their micro-business was located). In addition, 78.3% of the companies obtained loans from institutions that owned branches in municipalities located less than 50 km from their location. It is worth noticing, however, that the percentage of customers who have not turned to local financial institutions for financing has increased steadily over the past 10 years (Graph 4.1).

Graph 4.1. Percentage of customers who applied for loans at nearby branches.



The solid red line represents the percentage of customers who obtained their loan in a branch located in their municipality of residence-economic activity. The blue line (gray) corresponds to the percentage of customers who obtained their loan in a branch located within a 35 km (50 km) radius of their municipality. Source: *Asomicrofinanzas*. Elaborated by the author.

4.3.1 Definition of Geographic Markets

With the information regarding the location of the client and of the institution that grants the loan, we can infer that the clients have a strong predilection for those institutions that have branches near

their location. However, in some cases entrepreneurs have the need to move to other municipalities to request this type of financial services. Consequently, using the categories defined by the Colombian political-administrative division directly, such as municipalities or departments, to analyze the local credit offer has its limitations, because it can overlook the presence of financial institutions that are part of the local credit offer available to micro-entrepreneurs.

For example, according to information published in 2020 by the SFC, in the municipality of Cota, located 33 km from Bogotá, only two microcredit providers had branches in operation. However, potential clients located in this municipality could have relatively easy access to the financial offer of loan providers located in the Capital District or in other municipalities of the Bogotá savanna. The information supplied by some of the institutions affiliated to *Asomicrofinanzas* allowed us to verify that in 2020, 96% of its clients residing in this municipality obtained credits from institutions that did not have local branches in Cota.

Consequently, local microcredit markets are defined here as groups of municipalities located less than 35 kilometers from each other. These agglomerations are obtained based on a classification algorithm that minimizes the geographical distance between the member municipalities of the same group, with the restriction that the maximum distance between them is less than the limit established above.[4] Our empirical analysis is built under the assumption that these municipalities belong to a common market, where a confluence of economic and socio-demographic factors affect the economic performance of micro-businesses, the demand for microcredit and the presence of financial institutions.

Thus, the definition of local market used in this chapter considers the presence of possible spatial correlations between nearby municipalities.

Based on information from 1,102 municipalities, 504 geographical agglomerations were established, based on which the local market structure will be defined. The resulting clusters differ both in the number of municipalities that compose them as well as in the size of

[4] The analysis was performed with alternative specifications based on distances of 40 km and 50 km, with similar results. The municipalities belonging to each agglomeration can be consulted on request.

the geographical area they cover. Table 4.2 describes these geographic agglomerations. Those with the largest number of municipalities are typically located around large urban centers or special districts. For example, in the Capital District, Bogotá, the geographic agglomeration consists of the municipalities Bogotá, Soacha, Chía, Cajicá, Funza, Cota, La Calera, Mosquera and Sopó. The geographic markets located in the Orinoquía or in the Amazon regions are typically made up of a single municipality. To facilitate the analysis, we used a classification of these geographic markets based on the categories of rurality for the municipalities developed by the Departamento Nacional de Planeación (DNP , 2014).

For each agglomeration, the percentage of people living in scattered rural, rural, intermediate, or urban municipalities was calculated, and the agglomeration was assigned a category corresponding to the largest of these percentages. According to the data available up to 2020, the 152 local markets classified as scattered rural and rural accounted for 15.6% of the national population (7,844,780 people); in contrast, the 60 urban markets accounted for 67.5% of the population, corresponding to 33,966,724 people.

Table 4.2. Descriptive statistics Characteristics of geographic markets

Variable	N	Average	Std. Dev.	Min	Pctl(25)	Pctl(75)	Max
Scattered Rural Markets							
Area (km^2)	152	3444.53	7152.34	33	578	3016.5	65674
Total population	152	21611.07	26500.02	1336	9212.5	25761.5	283515
Population in rural area (%)	152	0.71	0.15	0.23	0.65	0.82	0.96
PDET Zones	152	0.30	0.46	0	0	1	1
Economic Importance*	152	303.82	689.38	10.74	85.19	272.96	7881.18
Distance to urban center (km)	152	86.06	38.59	0.00	64.81	103.11	219.30
Internet coverage**	152	0.02	0.02	0.00	0.003	0.02	0.11
BDO coverage program	152	0.07	0.26	0	0	0	1
Rural Markets							
Area (km^2)	156	1278.62	2005.55	93	454	1396.2	17873
Total population	156	29230.11	20479.75	2168	14072.8	40854	124754
Population in rural area (%)	156	0.57	0.15	0.24	0.46	0.67	0.96
PDET Zones	156	0.24	0.43	0	0	0	1
Economic Importance*	156	399.20	617.99	27.65	153.39	443.36	6691.64
Distance to urban center (km)	156	77.38	32.61	0.00	58.63	90.61	182.70
Internet coverage**	156	0.03	0.03	0.001	0.01	0.04	0.12
BDO coverage program	156	0.06	0.23	0	0	0	1

Continues

Intermediate Markets							
Area (km^2)	135	988.46	1070.57	20	387	1189	7411
Total population	135	63100.95	48980.46	6259	33289.5	80434	390702
Population in rural area (%)	135	0.46	0.18	0.06	0.33	0.57	0.94
PDET Zones	135	0.16	0.36	0	0	0	1
Economic Importance*	135	838.92	976.51	78.44	351.58	989.60	7952.90
Distance to urban center (km)	135	65.52	26.65	0.00	47.99	78.50	164.87
Internet coverage**	135	0.06	0.04	0.002	0.02	0.08	0.21
BDO coverage program	135	0.16	0.36	0	0	0	1
Urban Markets							
Area (km^2)	60	1713.17	1521.47	88	645.5	2293.2	6785
Total population	60	566112.10	1266068.00	34803	138581.8	440015.8	9094699
Population in rural area (%)	60	0.21	0.14	0.01	0.11	0.25	0.66
PDET Zones	60	0.23	0.43	0	0	0	1
Economic Importance*	60	11201.26	33249.54	319.13	1334.09	7116.54	245986.20
Distance to urban center (km)	60	41.88	36.78	0.00	14.03	66.72	179.37
Internet coverage**	60	0.15	0.06	0.03	0.10	0.19	0.27
BDO coverage program	60	0.13	0.34	0	0	0	1

This table presents descriptive statistics of the demographic characteristics of local geographic markets as of December 2019.

* (Billions of Colombian pesos).

** Number of access points per 10000 inhabitants.

The indicator variable "BDO Coverage Program" takes the value of 1 if the geographic market participated in any of the financial services coverage expansion programs implemented by Banca de las Oportunidades (BDO) between 2011-2019.

Source: *Asomicrofinanzas*. Elaborated by the author.

4.3.2 Recent Evolution of the Number of Branches and Microcredit Providers

In this section we analyze the evolution of the branching networks of microcredit providers. Table 4.3 presents the average number of branches and local geographic markets where microcredit providers are present, according to the type of institution and degree of specialization. MFIs showed a greater expansion both in the number of geographical markets where they operated, as well as in the number of branches. Banks specialized in microcredit increased the size of their branching networks significantly between 2014 and 2020. The number of local markets where these providers were present increased during this period, from 69 in December 2014 to about 102 in the same month of 2020. Similarly, the average number of branches of these institutions increased in this period: From 114.8 to 173.5. Other MFIs had significantly smaller branching networks than banks specializing in microcredit. However, they also experienced a significant expansion of their branching networks in more recent years.

The institution with the largest branching network was *Banco Agrario*, present in 445 of the 504 geographical markets throughout the country. Between 2014 and 2020, this bank increased by five the number of geographic markets in which it operated and by 44 the number of physical branches.

In contrast, banks that are not specialized in the microcredit segment experienced a reduction in the number of local markets where they operated and in their number of branches. Although they are concentrated in fewer geographic markets, these banks have larger networks. However, between 2014 and 2020 there was a significant contraction in the total number of branches for these financial institutions.

Graph 4.2 shows the evolution of the average number of competitors in each local market by microcredit provider type and geographic market category between 2007 and 2020. A significant increase in the number of MFIs (mainly banks and NGOs) has been observed since 2011. In contrast, growth was lower for non-microcredit banks, which even showed a substantial decline between 2019 and 2020, particularly in urban and intermediate markets. In scattered rural and rural markets, *Banco Agrario* was the main provider of microcredit, while the other suppliers were only present in about 20% of the markets.

Table 4.3. Characteristics of branching networks by type of institution (2020)

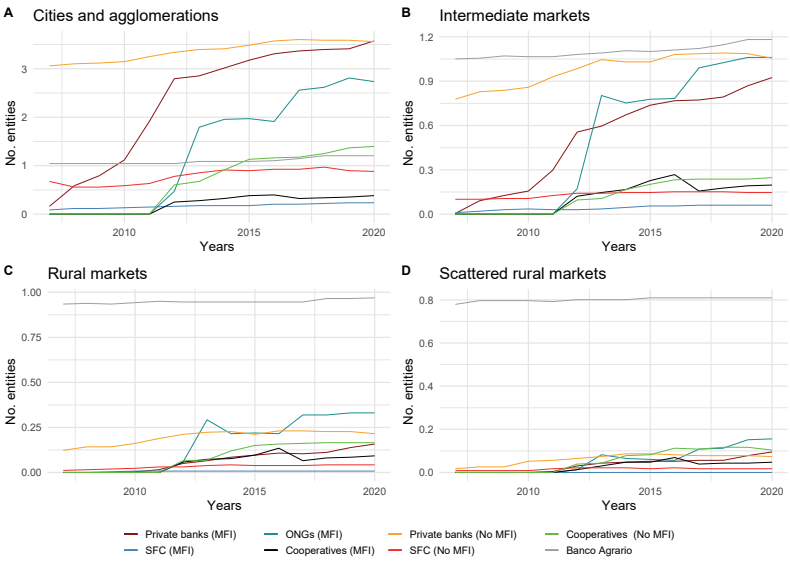
Type of institution	Average number of markets			Average number of branches		
	2014	2019	2020	2014	2019	2020
	Microfinance Institutions (MFIs)					
Banks	63	77	81.4	108.4	129.6	138.8
Coop. Solidarity Sector	6.7	8	8.6	11.8	11.8	12.4
Foundations and NGOs	14.1	19.6	19.6	21.1	29.8	29
Overseen by SFC	8	13	13	44	57	55
	Non-Microfinance Institutions (Non-MFIs)					
Banks	94	96.5	94	458	408.5	379.8
Coop. Solidarity Sector	4.6	6.6	6.6	6.9	9.9	10.0
Overseen by SFC	13	12.5	12.3	26.8	29.8	30
	Public Institutions					
Banks	440	445	445	744	787	788

This table presents the number of geographic markets and the average number of branches of credit providers according to their type and degree of specialization in the microcredit market niche. A loan provider is considered to be present in a local geographic market if it has at least one branch in operation.
Types of institutions: Private banks ("Banks"), institutions surveilled by the Office of the Financial Superintendent ("Overseen by SFC"), NGOs and microfinance foundations ("NGOs"), Cooperatives supervised by the Superintendency of Solidarity Economy ("Coop. Solidarity sector") and Banco Agrario ("Public Bank").
Source: *Asomicrofinanzas*; authors' calculations.

In the years 2012 and 2013, just after the modification of the usury interest rates applicable in the microcredit modality in 2011, there was a significant growth in the number of branches, particularly for microfinance institutions (Graph 4.2). This growth was more pronounced in the intermediate markets, where the average number of competitors increased between 2011 and 2020. It went from 0.17 to 0.85 in the case of MFIs, and from 0.14 to 0.75 in the case of other financial institutions.

In rural and scattered rural areas, the number of branches also increased, which is due in greater extent to the expansion of the branch network of microfinance institutions and those classified as "other". The number of microfinance institutions in each market between 2011 and 2020 went from 0.05 to 0.3 in rural markets, and from 0.01 to 0.22 in scattered rural markets. This means that at most 30% of rural markets and 22% of scattered rural markets had a local microcredit provider.

Graph 4.2. Evolution of the average number of competitors by type of institution and geographic market (2007-2020)



This graph presents the average number of institutions with at least one branch in operation, according to the type of institution and geographical market. These organizations are grouped according to their type as "Banks", "SFC" (other institutions supervised by the Office of the Financial Superintendent, "NGOs" and "Coop" (cooperatives of the solidarity sector), and according to their degree of specialization in the microcredit market as "MFI" (microfinance institution) or "non-MFI" (financial institution not specialized in microcredit). Source: *Asomicrofinanzas*. Elaborated by the author.

Traditional financial institutions had a less pronounced growth in the number of geographic markets in which they operated. The greatest growth in recent years was observed in intermediate markets, where the number of competitors of this type increased from 0.8 to 1.2. In the case of *Banco Agrario*, there was no significant expansion between 2011 and 2020, which may be explained by the already extensive branching network prior to the analyzed period. In scattered rural and rural areas, this bank continued to have the highest levels of presence and active branches in about 60% of local markets.

Institutions participating in the microcredit market differed not only in their degree of specialization, but also in the size of their branching networks. As shown in Table 4.4, most microcredit providers (46 of the 73 participants in the microcredit market) are smaller loan providers that concentrate their operations in less than 10 geographic markets. Most of the institutions in this group are cooperatives of the solidarity sector and NGOs. Between 2014 and 2020, there was an increase in the number of geographic markets where they operated and in their share of the number of loans, as it went from 4.0% to 8.0% of disbursements between 2019 and 2020.

Table 4.4. Institutions according to size of the branching network

Category	Institutions		Markets		Branches		Disbursements (%)	
	2014	2020	2014	2020	2014	2020	2014	2020
1 to 10	48	46	2.5	3.9	4.8	6.5	4.0	8.0
11 to 30	10	12	13.3	16.1	20.3	30.3	5.8	4.3
31 to 60	8	6	40.1	43	89.3	99	17.4	14.8
61 or more	6	8	184.3	165.5	480.7	366	72.7	72.9

This table defines four categories of branching networks according to their size (number of local markets in operation in 2020). For each category we compare the number of institutions, the average number of local markets and branches observed in 2014 and 2020. The last two columns of the table present the share of institutions of each category in the total number of loans disbursed in 2014 and 2020 respectively.
Source: *Asomicrofinanzas*. Elaborated by the author.

On the other hand, the group of institutions with the largest branching networks (with presence in more than 60 local markets) was composed of seven institutions (five banks and two NGOs) in 2020. Between 2014 and 2020, this group experienced a substantial decrease in the number of geographic markets where they were active, as well as in the number of branches.

4.3.3 Local Structure of the Microcredit Supply

This section will explore the local structure in the microcredit market and its evolution in recent years. Table 4.5 shows the prevailing market structure in the geographic markets in 2014 and 2020, based on the number of credit providers with at least one branch in operation. To facilitate the presentation, only two categories of microcredit providers are presented here: microfinance institutions (MFIs)[5] and non-microfinance institutions (non-MFIs). In 2020, 13.6% of rural local markets did not have microcredit providers (42 out of 308 agglomerations) and 40.1% of these had only one provider (*Banco Agrario* in 98.4% of cases). Compared to 2014, there was a reduction in the number of geographic markets with only one provider, indicating that there was an increase in the variety of funding alternatives available to residents of these places.

The biggest changes in market structure were observed in the intermediate markets. In 2020, 61.5% of markets had three or more competitors specializing in microcredit; in 2014, this percentage was just 48.8%. On the other hand, the supply of microcredit in terms of the number of competitors in urban markets remained relatively stable in the period analyzed.

The last section of Table 4.5 presents the percentage of the national population residing in local markets with the number of MFIs and non-MFIs specified in the corresponding row (column). In 2020, 71.5% of the national population was in markets with six or more competitors on the local microcredit supply, and this percentage was only 69.1% in 2010.

[5] Including *Banco Agrario*.

Table 4.5. Local markets by number of private microcredit providers (2010-2020)

	2010				2020			
MFI \Non-MFI	0	1	2	3 or more	0	1	2	3 or more
Number of scattered rural and rural markets								
0	46	6	0	1	42	6	0	1
1	142	29	9	0	126	28	3	1
2	28	16	4	2	35	19	3	0
3 or more	5	7	9	4	11	16	10	7
Number of intermediate markets								
0	4	0	1	0	1	1	1	0
1	21	8	6	0	18	6	4	0
2	8	11	7	3	7	6	7	1
3 or more	6	13	22	25	9	16	27	31
Number of cities and agglomerations								
0	0	0	1	0	0	0	0	0
1	0	1	1	0	0	1	1	0
2	0	1	0	1	0	2	0	1
3 or more	1	5	4	45	1	2	5	47
Percentage of the total population								
0	1.6	0.3	0.1	0.1	1.4	0.2	0.03	0.1
1	7.2	2.3	1.3	0	6.1	1.7	0.7	0.1
2	3.0	2.2	0.8	0.5	2.7	1.6	0.6	0.1
3 or more	1.4	4.3	5.6	69.4	2.1	5.1	5.9	71.5

This table presents the number of markets according to their classification and the number of microcredit providers of each type (MFI and non-MFI). The rows correspond to the number of MFIs and the columns correspond to the number of non-microcredit institutions (non-MFIs). The last section of the table presents the percentage of the national population residing in local markets with the number of microcredit providers specified in the corresponding row (column).

Source: *Asomicrofinanzas*. Elaborated by the author.

4.3.4 Entry and Exit of Loan Providers

In recent years, the expansion in the number of branches has slowed, possibly due to the development of other transactional and customer communication channels, which have replaced some of the financial services previously provided exclusively in a traditional branch.

Table 4.6 records the number of markets that experienced entry or exit of competitors between 2014 and 2020. Our calculations are based on the increase or decrease in the number of financial institutions with at least one local branch in operation. Additionally, the table presents the change in the number of branches in operation registered in this period. Most of the geographic markets where competitors exited belong to the categories *Rural* and *Disperse Rural*. However, the number of branches did not decrease significantly during the period.

In the markets classified as intermediate, there was a significant increase in the number of branches and the number of markets with at least one competitor, due to the entry of new loan providers. In contrast, urban markets showed a significant reduction in the number of branches in operation. However, this decline was not accompanied by the departure of competitors; therefore, consumers in these areas continue to experience a similar degree of variety in the loan supply. The regions of the country where local credit markets were more dynamic, as measured by the entry of new competitors, were the Caribbean and the Orinoquía regions. In these areas, mid-sized geographic markets benefited from a broader range of microcredit providers at the local level. In contrast, rural municipalities in the Amazon and Pacific regions recorded the lowest entry levels of new competitors.

Table 4.6. Patterns of entry and exit in local markets according to classification and type of loan provider

IMF \Non-IMF	Output	Stable	Input	Subtotal
Rural and Rural Scattered Markets				
Exit	0	3	0	3
Stable	8	235	9	252
Entry	7	41	5	53
Subtotal	15	279	14	308
Intermediate Markets				
Exit	1	1	0	2
Stable	6	73	13	92
Entry	1	35	5	41
Subtotal	8	109	18	135
Cities and Agglomerations				
Exit	0	0	0	0
Stable	1	48	3	52
Entry	1	5	2	8
Subtotal	2	53	5	60
Total Population (millions of inhabitants)				
Exit	0.00	0.12	0.07	0.19
Stable	1.91	41.81	0.69	44.41
Entry	0.90	4.36	0.52	5.78
Subtotal	2.81	46.29	1.18	50.38

This table presents the number of markets that experienced entry or exit of microcredit providers between 2014 and 2020. It is considered that there was entry (exit) of competitors if the number of institutions present in the market in 2020 is higher (lower) than that observed in 2014. The columns indicate whether there was entry or exit of non-microcredit (non-IMF) institutions and the rows correspond to changes in the number of specialized institutions in this niche market (IMF).

Source: *Asomicrofinanzas*. Own elaboration.

4.3.5 Indicators of Market Concentration

In this section we examine different market concentration measures and their recent developments in the microcredit sector. Indicators such as the Herfindahl-Hirschman index (HHI) or the degree of market share of the three largest competitors in the market (CR3) have been widely used in the literature to establish the degree of concentration. The HHI is calculated as the sum of the squares of the market shares of firms competing in a market; the CR3 corresponds to the sum of the market shares of the three main competitors. The HHI can take values between 0 and 1.[6] A market is considered to be moderately competitive if the HHI is at levels below 0.15.

Table 4.7 shows the HHI and CR3 indicators calculated in two alternative ways. The first uses the institutions' market shares at the national level; the second corresponds to a weighted average of the values obtained in the local markets, according to the size of the population. These calculations are based on the amount and number of loans granted during 2019 and 2020. As shown in Table 4.7, the aggregate HHI, calculated based on the amount and number of disbursements, remained relatively stable between 2019 and 2020, around 0.096. Meanwhile, the HHI weighted average, calculated based on market shares at the local level, was at levels close to 0.125 between 2019 and 2020. Both indicators suggest that the microcredit market was relatively competitive. At the national level, the three main competitors in the microcredit market accounted for 43.3% of disbursements in 2020, slightly lower than the figure observed in 2019 (46.5%), consistent with a situation of moderate competition.

Meanwhile, the median CR3 concentration and HHI rates observed at the local level suggest a higher level of concentration in the microcredit supply, standing at 66.2% and 0.27 in 2020, respectively, according to the value of loan disbursements. This is because in many geographic markets the local microcredit supply consists of fewer than three competitors.

[6] Alternatively, if the market shares are multiplied by 100 before calculating the sum of their squares, the HHI values will be in the range of 0 to 10 000. Their interpretation is similar.

Table 4.7. Indicators of competition in the market (2019-2020)

	2019	2020
	Herfindahl-Hirschman Index	
National Total (Amount)	0.096	0.096
National total (number)	0.103	0.097
Local (amount) - Weighted average	0.120	0.123
Local (number) - Weighted average	0.125	0.126
Local (amount) - Medium	0.255	0.270
Local (number) - Medium	0.230	0.238
	Concentration Rate (CR3)	
National Total (Amount)	0.427	0.449
National total (number)	0.465	0.433
Local (amount) - Weighted average	0.465	0.470
Local (number) - Weighted average	0.491	0.490
Local (amount) - Medium	0.645	0.662
Local (number) - Medium	0.622	0.628

This table presents the Herfindahl-Hirschman Index (HHI) calculated based on the value and number of microcredit disbursements granted during 2019 and 2020. The concentration rate (CR3) corresponds to the sum of the shares of the three largest institutions in the market. The weighted average HHI (CR3) is obtained as the weighted average of the competition indicator obtained in each local market, according to the size of the population.

Source: *Asomicrofinanzas*. Own elaboration.

4.4 A new Competitor in Rural Markets

To measure the degree of competition at the local level, we considered that the market structure observed at a given time is the result of strategic actions of both the financial institutions that are in operation, as well as of those of potential competitors that might or might not enter the market. In this way, the number of competitors and the level of profit of firms operating in a market are determined reciprocally

over time as the result of a process of continuous interaction. The development of a structural model that captures the complexity of this dynamic escapes the objectives of this chapter, therefore, this section presents a simplified strategy, based on the static model of competence proposed by Bresnahan and Reiss (1991). This model allows us to estimate the intensity of competition from the effect that the entry of a new competitor generates on the profits of institutions that already operate in a local market.

In this model, the dependent variable is the number of competitors operating in each geographic market, which depends, in turn, on a latent variable: the expected local profit in case of entry. The intuition behind the model identification strategy is to assume that those institutions operating in the market at any given time must have greater profits than they would in their default alternative (assumed to be null). Similarly, it is assumed that if only (n) loan providers are observed in a market (m), it must be because an additional competitor would derive a negative profit if it entered that market. This argument is summarized as follows:

$$\Pi(\bar{n}_{mt} + 1) < 0 < \Pi(\bar{n}_{mt}), \tag{4.1}$$

where $\Pi(\bar{n}_{mt})$ is the profit function of the institution and $\bar{n}_{mt} = n_{mt} - 1$ is the number of competitors in the market m in period t.

Additionally, we assume that the profit function $\Pi(\bar{n}_{mt})$ takes the following functional form:

$$\Pi(\bar{n}_{mt}) = S(X_{mt})V(\bar{n}_{mt}) - F(W_{mt}) + \varepsilon_{mt}, \tag{4.2}$$

where, $S(X_{mt})$ represents market size, $V_{mt}(\bar{n}_{mt})$ is marginal profit per customer $F(W_{mt})$ is the fixed operation cost and ε_{mt} symbolizes an unobservable component that can affect the benefit of firms, which follows a normal distribution with variance σ^2_{ε}. We will assume that $S(X_{mt})$, $V_{mt}(\bar{n}_{mt})$ and $F_{mt}(W_{mt})$ are linear functions as specified below:

$$S(X_{mt}) = \alpha_0 + \alpha X_{mt}, \tag{4.3}$$

$$V_{mt}(\bar{n}_{mt}) = \beta_0 + \beta_1 I(\bar{n} \geq 1) + \beta_2 I(\bar{n} \geq 2) + \beta_3 I(\bar{n} \geq 3) + \beta_4 max(\bar{n} - 4, 0) \tag{4.4}$$

$$F_{mt}(W_{mt}) = \gamma_0 + \gamma_F W_{mt} \tag{4.5}$$

The X_{mt} matrix includes variables such as population size, the economic importance index, the percentage of rural population, the area in square kilometers and whether the municipality is part of the territories that benefit from the Development Programs with Territorial Approach (PDET).

The marginal profit, $V(\bar{n}_{mt})$ depends on the number of competitors in the local market. The market structure is represented by dummy variables ($I(\bar{n} \geq x)$, where $x \in \{1, 2, 3\}$) that indicate the presence of one, two or three competitors in the market. From the fourth competitor onwards, we assume that the effect of an additional competitor on the expected profit is linear.

Finally, $F(W_{mt})$ depends on geographic market variables such as the distance from the nearest urban center and the number of Internet access points.

This model assumes that observations are independent, and that entry decisions are easily reversible. This assumption implies that there is no spatial correlation beyond these geographical agglomerations, and that the institutions do not consider the relative location of the other nodes of the branching networks when deciding whether to open or close a branch in a particular location.

Additionally, the model assumes that microfinance institutions are homogeneous. Although these assumptions may be strong, they are considered plausible in small rural markets, relatively distant from each other, so the analysis is restricted to markets classified as *rural* or *scattered rural*.

In these markets, where there are often limited competitors, consumers are more likely to perceive microcredit providers as similar financial institutions. Additionally, opening an branch in these locations represents a relatively low cost in terms of staff and equipment investment (compared to the investment that firms in other industries

have to make to enter a market), and that can be mobilized to other locations of the network if necessary.

This means that loan providers might choose to open or close multiple branches at any given time. Finally, the synergies that can take place between several branches in the same network are reduced in these areas. Relaxing these assumptions means significantly increasing the complexity and difficulty of numerical estimates of the model, which escapes the objectives of this chapter. However, in view of the limitations in capturing the complexity of the institutions' decisions regarding the distribution of their branching networks, the results of this exercise should be interpreted with caution.

Table 4.8 presents the outcomes of the estimated model based on information on the number of branches of the competitors that participated in the microcredit market in 2019. Regarding demographic characteristics that explain the potential size of the local market, the economic importance variable has the greatest impact;[7] Internet access also has a positive and significant effect on market size.

The effects associated with the entry of an additional competitor on marginal profits are significant and have the expected sign. The biggest reduction on the profit of financial institutions active in the markets is generated by the entry of the first competitor. It is observed that, keeping market size constant, the variable profit of a monopolistic institution is reduced by 61.54% when an additional competitor enters the local market.[8] The entry of a second competitor reduces the profit of incumbent duopolists by 44%. These values indicate that there is a significant level of competition in rural markets. The marginal effect of entry of a new competitor is reduced as the number of firms increases, which can be expected in a market in which a very significant increase in market size is required to harbor additional competitors.

[7] The coefficient that accompanies the variable Population takes the value of 1 as part of the necessary normalization to identify the other parameters, so it is not reported in Table 4.8).

[8] This change is calculated as $1-V_{mt}(\bar{n}_{mt}+1)/V_{mt}(\bar{n}_{mt})$. For example, the change in the marginal profit associated with the entry of a competitor into a market that was previously a monopoly would be given by $1-V_{mt}(\bar{n}_{mt}+1)/V_{mt}(\bar{n}_{mt}) = 1-\frac{\beta_0+\beta_1}{\beta_0}$

Table 4.8. Effects of the entry of competitors on the profit of financial institutions active in local markets

	Rural and Scattered Rural Markets		
Variable	Coeficient	Standard Error	Statistic-t
		Market Size	
Population in rural areas (%)	-1.92	2.33	-0.82
PDET	-6.08	5.31	-1.15
Economic Importance *	17.84	9.50	1.88
Internet	0.47	0.28	1.66
Area (km^2)	-0.03	0.01	-2.39
		Variable Benefit	
Intercept	0.26	0.09	2.92
First competitor	-0.16	0.06	-2.77
Second competitor	-0.04	0.01	-3.10
Third competitor	-0.02	0.01	-2.22
Fourth competitor	-0.01	0.00	-1.73
		Fixed cost	
Intercept	15.14	0.65	23.39
Distance to urban center	-0.35	1.78	-0.20
Internet access points	-6.02	1.90	-3.17
σ_ε	1.12	0.16	6.92

This table contains results of the ordered probit model using information from the number of microcredit provider branches in 2019 (503 observations). The first column presents the coefficients estimated using maximum likelihood. The second column contains the bootstrapped standard errors. To achieve identification of the parameters of the model it is necessary to impose a normalization on one of the coefficients. In this case, we imposed the value 1 to the population coefficient (which is determinant of the market size), so this variable is not reported in the table.
Source: *Asomicrofinanzas*; authors' calculations.

4.5 Changes in the Characteristics of Loans

The results of the previous section provide an estimate of the variation in profit of firms active in a market after the entry of a competitor.

However, this analysis does not identify the mechanisms that explain such reduction. In more competitive markets, the entry of a new firm into the market may substantially reduce the market share of other competitors, since the products or services are relatively homogeneous; in oligopoly markets, firms can try to differentiate themselves from the incoming competitor by offering more attractive terms for the clients.

To understand the changes in the characteristics of loans offered by incumbent financial institutions when there is a new competitor in the market, we used anonymized information of individual loans provided by *Asomicrofinanzas* (Annex 2). This database contains information on 7.41 million loans disbursed between 2010 and 2020. The loans included in the database represented 42.13% of the amount of microcredit disbursements and 51.8% of the amount of new loans in 2019.

The information provided by these institutions includes characteristics of loans, productive projects, and customers, which were described in detail in chapter 1 of this book. In particular, the database contains information about the location of customers, their businesses, and the branches where the loans were granted. The changes in the market structure discussed in this section include inflows and outflows from all 73 microcredit providers identified above.

Table 4.9 shows descriptive statistics of some key loan characteristics according to the presence of new competitors in local markets. First, we present the average number of loans granted by institutions that were previously active in the markets. We observed that in the markets and periods in which new microcredit providers entered, there is a reduction in the interest rate as well as the amount of the loans. By contrast, there is a higher percentage of new applications (compared to renewals or restructurings). As for the characteristics of the projects and the clients, there is a lower average age of the productive projects and a higher average percentage of female clients.

Table 4.9. Characteristics of loans according to the presence of new competitors (2011-2020)

Markets and periods where there was no entry of new competitors						
Variable	N	AVG.	SD	PCT(25)	Median	Pctl(75)
Interest rate	4.458.290	40.543	6.760	35.293	41.032	45.000
Amount of loan	4.458.290	3.370	4.099	1.200	2.143	4.000
Term (months)	4.458.290	19.708	16.096	12	18	24
New loan	4.458.290	0.401	0.490	0	0	1
Age of projects	4.458.290	83.544	106.859	0	47	127
Co-debtor presence	4.458.290	0.256	0.436	0	0	1
Female clients	4.319.327	0.548	0.498	0.000	1.000	1.000
Agricultural project	4.458.290	0.310	0.462	0	0	1
Markets and periods where new competitors entered						
Variable	N	AVG.	SD	PCT(25)	Median	Pctl(75)
Interest rate	2.948.888	39.677	6.127	34.856	40.894	43.995
Amount of loan	2.948.888	3.194	3.814	1.129	2.100	3.780
Term (months)	2.948.888	19.942	14.194	12	18	24
New loans	2.948.888	0.453	0.498	0	0	1
Age of projects	2.948.888	59.896	98.011	0	0	93
Co-debtor presence	2.948.888	0.243	0.429	0	0	0
Female clients	2.744.385	0.572	0.495	0.000	1.000	1.000
Agricultural project	2.948.888	0.332	0.471	0	0	1

This table presents descriptive statistics of the characteristics of loans granted by financial institutions active in geographic markets according to the presence of new competitors in the market. Information on the loans granted between 2012 and 2019 is reported.
The variable 'new credit' takes the value of 1 if the transaction corresponds to a new application, rather than a renewal or restructuring of a previous credit.
Source: *Asomicrofinanzas*. Own elaboration.

4.5.1 Models with Outcomes at the Institution-Municipality Level

The differences in the characteristics of the loans shown in Table 4.9 may be explained by the decision of financial institutions to operate in more attractive geographical markets, where productive projects that request financing have a greater economic potential and a better credit risk profile. To recognize if these differences are explained by greater competition in the local market, a panel model with fixed time and institution-local market effects is used, according to the following specification:

$$y_{jmt} = \alpha_{jmt} + \gamma_0 NComp_{m,t-1} + \gamma_1 \Delta NComp_{m,t} + \gamma_1 \Delta NComp_{m,t} d_m^{rural} + \gamma_3 OFI_{m,t-1} + \beta_J X_{jmt} + \beta_M Z_{mt} + \delta_j + \delta_m + \delta_t + \epsilon_{jmt}. \quad (4.6)$$

In this expression, y_{jmt} represents a feature of the loans granted by bank j active in market m in year t (average interest rate, average amount, number of credits, number of new applications). $NComp_{t-1}$ indicates the number of active competitors in the market m in the period $t-1$, $\Delta NComp_{m,t}$ and $\Delta NComp_{m,t-1}$ represent the change in the number of loan providers observed in years t and $t-1$, and $OFI_{m,t-1}$ is the number of branches observed in the period $t-1$. In addition, an interaction term ($\Delta NComp_{m,t} * d_m^{rural}$) is included, with which it can be identified whether the entry of new competitors generates a different response in rural markets. The model includes control variables grouped in the X_{jmt} and Z_{mt} matrices, which represent the characteristics of the geographic market and the loans approved in that market, as well as fixed effects of time (year and month), institution and local market (represented by the terms δ_m, δ_j and δ_t). The error term ϵ_{jmt} represents an idiosyncratic shock that can have an impact on the dependent variable and is not observable by the researcher.

As noted above, banks may decide to enter markets where there is significant economic growth, which also benefits financial institutions already active in the market. In addition, potential competitors may decide to enter markets where a weak response is expected from institutions already operating there. In view of the above, instrumental variables techniques or methods were used to capture the entry effect of a new competitor in the market. The instruments used here were built based on cost shifters and loan characteristics observed in similar but geographically distant markets, such as the average interest rate, the amount, and the average number of installments of loans in these markets.[9] A valid instrument should help predict the entry of new competitors into market m but should not be correlated with the unobservable term ε_{jmt}. It was considered reasonable to assume that the

[9] Specifically, the sum of new competitors in geographic markets of the same category (rural, scattered rural, intermediate or cities and agglomerations) located in the same geographical region, but in different departments.

values of these variables in distant markets within the same region are not influenced by local market m demand shocks observed in period t. This type of instrument has been widely used in the bibliography of space economy in public policy applications.

The outcomes are presented in Table 4.10. The first panel shows the effects of the market structure on the loan characteristics. As for the interest rate, a small but significant decrease was observed with the entry of new competitors (24 basis points). There is no differentiated response in rural markets in terms of the interest rates applied to new loans after the entry of a new financial institution.

Regarding the average size of the loans granted by incumbent financial institutions in the market, an increase of 2.1% was observed after the entry of a new competitor. The coefficient associated with the interaction term that captures the response of incumbents in rural markets is negative and significant, indicating that this increase was lower in rural markets (0.9%). In terms of the number of loans originated per provider, there is a 2.6% reduction associated to the entry of new competitors. This change is even more pronounced in the case of loans other than restructurings or renewals, for which a drop of 8.8% was estimated in intermediate and urban markets and 13.2% in rural markets.

When analyzing the characteristics of loans according to the number of active competitors in the market in the previous year, we found that as the number of active microcredit providers increased, institutions tended to offer loans with slightly lower interest rates (10.6 basis points less for each competitor present in the market) and smaller sizes. In addition, the percentage of loans other than renewals or restructurings was lower in markets with more providers.

Finally, regarding the characteristics of the municipality included in the estimate, the interest rate of microcredits was significantly lower in markets with greater population and economic importance. In turn, in those markets the number of renewals and restructurings tended to be higher relative to total disbursements.

4.5.2 Outcomes with Disaggregated Information at the Individual Level

Previously, we found that the interest rate of new loans is lower after the entry of a new competitor, but this variation may be influenced by changes in the risk profile and other characteristics of the loans of clients accessing financing options after increased competition in the local market.

To obtain a more accurate estimate, a regression based on individual credit level data was used to investigate whether credit characteristics change when a financial institution opens a new branch in the local market. This approach allowed us to include specific control variables of the client and the productive project that receives funding. This regression is estimated using information of loans granted between 2016 and 2019.

The outcomes are presented in Table 4.11. Consistent with the results presented in the previous section, we observed that the interest rate on loans tended to be slightly lower in markets where there were a greater number of microcredit providers. In addition, this rate was slightly reduced when a new competitor entered markets classified as *Cities and agglomerations* (13.7 basis points). By comparison, the competitive response was slightly lower (12.3 basis points) in intermediate markets and the most significant reduction was observed in scattered rural markets, reaching 25.4 basis points.[10] The changes in interest rates were consistent with a competitive response from the incumbent financial institutions, which sought to retain and attract new customers offering more favorable financing terms in the face of the entry of a new competitor.

On the other hand, the average loan size reduced slightly after the entry of a new competitor. This response was similar in different types of geographic markets. Our specification also allowed us to recognize the effect of an interest rate increase on the approved loan amount. We found that an increase of one percentage point in that rate was

[10] According to the outcomes of the model, an entrepreneur requiring a credit of 3.3 million (average value of credits) over a 24-month term, would save between $11100 and $24200 if it requests the product in a market where it was evident that a new financial institution entered.

associated with a decrease of 2.2% of the amount of the loan. It is worth noting that this effect corresponded to the expected change in the individual amount approved once the customer makes a request. The total effect of an interest rate increase on the volume of loans granted in a geographic area may be greater insofar as some customers choose not to apply for loans.

When the entry of a new competitor occurred in a location classified as *Cities and Urban Agglomerations* there was increase in average term of the loans. The opposite response was observed in intermediate and scattered rural markets. While this result could be interpreted as an improvement in financing terms for some clients, it could also suggest a more cautious attitude on the part of financial institutions, anticipating possible over-indebtedness of clients after the entry of a new competitor.

In general, financial institutions presented a stronger reaction after the entry of a new competitor in rural areas. This result is intuitive insofar as the impact of the entry of the new microcredit provider is absorbed by a smaller number of institutions, which depend on a relatively small potential number of customers.

Table 4.10. Effects of the market structure on the microcredit supply of financial institutions

	Dependent variable			
	Interest rate (%) (1)	Loan amounts (2)	No. of disbursements (3)	No. of new requests (4)
	Market structure			
New competitors (t)	−0.243***	0.022***	−0.026***	−0.081***
	(0.043)	(0.005)	(0.009)	(0.010)
New competitors (t)*Rural Market	−0.053	−0.013*	0.016	−0.039**
	(0.089)	(0.007)	(0.014)	(0.018)
Number of competitors ($t-1$)	−0.106***	−0.002***	0.007***	−0.014***
	(0.004)	(0.0004)	(0.001)	(0.001)
Number of branches	0.001***	−0.00000	0.0001***	0.0001***
	(0.0001)	(0.00001)	(0.00002)	(0.00003)
	Loan characteristics			
Average interest rate		−0.022***	0.012*	−0.009***
		(0.0005)	(0.007)	(0.001)
Average amount (log)	−9.769***		0.868***	0.013***
	(0.038)		(0.224)	(0.005)
Number of loans (log)	6.472***	1.247***		
	(0.017)	(0.002)		
Average installments	1.009***	0.044***	−0.059***	−0.011***
	(0.003)	(0.0003)	(0.010)	(0.0003)
	Municipality characteristics - Geographical market			
Municipality population (log)	−4.370***	−0.198***	0.799***	−2.254***
	(0.350)	(0.038)	(0.058)	(0.072)
Economic importance of municipality	−0.139**	0.044***	−0.001	0.012
	(0.060)	(0.007)	(0.011)	(0.012)
Effects of the local market	Yes	Yes	Yes	Yes
Effects of the institution	Yes	Yes	Yes	Yes
Time Effects (Month-Year)	Yes	Yes	Yes	Yes
Observations	194,959	194,959	194,959	194,959
R^2	0.0004	0.791	0.007	0.004
Statistics F	116.922***	721,696.300***	775.838***	1,569.626***

*p<0.1; **p<0.05; ***p<0.01.

This table presents the results of a panel model with fixed effects that analyzes the effect of the entry of new competitors into local markets on the characteristics of the loans granted by the incumbents, such as the interest rate (1), average amount of the loans (2), number of loans granted (3) and number of loans other than renewals or restructurings (4).

Models (2), (3) and (4) use logarithmic transformation of the dependent variable.

The estimate is made with a sample of loans granted between 2012 and 2019 by 15 microcredit providers.

Source: *Asomicrofinanzas*. Own elaboration.

Table 4.11. Effects of market structure on individual loan characteristics (contract-level data)

	Interest Rate	Amount (*log*)	Plazo
	Term Market Structure		
Competitors $(t-1)$	-0.0762^{***}	-0.0016^{***}	0.0241^{***}
	(0.0013)	(0.0002)	(0.0020)
New competitors (t)	-0.1370^{***}	-0.0029^{***}	0.0123^{**}
	(0.0029)	(0.0003)	(0.0043)
New competitors	0.0135^{*}	-0.0010	-0.0972^{***}
*Intermediate market	(0.0068)	(0.0008)	(0.0103)
New competitors	-0.0061	-0.0019	-0.0123
*Rural Market	(0.0113)	(0.0014)	(0.0172)
New competitors	-0.1176^{***}	-0.0026	-0.1535^{***}
*Disperse Rural Market	(0.0147)	(0.0018)	(0.0222)
	Loan characteristics		
Interest rate		-0.0344^{***}	-0.0665^{***}
		(0.0001)	(0.0008)
Credit amount (*log*)	-2.4239^{***}		8.3234^{***}
	(0.0042)		(0.0050)
Codebtor	1.1267^{***}	0.1428^{***}	0.3904^{***}
	(0.0056)	(0.0007)	(0.0085)
Guarantee value (*log*)	-0.0012	0.0118^{***}	0.0623^{***}
	(0.0010)	(0.0001)	(0.0015)
	Characteristics of the productive project		
Agricultural loan	0.2765^{***}	-0.0552^{***}	-0.3460^{***}
(dummy)	(0.0081)	(0.0010)	(0.0140)
Age of project	0.0020^{***}	0.0002^{***}	-0.0020^{***}
	(0.0000)	(0.0000)	(0.0000)
Asset value (*log*)	0.0427^{***}	0.0283^{***}	0.0434^{***}
	(0.0008)	(0.0001)	(0.0011)

Continues

	Customer characteristics		
Age of project	-0.0630^{***}	0.0123^{***}	-0.0224^{***}
	(0.0011)	(0.0001)	(0.0016)
Female gender (dummy)	-1.3290^{***}	-0.0154^{*}	0.3917^{***}
	(0.0644)	(0.0077)	(0.0975)
Dependents	-0.1033^{***}	-0.0017^{***}	-0.0365^{***}
	(0.0020)	(0.0002)	(0.0031)
	Characteristics Municipality		
Rural population (percentage)	0.0716^{***}	-0.0223^{***}	-0.0954^{***}
	(0.0089)	(0.0011)	(0.0135)
Population of the municipality (*log*)	-0.0484	-0.0271^{***}	0.4288^{***}
	(0.0258)	(0.0031)	(0.0390)
Economic importance (*log*)	0.0550^{***}	0.0177^{***}	-0.0765^{***}
	(0.0069)	(0.0008)	(0.0104)
Fixed Effects Year-Month	Yes	Yes	Yes
Fixed Effects department	Yes	Yes	Yes
Fixed Effects institution	Yes	Yes	Yes
Number of observations	5264947	5264947	5264947

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$. The following variables were included: Level of studies of the client, type of property, marital status, stratum, project target market, type of procedure and type of term. As for the characteristics of the market, variables such as: Distance to the nearest urban center, degree of rurality of the geographical market and membership of PDET zones were also included. Full results are available upon request to the author.
Source: *Asomicrofinanzas*. Own elaboration.

4.6 Conclusions

This chapter described the characteristics of the local microcredit supply, in terms of the number of branches and competitors that potential customers have at their disposal near their place of residence or the location of their business. Additionally, the changes in competition in the microcredit sector in local geographic markets were explored. As for the market structure, significant differences were found among microcredit providers, both in their degree of specialization in this segment and in the size of their branching networks. In recent years, there

has been an increase in the market share of microfinance institutions; other financial institutions that include microcredit in their portfolio of services, but do not have a high degree of specialization in this market niche, have reduced their share.

We found that the variety of financial products available to micro-entrepreneurs depends significantly on their geographical location. The individual information used in this chapter showed that about 80% of micro-entrepreneurs obtain financing from loan providers that have active branches near their place of residence or the location of their productive project. Although this percentage decreased in recent years, due to the development of alternative channels of communication with the client, it can be said that the presence of a traditional branch is a key element in the differentiation for providers participating in this market.

Although the microcredit market was found to be moderately competitive at the national level, there are significant differences in terms of the number of providers available in local geographic markets. A significant percentage of these markets, particularly rural ones, are served by fewer than three financial institutions. In contrast, the largest variety of microcredit providers is concentrated in intermediate and urban markets, where banks specializing in microcredit compete with smaller institutions that also offer financing services for micro-entrepreneurs. Despite the differences throughout the national territory, we found that in recent years the variety of financial services available in local markets has increased, particularly in intermediate cities and their vicinity, where the dynamic in terms of entry of new competitors is greater.

Next, our analysis focused on the effects of changes in the local structure of markets on the characteristics of loans granted by microfinance institutions, with the aim of establishing whether the expansion dynamics of branching networks into new markets has contributed to improving the terms of funding available locally to micro-entrepreneurs. We found that the profit of financial institutions decreased significantly with the entry of a new competitor; through more detailed information of the disbursements of some of the largest microfinance institutions in the sector, this reduction seems to be explained, to a greater extent, by a reduction in the intermediation margin per customer, rather than

by a significant decrease in the number of disbursements (a negative variation of only 2.6% per additional competitor is estimated). This result suggests that new competitors generate significant net growth in total microcredit volume, rather than replacing local supply.

When analyzing changes in the loan characteristics associated to the entry of a new competitor, we observed that incumbent financial institutions tend to offer slightly more favorable financing terms to their clients after such event. In particular, the interest rate of loans is the most sensitive characteristic to changes in the market structure, while the loan size does not present significant changes in the presence of a new financial institution.

While these changes are significant, their economic magnitude is small, suggesting that increased competition at the local level also implies that incumbents must incur in additional expenses in order to differentiate and attract new customers. In this regard, it was found that, after the entry of a new competitor, providers experience a greater reduction in the number of new applications, compared to the number of renewals and restructurings. This could suggest that there are key costs for clients associated with changing financial services providers, either transactional, or associated with a lower probability of microcredit approval. In addition, a more incisive commercial strategy in response to even greater competition at the local level can lead institutions to increase the credit risk of their portfolio. These possibilities should be considered in more detail in future research.

Although the present analysis finds that the interest rate of microcredits responds to changes in the local market structure, it is only a first step to understand how the size and geographical distribution of branching networks determine the optimal interest rate policy of providers at the national level.

To measure the capacity of institutions to establish their margin of intermediation and to examine its evolution in recent years, we need to understand first how micro-entrepreneurs assess the different characteristics of the credits. The evidence provided here indicates that this assessment depends heavily on local supply and demand conditions, which exhibit substantial heterogeneity throughout the national territory. We hope to move in this direction in future research.

4.7 Appendix

Table 4.12. Providers participating in the microcredit market in Colombia (2014-2020)

	nombre	Tipo	Espc
1	*Banco Agrario*	Banks	MFI
2	*Bancamía S.A.*	Banks	MFI
3	*Banco W S.A.*	Banks	MFI
4	*Banco Mundo Mujer S.A.*	Banks	MFI
5	*Bancompartir S.A.*	Banks	MFI
5	*Mi Banco S.A.*	Banks	MFI
6	*Banco de Bogotá*	Banks	Non - MFI
7	*Banco Caja Social*	Banks	Non - MFI
8	*Bancompartir*	Banks	Non - MFI
9	*Bancolombia*	Banks	Non - MFI
10	*Banco Coopcentral*	Banks	Non - MFI
67	*Banco CrediFinanciera S.A.*	Banks	Non - MFI
46	*Acción por Atlántico*	NGO	MFI
47	*Corporación Microcrédito Aval*	NGO	MFI
48	*Contact*	NGO	MFI
49	*Crezcamos**	NGO	MFI
50	*Edificar Encumbra*	NGO	MFI
51	*Fintra*	NGO	MFI
52	*Fundación Amanecer*	NGO	MFI
53	*Fundación Coomeva*	NGO	MFI
54	*Finanfuturo*	NGO	MFI
55	*Fundación Mario Santo Domingo*	NGO	MFI
56	*Fundesmag*	NGO	MFI
57	*Famiempresas*	NGO	MFI
58	*Fundación de la Mujer*	NGO	MFI
59	*Corporación Interactuar*	NGO	MFI
60	*Actuar Famiempresas Tolima*	NGO	MFI
61	*ECLOF*	NGO	MFI
62	*Actuar Bolívar*	NGO	MFI
63	*A Progresar*	NGO	MFI
64	*Fudemic*	NGO	MFI
65	*Fundación Indufrial*	NGO	MFI
66	*Cootrafa Cooperativa Financiera*	SFC	MFI
68	*Oicolombia*	SFC	Non - MFI
69	*Confiar*	SFC	Non - MFI
70	*Coop. Financiera de Antioquia*	SFC	Non - MFI
71	*Coop. de ahorro y crédito John F. Kennedy*	SFC	Non - MFI
72	*Coofinep Cooperativa de Carácter Financiero*	SFC	Non - MFI
11	*Coop. de Ahorro y Crédito CREAR LTDA CREARCOP*	Coop.	MFI
12	*Coop. de Comerciantes COMERCIACOOP*	Coop	MFI
13	*Coop. Especializada de Ahorro y Crédito CREDISERVIR*	Coop	MFI
14	*Coop. Latinoamericana de Ahorro y Crédito*	Coop	MFI
15	*Coop. Multiactiva de El Paujil Caquetá LTDA*	Coop	MFI
16	*Coop. Tolimense de Ahorro y Crédito COOFINANCIAR*	Coop	MFI
17	*Coop. de Ahorro y Crédito San Miguel*	Coop	MFI
18	*Coop. de Ahorro y Crédito Tabacalera Y Agropecuaria LTDA*	Coop	MFI
19	*Coop. Colombian Micro-enterprises*	Coop	Non - MFI

Continues

20	*Coop. de Ahorro y Crédito CONGENTE*	Coop	Non - MFI
21	*Coop. Multiactiva de Trabajadores de Santander*	Coop	Non - MFI
22	*Coop. de Ahorro y Crédito AVANCOP*	Coop	Non - MFI
23	*Coop. Of the Education workers From Putumayo*	Coop	Non - MFI
24	*Coop. de Ahorro y Crédito COOPSERVIVELEZ LTDA*	Coop	Non - MFI
25	*Coop. de Servicios Multiples Mogotes*	Coop	Non - MFI
26	*Coop. de Servicios Multiples Villanueva LTDA*	Coop	Non - MFI
27	*Coop. Especializasa de Ahorro y Crédito COOPIGON*	Coop	Non - MFI
28	*Coop. Financiera Cafetera*	Coop	Non - MFI
29	*Coop. Financiera San Francisco*	Coop	Non - MFI
30	*Coop. de Ahorro y Crédito BELEN*	Coop	Non - MFI
31	*Coop. Multiactiva Del Guainia*	Coop	Non - MFI
32	*Coop. Multiservcios Barichara LTDA*	Coop	Non - MFI
33	*Coop. Nacional de Ahorro y Crédito AVANZA*	Coop	Non - MFI
34	*Coop. San Pio X de Granada LTDA*	Coop	Non - MFI
35	*Coop. COOTRAIM*	Coop	Non - MFI
36	*Coop. COPROCENVA*	Coop	Non - MFI
37	*Coop. de Ahorro y Créd. Caja Unión*	Coop	Non - MFI
38	*Coop. de Ahorro y Créd. de Aipe*	Coop	Non - MFI
39	*Coop. de Ahorro y Créd. Financiera COAGROSUR*	Coop	Non - MFI
40	*Coop. de Ahorro y Créd. Nacional LTDA*	Coop	Non - MFI
41	*Coop. de Ahorro y Créd. para el Dllo. Solidario de Colombia*	Coop	Non - MFI
42	*Coop. de Ahorro y Créd. Pio XII*	Coop	Non - MFI
43	*Coop. de Ahorro y Créd. Social Prosperando LTDA*	Coop	Non - MFI
44	*Coop. de Ahorro y Créd. Valle de San José LTDA*	Coop	Non - MFI
45	*Coop. de La Guajira*	Coop	Non - MFI

* 'Crezcamos S.A.' became an institution surveilled by the Office of the Financial Superintendent of Colombia after the integration with the financing company "Opportunity International Colombia". In the descriptive statistics presented in this chapter it is considered as an NGO, since it retained this category for most of the analyzed period.

Table 4.13. Number of loans according to the financial institution (2010-2020)

	Institution	Number of disbursements
1	*Fundación Amanecer*	94.349
2	*Bancamía*	2.964.894
3	*Banco Mundo Mujer*	964.789
4	*Banco Bancompartir*	4.592
5	*Banco W*	411.756
6	*Cooperativa Financiera de Antioquia*	35.038
7	*Cooperativa Coomultrasan*	321.596
8	*Cooperativa Financiera Confiar*	29.252
9	*Contactar*	747.068
10	*Crezcamos*	473.681
11	*Finamiga*	4.389
12	*Finanfuturo*	39.079
13	*Fundación de la Mujer*	888.551
14	*Interactuar*	301.284
15	*Colombian Micro-enterprises*	133.826

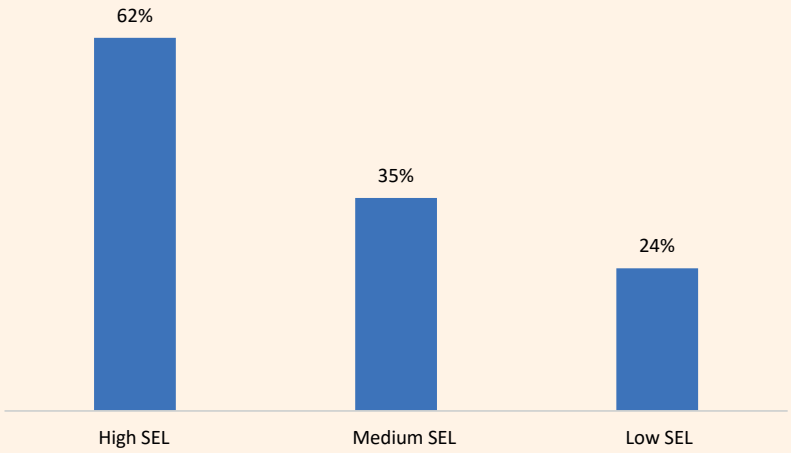
Micro-Insurances

Insurances are financial instruments that reduce the negative economic impact that people and companies may suffer because of unexpected events. In the event of a calamity, people with insurance (or their families) have more resources to cope with the situation and can recover more quickly. This type of instrument is particularly relevant for vulnerable populations, who are exposed to a number of risks that affect their socio-economic situation. Despite the above, households with a high socioeconomic status (SSN) are the ones that most acquire voluntary insurance (Graph 4.3).

To promote insurance among microcredit customers, industry and insurers have joined efforts to design insurances in line with the needs of this population group and their ability to pay. These partnerships have allowed both products to be offered simultaneously, reducing operating, travel, and time costs for both providers and customers.

As mentioned in Chapter 1 of this book, 57% of microcredit customers have voluntary insurance. Most of these insurances fall into the micro-insurance category, with a monthly premium of less than $20,000 for life and accident insurance, $30,000 for property and agriculture insurance, and $75,000 for health insurance (BdO and SFC , 2020). This box presents some of the micro-insurances offered to micro-entrepreneurs (BdO *et al.* , 2018).

Graph 4.3. Percentage of households with voluntary insurance according to their socioeconomic status



Source: BdO *et al.* (2018).

First, voluntary life insurance covering cases of death by any cause, total and permanent disability, and serious illnesses are highlighted. Monthly premiums range from $6,000 to $7,250 and protections for those affected or their families range from $3 million (m) to $5 m. There are also monthly plans of $9,000 with coverage of $9 m for death or permanent disability, and $4 m for serious illnesses. Likewise, micro-insurances for personal accidents are offered that cover accidental death, cancer diagnosis, daily rent for permanent disability or maternity, for a monthly premium between $8,000 and $12,500.

On the other hand, there are micro-insurances aimed at women for their protection in health issues (i.e., cancer), as well as during their pregnancy and the first months of motherhood. Similarly, differentiated products for rural and urban women (including one that protects their handbags against theft) stand out. As is observed in Table 4.14, insurance premiums range from $1,425 to $7,900, with coverage ranging from $500 to $20 m.

Table 4.14. Offer of micro-insurances for women

Micro-insurance	Monthly premium	Protection	Coverage
Cancer	$2,000- $7,900	$5 m - $20 m	Cancer Diagnosis for the first time
		$500 m- $1 m	Accidental death
		$1 m- $3 m	Assistance aesthetic surgery
Maternity	$3,200- $5,600	$250 m - $500 m	Maternity income (4 months)
		$150 m - $300 m	Assistance for payment of microcredit (one-time payment)
			There are no limits on medical assistance and legal guidance, among others
Rural woman	$1,425- $1,900	$500 m - $1 m	Accidental death
			It also includes medical, geriatric and pediatric telephone counseling; psychological, emotional, and legal telephone assistance; and woman control, among others
Handbag Protection	$2,800	$200,000	Loss of handbag, wallet, backpack, or briefcase due to qualified theft.
		$100,000	Protected wallet/documents due to qualified theft.
		$200,000	Protected Car Keys / Qualified home theft.
		$800,000	Cash theft due to qualified theft.

This table lists the most outstanding coverage specifications.
Source: Taken from the website of some institutions affiliated to *Asomicrofinanzas*.

Third, there are micro-insurances that protect businesses of micro-entrepreneurs, both agricultural and non-agricultural. Within the first group are some that cover adverse climatic events such as rains, droughts, hailstones and fires, and others that protect crops. Premiums in this group range from $13,314 to $19,950 with hedges that depend on the parametric reference indicator or maximum values of up to $5 m. In the case of non-agricultural businesses, insurance against damage, theft and civil liability is offered, as well as against events such as earthquakes and excess rainfall. These insurance premia range from $9,855 to $16,308, with coverage ranging from $50 m to $5 m.

Home damage or theft insurance is also part of the portfolio offered by microfinance institutions. Part of the material damages covered are fires, tremors, landslides, and water damage. The premiums offered range from $7 m, where the protection can reach $3 m, up to $35 m with claims payments of up to $ 15 m. In the case of robbery or thefts, insurance with premiums of $6,221 to $15,988, which cover losses between $1.4 m and $3.9 m. In addition, all risk insurances are offered for vehicles and motorcycles, against loss of documents and debit/credit cards, and for the protection of the client's entire family.

The fact that 57% of microcredit customers have at least one of the micro-insurances described above is good news, as it makes them more resilient in the face of different shocks. To the extent that customers are more aware of acquiring these types of products and that the joint work between the microfinance and insurance industries strengthens the supply aimed at this segment, a significant growth in the number of premiums and policies issued is expected. This process should be accompanied by training for customers on the procedures to make the policy payments, to reduce the number of complaints and increase their use. In this regard, Martínez (2021) indicates that the rates of claim rejection and the number of complaints for current policy in micro-insurance are higher than the industry averages, which could discourage its acquisition.

The Role of Microfinance Institutions in the Financial Inclusion of Migrants

In recent years, Colombia has experienced an unprecedented migratory phenomenon marked by the significant influx of Venezuelan citizens and Colombian citizens living in that country. This situation has brought key challenges of humanitarian assistance, regularization of their status, provision of basic goods and services (health, education, and housing), and their socio-economic integration.

According to data provided by Migración Colombia, 2,162,489 migrants completed the process of the Single Registry of Venezuelan Migrants (RUMV); there are 1,821,041 pre-registrations of the Temporary Protection Statute; and 1,061,815 Temporary Protection Permits (PPT) were approved.[11] In addition, the Ministry of Foreign Affairs has a record of

[11] In March 2021, the Colombian Government issued Decree 216 adopting the Statute of Temporary Protection for Venezuelan Migrants (ETPV). This measure seeks to homogenize the process of formalization of this population and create a single registry that facilitates their access to services and policy monitoring. The ETPV is composed of the RUMV and the PPT. Once people complete the RUMV (biographical data, demographic data, facial biometrics, household, and summary test), they must complete the characterization survey (personal data, family group, living conditions, ethnicity, studies and occupation, social security, health, stay in Colombia, reasons for migration, vulnerability, and perception of integration) and complete the face-to-face biometric registration to access the PPT.

19,161 returned Colombians, although they estimate a higher number including unregistered.[12]

Attention to these population groups has required the joint effort of public and private institutions at all levels, including local and international agencies and host communities. The Government has made progress in the implementation of the CONPES 3950 Strategy for the Attention of Migrants from Venezuela, Decree 216 of 2021 and the consolidation of the Office of Assistance and Socio-Economic Integration of the Migrant Population. The Government's efforts have focused on two lines of action. On the one hand, improving the care and integration of migrants in terms of their access to health and education services; the care of children, adolescents, and youth; the provision of humanitarian services, housing, water, and sanitation; and the improvement of their working situation. On the other hand, strengthening the institutional capacity for an articulated response to the migration phenomenon in coordination with local and international actors.

Integrating the migrant population means not only guaranteeing their access to basic services. It also requires articulated work that promotes their well-being and integration, to create the right conditions for their development and contribute to the host communities. Thus, within the route designed for the integration of these population groups, one of the key elements is their socio-economic inclusion by linking them to the labor market and/or supporting their enterprises.

In this sense, the Local Integration Centers for Migrants stand out, where guidance and referrals are provided for the migrant, refugee and returned Colombian population. Similarly, the efforts of the Ministry of Labor, supervising the employment situation of migrants, their working conditions and compliance with labor standards, stand out. In addition, there are programs of non-governmental organizations such as Somos Panas Colombia, of the Office of the United Nations High Commissioner for Refugees (UNHCR) that, in alliance with some private sector companies, promotes hiring of the Venezuelan population. Despite the efforts, the challenges in this area are outstanding. According to figures from the Border Management Office (Gerencia de Fronteras) (2022), only 106,000 Venezuelans are listed on the Integrated Liquidation of Contributions Form

[12] For more details enter https://www.dnp.gov.co/DNPN/observatorio-de-migracion/Paginas/Colombianos-retornados.aspx.

(PILA), and 12,000 Colombian companies are listed as having contracted Venezuelan migrants.

Recently, the Government issued CONPES 4100 Strategy for the Integration of the Venezuelan Migrant Population as a Development Factor for the Country, where seven lines of action are defined: (I) Implement strategies to increase the supply and enable comprehensive access to services for the migrant and host population; (II) Strengthen the State's capacity to respond with prevention and addressing vulnerabilities; (III) Strengthen and adopt strategies that will allow the economic integration of the Venezuelan migrant population; (IV) promote environments that favor the social and cultural integration of the Venezuelan migrant population; (V) Strengthen the institutions responsible for the care and integration of the migrant population; (VI) define a financing strategy to ensure integration and harnessing for development and (VII) strengthen the generation, processing, exchange of information and evaluation of service range.

On the other hand, regulators and financial institutions have joined efforts to financially include these segments of the population, among which are the flexibility of the requirements to acquire a financial product and / or the design of products more in line with their needs. Through Circular Letter 82 of 2019, the SFC stipulated that the Special Permanence Permit (PEP),[13] as well as the expired Venezuelan passport that has the stamp of entry and permanence granted by the Special Administrative Unit Migración Colombia and whose expiration does not exceed 2 years, must be admitted for Venezuelan nationals to acquire or open financial products and/or services.

Subsequently, the SFC Circular Letter 71 of 2021 reminds institutions under its supervision that, as of the publication of Decree 216 of 2021, all PEP are automatically extended for two years (until 28 February 2023), and that, during that period, these will continue to be valid as a means of identification to deal with the financial system. It also emphasizes that the PPT is a document with full validity for the identification of its holder and must therefore be admitted for the opening and contracting of financial services.

[13] The PEP is an identification document issued by Migración Colombia, which allows Venezuelan nationals who are in Colombian territory to remain temporarily on a regular basis.

The work to financially include this population has been justified by the conviction that access of the migrant population to financial products and services facilitates their advancement in the formal labor market, reduces the expenditure on humanitarian aid due to the economic self-sufficiency of the person, and contributes to their socioeconomic empowerment.

Despite the efforts described, the financial inclusion indicator for this population reached only 14% at the end of 2020, while for the total national population it was 87.8% (Banca de las Oportunidades and the Office of the Financial Superintendent of Colombia 2021).[14] At the end of March 2022, the SFC reported that 401,789 Venezuelans have some product within the financial system. The total number of products purchased by this population amounted to 549,732[15] (1.4 per person), with banking establishments (76%) and SEDPES (21%) standing out, with about 97% of the total.

On the other hand, the December 2021 Report on the Situation of Microcredit in Colombia reported that only 706 of the 127,658 new debtors (0.55%) in the fourth quarter of 2021 were migrants, representing 0.27% of the total portfolio. These gaps underscore the need to continue working on this subject and learn from successful experiences that encourage and inspire the participation of new actors.

Below we highlighted the efforts of some providers associated to *Asomicrofinanzas* and beneficiaries of the Rural Finance Initiative (IFR) of the United States Agency for International Development (USAID). The information presented was taken from the event Financial Opportunities for the Migrant Community organized by USAID and allied institutions on 24 June 2021.[16]

First, the creation of the *Financial Orientation Guide for Refugees and Migrants from Venezuela*[17] was highlighted, the purpose of which is to inform this population about the procedure to open a savings account,

[14] This indicator is measured as the relationship between adults with a deposit, credit or insurance product, and the total.

[15] 8,598 were microcredits.

[16] More details on: https://www.oportunidadesfinancierasmigrantesvnlz.com/

[17] This document is the result of a joint effort between UNHCR, the Pan American Development Foundation (PADF), the International Organization for Migration (IOM), the International Labor Organization (ILO), United Nations Development Program (UNDP), USAID and the Interagency Group on Mixed Migration Flows (GIFMM).

make use of electronic wallets, access credit cards or insurance, send or receive remittances and financial recommendations to prevent fraud or keep up with payments, among others.

Additionally, Bancamia is part of *The Tent Partnership for Refugees (TENT)*, which aims to mobilize the business sector to improve the lives of migrants, so it has been strengthening the supply of financial products for Venezuelan migrants. This bank linked migrant people as beneficiaries of the Empropaz program that provides comprehensive accompaniment and financing to entrepreneurs. On the other hand, Banco Mundo Mujer and Crezcamos have been working on financial inclusion issues of the Venezuelan migrant population through microcredit, promoting investment, and economic and financial education programs. These programs are carried out in partnership with USAID's IFR, which for some banks is complemented with a guarantee from the International Development Finance Corporation (DFC) for this population.

De igual manera, se resaltó que *Bancamía* forma parte de *The Tent Partnership for refugees (TENT)*, cuyo objetivo es movilizar al sector empresarial para mejorar las vidas de los migrantes, por lo que viene fortaleciendo la oferta de productos financieros dirigidos a migrantes venezolanos. La entidad vinculó a la población migrante como beneficiaria del programa *Empropaz* que brinda acompañamiento integral y financiamiento a los emprendedores. Por otro lado, se subrayó que *Banco Mundo Mujer* y *Crezcamos* vienen trabajando en asuntos de inclusión financiera de la población migrante venezolana por medio del microcrédito, el fomento de la inversión y programas de educación económica y financiera. Estos programas se realizan en alianza con la IFR de USAID que se complementa para algunas entidades con una garantía del *International Development Finance Corporation (DFC)* para esta población.

Likewise, we underscored the efforts of micro-enterprises in Colombia aimed at migrants, Venezuelan returnees, and inhabitants of PDET municipalities through the Virtual Financial Education program. At the end of the program, the cooperative presents its financial offer to the participants, which promotes their financial inclusion through savings accounts and / or microcredits.

Finally, we highlighted the efforts of providers such as Movii, Tpaga and Agape. The first two offer mobile wallet services to facilitate transactions of this population. Agape, on the other hand, focuses on supporting group

savings and credit projects for vulnerable communities such as Venezuelan migrants.

Image courtesy of *Crezcamos*, Financing Company

CHAPTER 5

Our Microcredit Institutions

The institutions that are part of this study are different in nature. Some are niche banks; others are cooperatives, microfinance institutions, and a few are non-governmental organizations (NGOs). However, regardless of their legal status, they all share the same interest: to support small urban and rural businesses that promote the economic development of families in conditions of poverty or vulnerability.

Undoubtedly, these institutions associated with *Asomicrofinanzas* are the main actors of the results analyzed throughout this book, since they directly manage microcredit in Colombia. Their vocation, dedication, and experience in the care of micro-entrepreneurs have allowed many families in the country to improve their quality of life and have been a source of inspiration for those who consider microcredit as a tool to overcome poverty.

The institutions studied and other members of *Asomicrofinanzas* are reviewed as follows. They contribute with their work much more than financial capital because they additionally help to transform communities, support micro-entrepreneurs to meet their goals, and provide instruments that improve their quality of life and well-being.

Bancamía

At Bancamía, we work for the people! [1]

A promise of value like the one we have made since our creation in 2008 at Bancamía, an institution of the BBVA Microfinance Foundation, to improve the quality of life of low-income families, commits us to continue advancing to fulfill this purpose, in which we have worked daily to generate real transformations in the different regions of the country.

We continued our work tirelessly in the midst of a global health emergency. We have worked hard to help mitigate the effects that have been caused. Life changed us. The poverty and social inequality the pandemic have left behind leads us to become an active part of many solutions that are required in this path of accompanying those most vulnerable.

Consequently, at the Bank we have remained close and active so that entrepreneurs continue searching for and working towards their growth. Today we serve more than 1.5 million customers with credit, savings, investment, and insurance products. Of the entrepreneurs in the micro-enterprises we finance, 54% are women, 43% live in rural areas, 86% are vulnerable (from the standpoint of their income), and 40% have, at most, primary education.

To mitigate those barriers that represent limitations on the way out of poverty, we are working from different fronts that strengthen the work of microfinancing in its broad purpose of accompanying the progress of those who need it most.

[1] Figures as of August 2022.

We are getting closer

We are further developing the basis of our microfinance methodology, Relational Banking, consolidating it with an expansion plan that allows us to have 227 offices in 100% of the departments of the country today. This is strongly complemented by digitalization processes that bring the bank closer to its customers and facilitate its relationship with them.

We have strengthened our product portfolio with a value-offering digitization strategy that allowed us to launch the Digital CTD, the accounts Soñando Juntos Digital, Micropayrolls, and Platamía, a small deposit that helped to bank nearly 270,000 people during the pandemic. Along with this, we have created a Digital Loan for outstanding customers that show good handling of their products. All this can be managed by the client itself from our Mobile Banking application.

As of 2022 we have more than 340,000 digital clients, 63% of them women and 28% rural residents, who use the online ecosystem, with tools such as Virtual Office, Corporate WhatsApp, and Mobile Banking.

We go beyond finance

Women, indigenous people, peasants, migrants, and conflict victims, among other population groups, have found barriers to access the formal financial system. They are a priority for Bancamía, and hence we work on programs that not only address the provision of a financial product or service. The goal is to contribute to generate integral development for their path out of poverty.

Our intention has been strengthened, for example, with the support that Bancamía has given since 2018 through the program Productive Entrepreneurship for Peace (Empropaz), working in partnership with USAID, the World Corporation of Women Colombia, and the World Corporation of Women Medellín, to serve Colombian microentrepreneurs and entrepreneurs, Venezuelan migrants, and host communities in 89 municipalities of the country, affected by violence and poverty.

With this model we have managed to generate entrepreneurial skills and strengthen businesses, through specialized socio-entrepreneurial training, complemented by a financial inclusion process under special

conditions. In these areas we have served more than 150,000 people with Productive Finances that allow them to receive loans, savings accounts, CDTs (term deposit certificates) and insurances. Also, about 7,000 beneficiaries have received training support.

In 2020, amid the pandemic, in a scenario that increased school dropout rates, BBVA and Bancamía created the 'Transforming Realities' Scholarship to facilitate children of low-income entrepreneurs, served by Bancamía, to study at the university. We have delivered 10 grants and, after two years, we decided to extend this commitment to the next generations by delivering twice the annual scholarships.

We complement this with a robust financial education program, 'Echemos Números', created to provide clients and communities with educational actions that allow them to make sound decisions managing their finances and influence positively their economic well-being. This program has been awarded the Quality Seal in the category "Capacity Management in Financial Education" Level 1, by the Financial Superintendent's Office of Colombia, being the first bank in the country to receive this recognition.

Through different alliances with local partners and international organizations, such as USAID, IFC (International Finance Corporation), Trust for the Americas and Tent Partnership for Refugees, among others, managed jointly with the BBVA Microfinance Foundation, Bancamía is expanding the impact of its mission, working as a team on behalf of vulnerable populations in different fronts such as: training in entrepreneurial and digital skills, financial inclusion of women and Venezuelan migrants.

> *"At Bancamía, beyond talking about digital transformation, innovation, or delivery of a financial product as a standard step in business evolution, we are driven by the purpose of transforming realities, thus getting closer and closer to those who wish to launch their business ideas or strengthen their micro-enterprises from anywhere in the country as the only way for their families to come through , contribute to*

development in their communities', and begin to leave behind the burdens of poverty that widen the inequality gaps that we are all fighting against in the BBVA Microfinance Foundation Group".

Viviana Araque Mendoza
Executive President of Bancamía

Banco Caja Social

Banco Caja Social, a company of the Fundación Grupo Social, is one of the financial institutions with great tradition in Colombia, since throughout its history it has remained faithful to its principles of building every day a fair, supportive, productive, and peaceful society. Its origin dates back to 1911; that year, thanks to the work of the Spanish Jesuit priest José Maria Campoamor, the Social Savings Fund of the Workers Circle was created, with the purpose of encouraging the working class to practice savings as an economic and social instrument, as well as facilitating popular sectors of the middle and lower socioeconomic strata access to loans. Thus, it began the path towards true financial inclusion of lower income populations from Colombia.

It is an organization whose raison d'etre is based on the common good to conceive a different bank, which has a genuine interest in listening, knowing, and understanding the real needs of others. Therefore, it provides real opportunities for progress through pertinent and relevant financial solutions, designed according to the people it serves, especially those from popular sectors. In a competitive market like the one we live in, Banco Caja Social works tirelessly to stand out by making a difference with a service that is understood as: "The genuine, deliberate, permanent and structural orientation, to have deep knowledge of the need of others and to find in its satisfaction the organization's raison d'etre."

For this reason, it has a robust value proposition with a very important component, which is *gratuity*, as a reflection of its commitment to being a bank that provides solutions to its customers, and which has become tangible by making available to Colombians some of the

most in-demand services, such as free withdrawals at ATMs and an extensive network of bank correspondents, free transfers from digital channels to other banks, and opening and managing the Cuentamiga savings account.

Likewise, Banco Caja Social has its Specialized Microfinance Unit, which promotes personalized attention through genuine support to micro-entrepreneurs, thus supporting its link to the country's economic dynamics to strengthen and protect the nation's business and productive network, which is responsible for much of Colombia's employment generation. It is through this business unit that we share the purpose of promoting financial inclusion processes, providing access to affordable financial services according to the real needs of microentrepreneurs and accompanying their business units to help achieve higher levels of well-being.

The Specialized Microfinance Unit, with an operating methodology different from traditional credit-granting models, is not based on the evaluation of patrimonial statements, credit history or real payment guarantees, but evaluates each request from the dynamics and reality of the microenterprise, the full knowledge and projection of the business, and the payment capabilities with flexible frequencies. Most importantly, it has advisors with specialized training to visit businesses and accompany clients on site to provide microentrepreneurs with better alternatives.

Without a doubt, Banco Caja Social remains faithful to the legacy of Grupo Social Foundation by reiterating its commitment to the country and its vocation to authentically serve popular markets, with the strong conviction that its contribution as the Bank that is the Friend of Colombians, making service its raison d'etre, will have a transformative impact on society.

Ban100

Ban100: Transforming the financial experience of the Colombian population's base segment.

Ban100 was born with the purpose of offering top quality credit products, as well as a savings and investment portfolio with safety and profitability criteria for the base segments of the Colombian population.

The institution emerged in 2011, with its focus on Term Deposit Certificates (TDC). Then, in 2012, it received authorization from the Financial Superintendent's Office to change its company name to Credifinanciera —— Financing Company. In the same year, the first office was opened in the country's capital and, to expand its portfolio, the bank purchased the portfolio of Microcrédito de Microfinanzas, a relevant company in the microcredit market, to later launch its financial and microcredit products.

Since 2013, it began its expansion strategy by opening offices in the cities of Bogotá, Medellín, and Cali.

With the vision of continuing to consolidate its business model, in August 2019, Credifinanciera requested the authorization of the Financial Superintendent's Office of Colombia to acquire 100% of the shares of Banco Procredit S.A. and thus give way to its consolidation as a Bank in January 2020.

Throughout its history, it has built a value offer based on principles of transparency, trust, agility, and responsibility, which has resulted in products and services for thousands of people and families, who for some reason do not have the history or meet the requirements for traditional banking, to fulfill their purposes and provide them with better living conditions.

Its commitment is reflected in its credit lines, with which each person with a dream, a life story and a purpose can find a responsible

and reliable way to fulfill it. Part of it is reaching different populations; currently the institution is present in more than 890 municipalities.

With figures as of July 2022, Ban100 had more than 170 thousand customers. For this period, the company reflected an evolution in its credit portfolio, reaching $1.66 billion, equivalent to 18% above everything that was achieved in 2021.

Part of this growth is due to the accompaniment and the microcredit offer, with a 100% digital modality that has allowed it to meet the working capital needs of micro-entrepreneurs and entrepreneurs and reduce approval and disbursement times through an agile and friendly process.

Ban100 is committed to expanding responsible access to financial services, as the most effective way to reduce poverty rates and build a better country.

By July 2022, microcredits showed a very positive dynamic, as the product had 24,458 customers, with a portfolio balance of $132 billion pesos. It should be noted that the number of 18- to 25-year-old customers increased more than twice the previous year and women led the figures with 56% of applications and approvals. This reflects how the Bank builds strong relationships with its clients, allowing them to have greater financial inclusion.

For the first half of 2022, 127,517 companies were created in the country, representing a growth of 3.7% compared to the figures of the prior year, as shown in a report by Confecámaras (2022). In line with the increase in the number of companies constituted in the country, Ban100 has increased the support offered to these sectors of the economy. Wholesale and retail trade led the Bank's microcredit share with 45%, followed by manufacturing, agriculture, and hospitality and tourism industries (see Table 5.1).

The Bank's focus on financial inclusion is evidenced in its strategy of providing broad solutions for the population's base segments. Proof of this is that 92% of its credit portfolio is concentrated in socioeconomic strata 1, 2 and 3. This led the British magazine Pan Finance to recognize this institution as the innovative bank of 2022 in financial inclusion. Their selection considered factors such as financial inclusion initiatives, scope, access facilities to financial services for customers,

incorporation of new solutions, the bank's sustained growth and the uniqueness of its products and services.

Table 5.1. Portfolio's distribution by economic sector

ECONOMIC SECTOR	Jul_22
WHOLESALE AND RETAIL TRADE	48.51%
MANUFACTURING INDUSTRIES	19.10%
AGRICULTURE, LIVESTOCK, HUNTING, FORESTRY AND FISHING	10.16%
REAL ESTATE	5.40%
MEALS AND ACCOMMODATION	4.55%
OTHERS	3.81%
SERVICES	3.77%
TRANSPORTATION AND STORAGE	2.83%
CONSTRUCTION	1.87%
TOTAL	100.00%

"At Ban100, we work efficiently to provide close services, offering products to populations neglected by traditional banking. These results show people's confidence in our business model, our financial strength, and the ability to provide financial support through innovative channels," said Danilo Morales, CEO of Ban100.

Banco Mundo Mujer

Mundo Mujer, a Bank for the Community

The commitment to contribute to the economic and social development of working communities, especially in lower-income populations, has been the great motivation of Banco Mundo to become the number one private microfinance bank in Colombia, both by its microcredit gross portfolio, as well as the number of customers, according to figures from *Asomicrofinanzas* as of August 2022.

For thirty-seven years (thirty as a foundation and seven as bank), Mundo Mujer has positioned itself as an institution that works with discipline and resilience, strengthening itself as an institution and being a strategic ally for its stakeholders.

It helps the community with credit, savings, and investment products, with few and easy requirements, quick response, and personalized attention. It offers its clients urban, rural, and agricultural microcredit, Small Business Credit, Free Investment Credit, as well as savings accounts and TDC.

Their head office is in Popayan. It has 178 offices located in 22 departments from where it serves populations of 673 municipalities. It provides employment to about 4,800 people in the country, of which 56% are women; 18% of this population is in the department of Cauca, thus becoming a reference for drive in the region.

At the end of August 2022, it has a total of 702,888 customers, of which 512,795 belong to the credit segment. Its portfolio balance was COP 2.2 billion and its Expired Portfolio Index, EPI, was 3.73%. As for its fundraising management, it has reached more than 180 thousand

savers and investors, who consider Mundo Mujer as a trustworthy and supporting institution. The bank makes accords with different legally constituted insurance companies in the country, based on commercial agreements and network-use contracts, which seek to ensure that customers can access tailor-made insurance products with competitive conditions.

The excellent results of Banco Mundo Mujer are obtained, among other reasons, thanks to its credit methodology focused on the close and inclusive attention, directed to entrepreneurs who want to strengthen their businesses or productive units both in the countryside and in the city.

In addition to ensuring ethical and responsible financial inclusion, Mundo Mujer is committed to the care of resources today, for future generations, seeking a financial system compatible with economic, social, and environmental sustainability, as a superior purpose. As part of its commitment to the environment, it applies since 2017 the Green Protocol of Asobancaria and advances towards the massification of the BioSustainable Agricultural Loan.

In August 2021, it was linked to the National Carbon Neutrality Program of the Ministry of Environment and Sustainable Development, to help create a greener future for all Colombians, committing to slow the progress of climate change and contribute to the achievement of the zero-greenhouse gas net emissions goal (GHG), set by the Government by 2050. Likewise, it has the Environmental and Social Risk Management System (SARAS) to evaluate risks and detect the possible shortcomings that clients present in terms of environmental and social aspects that may affect the payment of their obligations.

Currently, Mundo Mujer deepens its knowledge of customers, evolves technologically, offering new products and services according to their needs. It retains its promise of value with easy access and quick and personalized attention, to improve customer experience and create long-term relationships.

Banco Mundo Mujer grows hand in hand with its clients and together they build stories of progress, which are the source of inspiration to continue giving support to Colombia.

> *"We lend a hand to micro-entrepreneurs through credit and savings. We are there when they need us most, so*

they can grow and strengthen their businesses. Our clients see microcredit as an excellent opportunity to invest and continue making progress with their families.".

José Vicente Velasco Melo
President of Banco Mundo Mujer

Confiar Cooperativa Financiera

Microfinanzas en Confiar
The small Greatness of Solidarity

Acting cooperatively to live well together is one of the maxims that Confiar has implemented throughout its 50 years: not only to financially include people, but also to improve many areas of their lives.

If we talk about microfinance, we can say that the cooperative served 119,594 independent workers during the first half of 2022, which corresponds to 31% of the social base of *Confiar*. Most of them are informal, formal, peasant and professional people.

As a particular feature, we must highlight that in this same period these people have saved more than they loan. The collections, which amount to $274,419 million, together with social contributions for $71,508, add up to a figure higher than the loans, which correspond to $282,217 million. Two lines characterize us currently: microcredit, which has one of the lowest rates in the market, and housing credit, where we are a national level reference point for serving this segment with solutions for social interest housing.

These figures were made possible by leaving behind the effects of the 1999 financial crisis. After this period, the Cooperative arrived at a stage of development and operational excellence that aroused the interest of some analysts who admired the inventiveness of *Confiar* to adapt to the demands and regulations of the control bodies, and to conceive strategic imperatives to guarantee financial self-sufficiency. It has also been admired for its participation and integration with city projects, continuity of educational processes and its excellent administrative

management, maintaining a proposal of collective well-being alongside it.

In the world order, the international campaign to boost and promote microcredit promoted by the World Bank stands out in this period. In 2004, Confiar had the support of the World Council of Savings and Credit Cooperatives and the support of the non-governmental organization Action International, to implement the individual microcredit project aimed at informal sectors. They have been marginalized from financial services, which is why they have been at the mercy of illegal usury, also called drop-by-drop lenders.

In its initial stage, Confiar had coverage in the sectors of Castilla and Metrocable in Medellín, and in the municipalities of Itagüí and Caldas, granting 567 loans worth $814 million that supported the economic needs of people without banking ties. This allowed them to have access to low-amount loans, enough to activate their small commercial and service enterprises.

In 2005, the microcredit program, coming from Confiar and consequently following the UN parameters, delivered a loan exchange worth $ 3,111 million, which benefited 1,701 people, putting their hopes in the endorsement the Cooperative gives to their productive projects; thus, renewing their aspirations to improve their living conditions and maintain community enterprises in the work arena.

The intervention in the microcredit programs was complemented by strengthening the alliance between the Cooperative and Fomentamos, a corporation made up of 11 organizations, between cooperatives and NGOs, that aimed and aims to bring microfinance services and products to the most marginal sectors through the strategy of solidarity circles or groups. In this strategy, no individual is responsible for the credits, instead, a group is erected where each is responsible and co-debtor of the other.

The pilot project was carried out in the Moravia neighborhood, a community that grew in the invasions and around the city's garbage deposits, extremely vulnerable, and being the first to receive the credits that enabled them to create and strengthen their ventures around their trade and knowledge.

The training activities enabled the community to organize under the modality of solidarity circles, made up of 15 to 20 people who were granted a credit to capitalize their respective enterprises. Their endorsement was none other than the trust generated by the circle's solidarity support.

By 2010, the Colombian economy grew by 4.3%, and in that growth, cooperatives set an example in the face of the speculative weaknesses of the financial system.

In many aspects, *Confiar* became a solidarity paradigm; one of those advances was to move from microcredit to microfinance, a perspective that is maintained and has been extended to the nine departments in which the cooperative currently operates; and it is its purpose to continue working this way.

Contactar

Contactar, 31 years transforming Lives through Microfinance

In *Contactar*, every day is extraordinary. The entity's staff, distributed in 12 departments of Colombia, found in microfinance a life purpose, reaching the door of thousands of Colombians who need opportunities. To achieve this, they travel thousands of kilometers on uncovered roads, climb mountains, cross rivers, withstand heat or cold, and all this to provide financial and non-financial services to communities located in the most geographically remote areas.

With 31 years of history, with differential service as its DNA and their unmistakable orange jacket, *Contactar* has brought funding, primarily to clients in the countryside who generate with their work economic growth in the country.

There are 1,300 collaborators who make the difference so that these Colombians have a formal, timely and secure strategic ally for their sustainability. This is of the utmost importance, when 16% of the population lacks favorable socioeconomic and living conditions (multidimensional poverty) and in which disperse rural and semi-rural populated areas have an incidence of 31.3% (DANE , 2020a).

This *Contactar* family, a transformation engine, is in Nariño, Putumayo, Cauca, Huila, Meta, Boyacá, Cundinamarca, Tolima, Risaralda, Quindío, Valle del Cauca, and Casanare, working every day from a network of 80 offices, seeking with loans, microcredits and microinsurance the progress of customers and their productive units in more than 400 municipalities, with a vision of promoting the generation of added value in social and environmental matters while focusing on sustainability.

The premise that moves *Contactar* is to give everything for Colombia, and it demonstrates it with facts. In August 2022, the entity exceeded half a billion pesos in portfolio and reached 130,000 clients, milestones that reflect the progress in financial inclusion with a diversity of rural productive units such as: animal husbandry, crops and food processing, crafts, as well as businesses that need to grow like hardware stores, garment makers, neighborhood stores, among others.

Access to resources is granted through a microfinance methodology with a rigorous, personalized, and detailed analysis, which involves a responsible process of credit allocation. This is demonstrated in the Past Due Portfolio Index, which, as of August, was 2.56%, one of the lowest in the sector.

This is how the motto of the entity, "We provide financial opportunities at your fingertips," gains meaning: by including the country's most vulnerable population in the system—those whose access to financial services has been historically limited—accompanied by a comprehensive consultancy for sustainability that promotes financial education, technical assistance, women's empowerment (*MujerES* program) and that of young people in the countryside (Rural Youth) as well as housing improvement so that more Colombians may have an adequate, dignified, and healthy place to live (The Ideal Housing Dream). Likewise, the entity works online to prevent customers from natural disasters, creating tools to manage and mitigate climate change risks.

Also, *Contactar* contributes to the country's financial inclusion by providing protection through microinsurance. This translates into a mechanism for the client's peace of mind, being able to have low-cost access to an emergency protection for people, their families, homes, and businesses. This is how 9 out of 10 clients have voluntary insurance, which means that, as of June 2022, we have 396,928 policies that allow our clients to protect their dreams.

These results have been achieved by working together with national and international strategic allies, who share the same vision, trust the *Contactar* seal and believe in the country's progress, supporting more and more Colombians who require it. In this path of microfinance, *Contactar* joins organizations that have taken the same course, such as *Asomicrofinanzas*, the Colombian Association of Microfinance Institutions; *Banca de las Oportunidades*, a Bancoldex program to

promote financial inclusion in Colombia, and the Action Network, an international association of microfinance institutions in Latin America. These are proof of the firm conviction of achieving goals as a team and strengthening the country's microbusiness fabric.

Contactar's operation is monitored by the KPMG fiscal auditor and supported by the risk ratings provided by Microfinanzas Rating and Fitch Ratings. This encourages the entity to promote projects that transform realities in more places in the country and promote a better quality of life.

For *Contactar*, the magic of its operation is in the hands of its employees, guided by clear values of transparency, warmth, commitment, responsibility, coherence, and solidarity. That is why we emphasize that in the most recent certification of Great Place to Work, 9 out of 10 employees consider that *Contactar* is an excellent place to work. The same number is proud of what has been achieved and of being linked to the entity (GPTW 2022).

In line with this, the *Contactar* staff demonstrates diversity and gender equity, evidenced by having parity between men and women, and the important place the new generations occupy, with 88% of millennial collaborators, who build conversational bridges with customers to identify their needs and include them in the financial world in a responsible and close way.

> "Contactar *moves forward decisively to continue accompanying the dreams of those who want to strengthen their businesses and take care of their families, homes and productive units.".*

¡*Contactar* gives it all for Colombia!

Table 5.2. Poverty thresholds

Contactar in figures		
Data in millions of pesos (August 2022)		
Item	**2021**	**2022**
Assets	505.595	621.019
Liabilities	358.970	461.036
Equity	146.625	159.983
Revenue	97.865	121.848
Productivity (Revenue 12 months/average portfolio)	37,15%	39,47%
Expenses	85.291	112.203
Efficiency (Expenses 12 months/average portfolio)	36,56%	37,25%
Surpluses	12.574	9.645
ROA (Surpluses 12 months/average assets)	0,80%	2,37%
ROE (Surpluses 12 months/average equity)	2,68%	8,71%
Portfolio	401.077	501.295

Source: DANE. Own elaboration.

Cooperativa Minuto de Dios

Cooperativa Minuto de Dios, your Future, our Present

The *Cooperativa Minuto de Dios* belongs to the *Obra Minuto de Dios* - (OMD), with eleven other social organizations born from the social innovation vision led by Father Rafael Garcia Herreros, JMC (Jesus and Mary Congregation). By serving others, it puts his ideas into practice and applies with them and other non-profit solidary and of educational nature, the sixth principles of the sector on "Collaboration between Cooperatives".

The Cooperative started with 39 founding members, which today exceed 104,000. In this foundation, solidarity is built and put in practice. With their work, contributions, exercise of their rights, experience of cooperative principles and compliance with their obligations, its members form a continuously growing collective heritage that spreads over 23 departments, 55 headquarters and 83 attention centers, 11 Higher Education Institutions (IES), and 9 non-profit organizations that offer diverse services to a growing number of people, communities, and territories.

Solidarity Services

In these years of history, the *Cooperativa Minuto de Dios* has been able to manage 1,047,026 loans of more than 1.3 billion pesos. It has developed solidarity policies and activities aimed at our partners and their communities with the investment of 50% of all surpluses obtained, an expression of the cooperative principles and values that differentiate us from traditional banking.

Educational loans, the reason that originated the Cooperative, have allowed us to generate a model adjusted to the particularities of our social base, by designing differential products with the purpose of "inclusion," based on the real situation of the associates and their families. This model, initially structured with and for *Uniminuto*, has sought to guarantee continuity and permanence in the students' educational process and has been a reference for other higher education institutions (IES), eleven of which are our associates and allies today.

The commitment of the Cooperative in times of the pandemic drove us to offer not only educational loans but also microcredit products to meet the financing needs for the productive units of our associates and the micro-businesses linked to the *Obra Minuto de Dios* in its Microbusiness Program MD.

Digital Transformation

We have understood the need to develop and implement these technologies to expand coverage, improve services, and give timely response to the needs of partners, strategic allies, and the public.

Our Digital Ecosystem connects needs and solutions to improve the quality of life of associates and users; adapts to the changes and conditions imposed by the 4.0 revolution, the changes of the market and the business model; it evolves with new developments, integration platforms and service implementation to position itself at the forefront in the excellent provision of services; and it is efficient in the best use of technological, human and financial services that guarantee the best experience for the associates to achieve the evolution of information systems, platforms and autonomous applications that impact service positively. We have identified projects that are being executed with specialized external companies or through the development of our own platforms:

- CRM: Customer - partner relationship management, simplifying service processes.
- 100% virtual loan application
- Mobile application that encourages associates to self-manage their requests.

- Optimization of communication channels according to the preferences of our partners.
- Adoption of existing teleworking modalities to benefit employees' quality of life and resource efficiency.

Social Funds

In the last three years and despite economic difficulties, the Cooperative has recorded surplus thanks to the commitment and payment agreements of most of the social base, strengthening reserves and social funds, especially the solidarity fund to support members in difficulties and increase the Cooperative's own assets.

The continuous improvement and appropriation of the culture of quality has allowed us to maintain since 2013 the quality certification, today under the ISO[2] 9001: 2015 standard, considerably improving all processes for the benefit of the associates.

Associates, employees, managers, and strategic allies have contributed from different fronts to the construction and growth of the Cooperative; their service and commitment will allow us to achieve the goals proposed for the benefit of people, communities, and territories: This is the essence of "Solidarity".

[2] Certification issued by the Instituto Colombiano de Normas Técnicas y Certificación (Colombian Institute for Technical Norms and Certifications)—ICONTEC.

Corporación Interactuar

Transcending the positive Impact of Microcredits

Interactuar is a social and business enterprise that has transcended the positive effect of microcredit since its foundation. Today it is a social organization with the purpose of mobilizing access for the middle class and contribute to its consolidation through financial services with value accompaniment to companies and people with the potential to develop business and human capacities. Since 1983, *Interactuar* has accompanied more than 450,000 Colombian entrepreneurs to boost their micro-enterprises, which improves the quality of life of small entrepreneurs and is a clear commitment to social equity and the country's development.

It was born 39 years ago in Medellin under the leadership of the brothers Julio Ernesto and Joaquin Urrea, with the purpose of giving small family businesses access to the financial system to strengthen their enterprises and thus improve their quality of life. Together with the support of different business leaders from Antioquia, they took on the task of identifying and supporting entrepreneurs in the region, allowing them to believe in their dreams and capabilities.

Over the years, *Interactuar* understood that money alone cannot make a company sustainable and that entrepreneurs should have management vision and comprehensive knowledge of their sector. For this reason, *Interactuar* currently connects them with knowledge applied to the reality of their microenterprise.

Today it annually serves about 50,000 entrepreneurs, of which 53% are women, in 39 offices in the departments of Antioquia, Caldas, Córdoba, Cundinamarca, Sucre and Tolima. Its current portfolio is more

than 330,000 million pesos with a Past Due Portfolio Index of 3.0%. Twenty-five percent of the entrepreneurs served have been strengthened with knowledge delivered through workshops, consultancies, and programs for urban and agricultural business acceleration. *Interactuar* also develops social projects in partnership with other national and international institutions, annually impacting the lives of more than 3,000 entrepreneurs.

A powerful Tool for Business Transformation

After 39 years of capitalizing on the lessons it has learned providing integral accompaniment to entrepreneurs, *Interactuar* has designed tools to accompany their path towards growth, offering them, from practical advice, to complete programs to transform entrepreneurial mentalities. These actions promote the expansion of conscious capitalism, while generating capacities for competitiveness and sustainable micro and small enterprises. One example is the Base Acceleration Method (MBA) for urban and agricultural micro-enterprises.

In these programs, the purpose of working on the principles of conscious capitalism at all levels as efficient organizations connected to the market is to contribute to generate value for and sustainability of micro- and small businesses with a sustainable development approach and the guarantee of human rights for the access and consolidation of an empowered middle class, in the territories influenced by the companies we accompany.

From the Agribusiness MBA, for example, we emphasize the need of accompanying leaders of the agricultural sector, rural women, agro-millennials, and producer organizations. With the agribusiness seedbeds and the agro-MBA, they are articulated with the agribusiness chains, strengthening the productive base of community organizations, and accompanying the generation of new strategies for a more resilient agriculture.

Interactuar sees microenterprises as powerful enablers of human, social, economic, and business development, capable of making the economy, territories, and lives of millions of people more dynamic. This is why it works with a model based on the development of human and business skills based on its financial service and value accompaniment, mainly allowing the entrepreneur to transform his or her mentality and

behavior, going from believing that he or she is the only one who does things right and doing everything in the company, to having a business mentality that assumes responsibility for its results, appropriating the necessary tools for management, defining a clear purpose for its microenterprise, developing capabilities to implement improvements in its processes, empowering others, monitoring the market, training, innovating, and creating new negotiations and relations. In other words, it means not only trusting, but learning to understand, and to adjust to the changes of the economic, environmental, and social context.

Also, being a sustainable organization is a permanent challenge for *Interactuar*, so it can fulfill its purpose. Working on generating value, contributing to the Sustainable Development Goals and the scalability of the impact on their entrepreneurs reaffirms that growing is a social commitment in this type of institutions and this must be done hand in hand with continuous learning, listening to stakeholders and being able to articulate with other institutions to expand positive impacts.

Crezcamos Compañía de Financiamiento

Crezcamos is a financial institution that works hard to bring **development** and access opportunities through **quality financial services** for lower-income communities in the country. It is a **growing** company that firmly believes that working for others is the best way to **transform realities**.

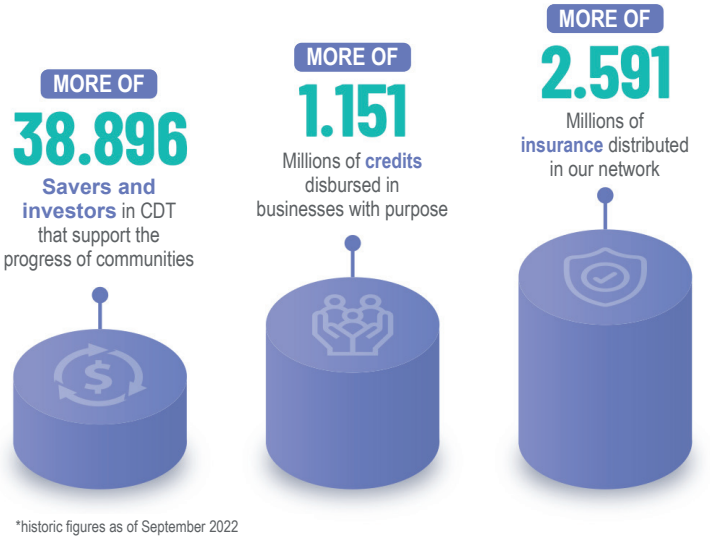
This is how it became the ally of many entrepreneurial families, who work for a better future. A winning bet that materialized on 16 August **2006**, when *Fundacoop* decided to bet on its business idea: A company dedicated to **impacting** the lives of Colombian businessmen and entrepreneurs.

For years, *Crezcamos* has put all its energy in **inspiring** its customers to **achieve their dreams and goals**, facing challenges full of opportunities

that have enabled it to make new realities possible, and to endorse **business ideas** of all who have needed a hand on their **path to progress**.

By merging with Opportunity in **2019**, it was transformed into *Crezcamos S.A.* Financing Company, an institution supervised by the Financial Superintendent's Office of Colombia, offering its clients a wide portfolio of financing, savings and investment services, protection, and financial education, which respond to the new needs and requirements of its clients.

During its 16 years of experience, it has managed to expand its coverage nationwide with **presence** in more than 421 municipalities and 13 departments, 104 offices and more than 1,500 collaborators that **vibrate sowing progress**.



The **results** have been **satisfactory**. This Santander company is marking the **history** of the department and many Colombian families, opening **new paths** and opportunities for people who once thought they could not meet their goals. *Crezcamos*, as its name suggests, has dedicated itself to **growing alongside its customers**, keeping the light of hope in each of our hearts and impacting lives that contribute to the social and economic development of the country today.

"Life presents us with a number of obstacles and difficulties that most people prefer to avoid. In my history, what I have done is embrace those difficulties, and with that I have built a company that helps others overcome them. Don't let anything stop your desire to progress.".

Mauricio Osorio
Corporate President of *Crezcamos*

Fundación El Alcaraván

Measuring Social Impact: Opportunities and Challenges for Microfinanzas El Alcaraván

In 2022, *El Alcaraván* Foundation launched a pilot exercise to measure the social impact of the microfinance program.

El Alcaraván Foundation, created by Ecopetrol and SierraCol Energy, started implementing this program more than 25 years ago to help the most vulnerable and without opportunities in Colombia to overcome the barriers that prevent their access to the formal financial system.

Currently, *Microfinanzas El Alcaraván* offers several lines of credit, personalized attention, and advising to their 4.000 clients. It also offers a complementary financial education program. The program has benefited more than 7,000 micro-entrepreneurs in the municipalities of Arauca, Arauquita, Saravena, Tame, Fortul, Cravo Norte and Puerto Rondón in the department of Arauca; Cubará and Samoré in Boyacá; and Hato Corozal, Pore, Paz de Ariporo and Yopal in Casanare.

The impact metrics pilot was developed by the team of the Financial Inclusion Unit of the Foundation with the support of *Asomicrofinanzas* and the volunteer program of the organization Partners of the Americas.

This pioneering initiative was framed in the methodology conceived by *Asomicrofinanzas* and Partners in 2021, embodied in the "Handbook of social indicators for microfinance institutions in Colombia." The handbook guides organizations to consider three dimensions in measuring

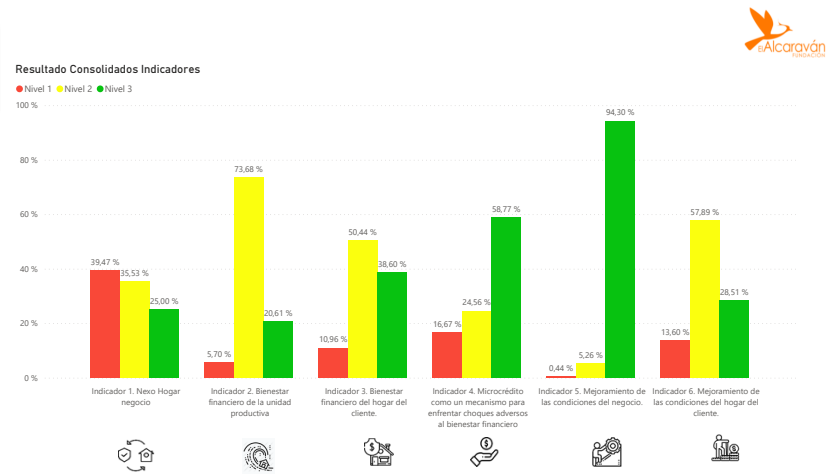
impact. The first one addresses the productive unit-household relationship and identifies the links between access to credit and the financial well-being of businesses and households. A second dimension considers microcredit as a mechanism to deal with adverse shocks; and finally, the potential of microcredit to leverage condition improvement is analyzed.

The pilot, implemented in Arauca, started with a training of "impact assessment champions" of the *El Alcaraván* team. A random sample of 228 microfinance clients (51% women and 49% men) was then defined, the baseline survey was designed, and a consistency test was performed before going to the field. The characterization of the surveyed entrepreneurs revealed that in 23.5% of the cases they are conflict victims; 15.8% of the entrepreneurs are mothers who are heads of household; 2.6% of the cases are migrants, and 4.1% of the cases registered some disability.

In the next step of the process, measurements were made for the six indicators proposed by the methodology. Indicators 1 to 3 measure dimension 1 (household-business nexus, and well-being), while indicator 4 concentrates on dimension 2 (adverse shocks), and the last two correspond to metrics of dimension 3 (best conditions leverage). Colorimetry is standard. The red color establishes an alert associated to unfavorable impacts, yellow indicates moderately favorable impacts and green identifies positive impacts.

As seen in the graph, the result obtained in indicator 1 reveals that 39.5% of respondents do not differentiate management of household and business finances. In the remaining 60.5%, the entrepreneurs have moderately acceptable (35.5%) or favorable (25%) levels in terms of their management practices, being able to separate the household finances from those of the productive unit. There is therefore an opportunity for improvement for the *Alcaraván* team, which involves deepening the analysis of the variables to understand in which groups of customers they should focus their attention within the 39.5% segment that do not have good practices in this regard.

Graph 5.1. Initial results Social Impact Metrics Pilot, Fundación *El Alcaraván* Foundation, 2022



Indicators 2 and 3 show the level at which microcredit affects the financial well-being of the productive unit and the client's household. In both indicators, most businesses (73.7%) and households (50.4%) recognize an intermediate level of impact associated with access to microcredit. Again, there is an opportunity to fine-tune the program's intervention in Arauca, with the aim of increasing, in the immediate future, the registrations in the green or high impact column.

The result recorded in indicator 4 is very interesting, as it reflects that for 58.8% of microfinance clients of *El Alcaraván*, the credit and received service contribute to the resilience of their businesses, protecting financial well-being against adverse shocks. This fact is particularly relevant in the current context, after having faced a pandemic and having suffered the negative consequences generated by isolation measures that seriously restricted economic and social activity.

Indicator 5 is undoubtedly the most satisfactory measure derived from this first impact metrics exercise, as 94.3% of customers report seeing improvement in the conditions of their micro-businesses thanks to financial inclusion. Finally, most credit takers (57.9%) recognized an improvement in household conditions.

In general, the pilot poses significant challenges for the organization. As mentioned above, it is necessary to deepen the crossing of variables and do a more detailed analysis, to design specific actions to reduce unfavorable indicators and/or improve the results toward the more positive range. Likewise, it is essential to continue measuring the social impact of the microfinance activity, to monitor changes and evaluate the effectiveness of the new steps taken, resulting from each new measurement. In this sense, it is important to highlight that the Foundation has personnel trained with the valuable experience of this first metrics pilot.

Microfinanzas El Alcaraván is a member of *Asomicrofinanzas*. Its strategic allies include the German *Sparkassenstiftung* Foundation, Partners of the Americas, Opportunity Finance, and Ecotropics.

MiBanco

Mibanco, together we build Stories of Progress

Mibanco is committed to guiding the development of microfinance in Latin America. This financial institution, which is part of the Credicorp group, was born in Perú more than 20 years ago, with the banner of promoting financial inclusion and contributing to the progress of the economy, seeking to challenge the limitations or barriers faced by the entrepreneurs. *Mibanco* has become the leading microfinance brand in the region.

The purpose of *Mibanco* is to transform lives in all corners of the countries in which it operates, to promote banking, financial inclusion and the evolution of micro, small and medium-sized enterprises in favor of economic development. Thus, the arrival of *Mibanco* in Colombia in 2020 meant that the leading brand in Latin America and the second worldwide had landed to open a new chapter of the sector in the country. In Colombia, *Mibanco* combined the experience of the Credicorp group, Perú's main financial holding company, and the knowledge of the local market, with the trajectory and experience of two Colombian institutions such as *Bancompartir*, with 35 years in the market, and Encumbra, with 6 years, all at the service of micro, small and medium-sized entrepreneurs, and informal workers.

The incursion of an important actor like *Mibanco* in Colombia supposes the resignification of the microfinance sector in the country. This leadership has been possible thanks to the deep knowledge of the financial realities of the region, for which the bank constantly designs

innovative solutions. This, added to the trajectory capitalized by the integrated institutions, form an ideal equation to become the main ally of Colombian entrepreneurs and families.

At the heart of the bank's corporate culture are the clients and the commitment to provide them with a quality-based and close service, marked by accompaniment and personalized advising. Thus, clients can make the financial decisions that best suit them for their needs, with responsibility and always thinking about their well-being and progress. *Mibanco* works to be the most well-liked partner of its customers, collaborators, and communities in which it operates, with a philosophy based on trust and supported by its excellence in service. These attributes, as well as its projections in digitalization and technology, have made it the main promoter of microfinance evolution in the region.

Mibanco's performance and experience in the sector have allowed it to not only achieve successful banking and financial inclusion in the markets in which it operates, but also to obtain recognition and qualifications that support its leadership. Thus, in 2021, *Mibanco* became the first microfinance institution graded as AAA by Fitch Ratings in Colombia, the highest grade awarded locally and internationally by the rating company. In turn, in 2022 *Mibanco* issued the first social gender bond issued publicly by a microfinance institution in Colombia, with the participation of the International Development Bank (IDB) Invest as anchor investor, aiming to close gender gaps in access to credit and promote greater inclusion of female microentrepreneurs. This operation has contributed to six United Nations Sustainable Development Goals (SDGs): End poverty (SDG 1), Gender equality (SDG 5), Decent work and economic growth (SDG 8), Industry, innovation, and infrastructure (SDG 9), Reducing inequalities (SDG 10) and Partnerships to achieve the goals (SDG 17).

Mibanco is projected as a key ally to promote the progress of entrepreneurs in Colombia, who will find in it an expert that goes beyond offering a financial solution, as it bets on always knowing their clients and deeply understanding their needs and aspirations to become the microfinance expertise leader, leveraged in innovation and the development of a hybrid model that combines personalized attention with applications and client self-management.

Mibanco, honoring *Credicorp's* purpose to accelerate the changes that countries need, will continue to bet on Colombia's economic progress, raising local standards in the microfinance segment and fulfilling its firm commitment to build more and more stories of progress in the country.

Microempresas de Colombia

Microempresas de Colombia, Integral Development for Micro-Entrepreneurs and Entrepreneurs

Since 1970, the year it was created, the mission of *Microempresas de Colombia* has been the same: To contribute to the social and economic transformation of micro-entrepreneurs, their families, and the community in general.

And it was 52 years ago when the *Fabricato* Corporation for Social Development was born in *Fabricato Textilera* as a program to support the families of workers to develop their enterprises. Then, in 1980, a group of entrepreneurs from Antioquia continued with the initiative, giving life to Microempresas de Antioquia as a private, non-profit organization specialized in microcredit, a pioneering institution in granting loans, accompanying entrepreneurs in the creation of their companies, and training them.

In 2007, Microempresas de Antioquia was created as a Contributions and Credit Cooperative and, in 2009, the Cooperativa de Ahorro y Crédito began to operate to promote the savings habit in micro-entrepreneurs, so that they can progress in their life cycle. Then, in 2012, the change of name to *Microempresas de Colombia* was approved in the ordinary assembly of delegates and associates. This allowed it to serve regions in need of productive entrepreneurship projects such as Chocó, Córdoba, and Sucre, among other territories.

Microempresas de Colombia is a solid institution that provides a comprehensive portfolio according to the needs of entrepreneurs,

businesspeople, and associates; contributes to maintaining employment of its collaborators and contributes to people's quality of life.

It has a network of 34 offices, more than 130 banking correspondents, 7 service points and 105 financial advisors that serve 190 municipalities of Antioquia, Caldas, Córdoba, Chocó, and Sucre. In addition to the financial services, we have development cooperation projects that seek to serve vulnerable communities such as women, youth, indigenous and Afro-Colombian communities with a comprehensive intervention that promotes and strengthens their social, economic, and political empowerment.

Of our total portfolio, 69% of the loans are disbursed outside the *Valle de Aburrá*[3] and 51% of the portfolio belongs to women. Digital credit has enabled us to continue providing financial services in the most remote areas. In this regard, digital placement closed during 2021 with a total of 25,013 million pesos in 6,393 loans, which corresponds to 17% of the total portfolio.

Of the 112 thousand associates, it is noteworthy that 55% are women, and 97% belong to social strata 1, 2, and 3. 62% of the associates are located outside the *Valle de Aburrá*. 54% of the savers are women; 51% when comparing the borrowers.

In the last year, 33,250 people received assessments on their businesses, counseling, training, and financial education.

Our business development service is specially designed to meet the needs of our associates. We use virtual and face-to-face methodologies, always with the accompaniment and advising of our team of professionals. These tools allow micro-entrepreneurs: to develop their business ideas, to identify expenses, income, and investments, to improve their market offer and generate added value, and to integrate into the market chains, expand markets, design marketing strategies, and venture into digital channels.

In 2021 we were present in several municipalities of Colombia developing and leading projects of economic, cultural, educational, humanitarian, and social impact, contributing to economic reactivation, women's empowerment, reconstructing social fabric, guaranteeing rights and, of course, financial inclusion through a digital ecosystem which

[3] The *Valle de Aburrá* (Aburrá Valley) is a subregion of the department of Antioquia, made up of ten municipalities including its capital, Medellín.

is easy and secure to make transactions, disburse credits, acquire a savings habit, and access insurance, among others. We invest in the promotion of socio-emotional skills in children and adolescents through sports and technology with the purpose of educating critical citizens, with capacities for leadership and decision-making.

In partnership with national and international cooperators, we carried out actions to generate economic and social development in Antioquia, Chocó, Córdoba, and Sucre, directly benefiting 16,539 people, of which 9,675 are women and 6,864 are men.

Ensuring access, availability and security conditions is a strategic objective for our institution. Year after year, we strengthen our transactional model to bring financial products at zero cost to associates, especially in rural areas. The most recent developments are digital affiliation, digital credits, opening and renewing digital insurances, and paying savings products.

Our mission is and will be to accompany associates in their business sustainability, with methodologies to serve rural areas, offer training in business skills and a digital ecosystem that facilitates financial transactions such as credit and savings. Likewise, we will continue to work on the social and economic development of people in various territories of the country.

UNI2 Microcrédito

UNI2 Microcrédito - From Entrepreneurship to Financial Inclusion

UNI2 Microcrédito began operating in 2014 as an organization aimed at building a better country with opportunities for financial inclusion for the population at the base of the pyramid. Throughout these 8 years, the company has had an accelerated and sustainable growth that has positioned it at the national level. It has one of the healthiest portfolios in the country, generating high-impact financial inclusion focused on ensuring the sustainability of micro-entrepreneurs and small farmers.

To reach this point, UNI2 established a bottom-up strategy focused on its clients' well-being through entrepreneurial asset financing, while consolidating best practices in portfolio placement and management. This vision has been transcendental in the construction of several milestones that have marked the history of the company and its positive evolution in the market.

During 2020, despite the multiple challenges presented by COVID-19, the company carried out its first social certification process, obtaining the sBB rating, aligned with the correct implementation of social performance management systems and adequate client protection standards. This process was carried out jointly with *Microfinanzas Rating* (MFR), one of the main rating companies and world leader in the evaluation of financial institutions. A Social certification process provides an expert opinion on the social performance management of

a financial service provider and its ability to implement its mission to achieve social performance goals.

Achieving this qualification represented a momentous achievement to the company, which helped to consolidate the strong pillars that have forged the foundations of an organization that focused on generating real changes in the population it serves.

Following this approach, in 2021 *UNI2 Microcrédito* was awarded the International Gold Level Certification in compliance with client protection principles (previously known as the SMART Campaign), a recognition to the dedication and continuous improvement of processes at all levels of the company to ensure proper attention to all customers.

Currently, UNI2 has a portfolio of over $100,000 million pesos, serving more than 14,000 active clients in 16 offices nationwide and a team with more than 250 employees.

These important milestones and growth are reflected in the generation of well-being for the 40,000 families that have been served over the last eight years in urban and rural areas and who have had the opportunity of taking a loan thanks to the company. Around 14% of customers in the UNI2 portfolio had never had any credit experience with another sector. Similarly, four out of ten customers who apply for a microloan with the institution have never had ties to the traditional financial sector or to cooperatives.

Likewise, serving population in situations of vulnerability and poverty is also a central axis of the company. Almost 16% of the clients currently served are in a vulnerable situation, while around 400 families are in extreme poverty, a circumstance that closes their access to the traditional financial sector. This vision of financial inclusion at UNI2 is the main column that has been opening opportunities to thousands of people to continue growing their business responsibly and in a formal way.

The company's social and strategic results have been accompanied by important advances in the consolidation of national and international funding sources, thus expanding quotas with local commercial banks and attracting new foreign investors with a vision to generate impact. Building these relationships has paved the way for the revitalization of treasury management, which set noteworthy milestones such as close of business in dollars for about USD $5 million including a subordinated

debt of USD $3 m with Bamboo Capital Partners. Under this scheme, UNI2 currently has more than 20 national and international allies who have contributed to consolidate its funding and continue with its business development plan.

For 2022, *UNI2 Microcrédito* hopes to continue contributing to financial inclusion with a responsible and sustainable expansion in new territories nationwide, always prioritizing the well-being of the client as the main leverage for the country's sustainable growth.

Image courtesy of *Bancamía*

Special Mention: Citi Foundation in Colombia

The Citi Foundation works to promote economic progress and improve the lives of people in low-income communities around the world. It invests its efforts in increasing financial inclusion, promotes job opportunities for people, and charts joint paths that activate communities economically. The Foundation promotes thought leadership and innovation in the places where Citi Bank operates.

We have been lucky for several years, in which the Citi Foundation has accompanied *Asomicrofinanzas* and has supported productive transformation processes, training and support programs relating to inclusion and financial education.

"Sustainable Production Chains for Rural Development in Peace Program" has been strengthening small cocoa and coffee producers in vulnerable areas of different regions of the country since 2020.

Asomicrofinanzas has managed the program that shelters these micro-entrepreneurs through the affiliated institutions that have joined the initiative and have expanded them.

With resources close to 350 thousand dollars, the target population has been reached: Victims of the Colombian armed conflict, mothers who are heads of household, women, and young people.

This interaction through the institutions has focused on the following axes: Technical assistance, fair-trade assistance, associative support, financial education, and financial inclusion.

The project operated in the departments and municipalities where the selected microenterprises are located: Antioquia (El Bagre, Cáceres,

Chigorodó), Bolívar (Cantagallo, Morales, San Pablo, Santa Rosa del Sur, Simití), Caldas (Belalcázar, Viterbo, San José, Anserma, Nocasia, Samaná, Victoria), Córdoba (Monte Líbano, Puerto Libertador, San José de Ure, Valencia) and Nariño (La Unión, San Lorenzo, Consacá and Sandoná).

Program Beneficiaries.

The work was done with microfinance companies such as *Contactar*, which is focused primarily in the rural sector. *Contactar* sows financial well-being in coffee growers. Through this alliance, the project was activated: Productive, environmental and socio-business strengthening for coffee growers in Nariño.

This initiative benefits more than 240 grain producers and their families in La Unión, San Lorenzo, Consacá and Sandoná (Nariño) through implementing sustainable agriculture, using satellite technology that offers precision in selecting land suitable to improve the quality of coffee, and barismo as a tool to enjoy the best cup.

Contactar develops a virtuous circle in which the coffee grower is not only financially included but is recognized as a fundamental part of transforming its coffee plant into the best roast, taste, and texture.

The project is an incentive to continue contributing to the productivity of the rural sector, reducing costs, increasing profits, with

the proper management of resources that transform the lives of rural producers and motivates them to remain in their lands and transmit that cultural seal that has been the real engine to fulfill dreams to more generations.

Officials from *Contactar* providing accompaniment.
Source: *Contactar* (2021)

The most important part of the support of *Contactar* is mixing the grain-growing technique with knowledge, technology, and further developing processes, while at the same time, micro-entrepreneurs receive the best fertilizer with education and advising to strengthen their crops, businesses, and their quality of life.

On the other hand, *Interactuar* developed a training and consulting program, designed specifically for agricultural producer organizations. The objective was to strengthen their management teams or corporate governance, with associative management strategies and leadership capabilities, to boost its members' participation and its business competitiveness.

During the years *Interactuar* has provided support, opportunities and challenges have been identified in relation to the competitiveness of these organizations, including: Developing a two-way business model that meets social needs, consolidating lateral leadership to promote collective critical thinking and participation, focusing resources and

capabilities through long-term strategic planning, considering their competitive advantages, bringing cohesion to its members and achieving consistency with permanence criteria according to merits, and investing in marketing strategies that position the associative brand at local, regional and international levels.

All this results in projecting solid organizations under a business approach. This type of relations allows institutions such as *Interactuar* to reach more entrepreneurs with service proposals adjusted to their needs. Usually, these proposals have advantages such as better interest rates and agility in access to credit. In addition, associativity favors links with anchor companies. In conclusion, the comprehensive model of *Interactuar*, based on funding and knowledge, allows the associative model to generate ecosystems in which the development of capacities leads to business development. All this was made possible with the support of Citi Foundation.

On the other hand, for 19 months, *Finanfuturo* accompanied associations, productive units and the population of the municipalities of Belalcázar, Viterbo, San José, Anserma, Norcasia, Samaná and Victoria, from the department of Caldas, with the purpose of improving income and credit life indicators, which contribute to the quality of life of beneficiaries and their families.

With the signing of the Agreement, the implementation of the FRUPAZ 3.0 project began, carrying out a comprehensive intervention, which consisted of more than 400 cocoa producers benefiting from technical assistance for crop improvement, from applying good agricultural practices, identifying their crop plan, receiving support for complementary crops, and raising awareness in sustainable cocoa production and in Fair-Trade. Two associations were trained in strategic and financial direction, reviewing and adjustment of Covid-19 protocols, strengthening the structure of good government and governance, and reviewing and validating their associative regulation compliance.

More than 600 people received training and awareness in entrepreneurship, financial education, and soft skills. Inclusive policies were promoted: Gender equity with 30% participation of women; equity and inclusion of youth (14-28 years) with 10% participation of young people. Financial inclusion was promoted to facilitate access to financing mechanisms for 550 people from the rural population located in the

intervention area with more than 2,200 million pesos available for credit. Access to markets was achieved through visibility strategies: Promotion of commercial agreements, training in media strategies and management of social networks.

Skills Development with Technique Appropriation for Entrepreneurs.

All these actions were executed through *Asomicrofinanzas* in alliance with the institutions. We highlight the Association of Cocoa Producing Organizations of the *Nudo de Paramillo "Chocolate Colombia,"* which received the Fair-Trade certification, a seal that endorses and guarantees compliance with strict international requirements in economic, social and environmental terms, and which will be delivered by Fairtrade Labelling Organizations International (FLO) during 2022, with the subsequent fulfillment of all the requirements.

This certification helps shield products against falling prices, guarantees a minimum price in the market, and will encourage it to rise according to demand. Likewise, it provides producers with a Fair-Trade premium so that farmers can invest in potentiating their business, with the aim of helping them to generate greater income, associate among themselves and improve their living conditions.

It is worth noting that this project has a focus on gender and youth inclusion to perpetuate the business and promote generational change, since it arises from the understanding that cocoa is a country

flagship product, and it is produced under challenging conditions such as widespread poverty, gender inequality, and deforestation, among others. This project was added to the project "Blended Finance in Chocolate Colombia," implemented by the *Julio and Astrida Carrizosa* Foundation - IC Foundation, with resources from the United Nations Multidonor Fund for the Sustaining of Peace. They created, together with Citi Foundation, an important synergy to achieve the goal.

Promotion of Responsible Consumption and Sustainable Development.

"Undoubtedly, the strengthening of Colombian agriculture and the capacity building of our cocoa producers are a driving force behind progress. For more than five years, Citi has supported the financial inclusion of our farmers through different social investment projects with *Asomicrofinanzas*. Achieving this certification confirms the importance of continuing to invest and support the productive systems of rural populations in Colombia, allowing us to contribute to the closing of such marked inequality gaps in these areas of the country," assured Pablo del Valle, Citi Country Officer (CCO) in Colombia.

With resources provided by the Citi Foundation, *Asomicrofinanzas* has disbursed and committed resources that amount to more than 1,200 million pesos. The eight cocoa organizations that participated in the certification process to obtain the Fair-Trade seal are already commercializing part of their production to customers in Europe.

These have been important years to materialize supports and achieve objectives. *Asomicrofinanzas* made different field trips with key institutions of the national government possible, among them: Ministry

of Agriculture and Rural Development; Ministry of Commerce, Industry and Tourism; *Banco de la República*;[4] Office of the Financial Superintendent of Colombia; Fund for the Financing of the Agricultural Sector (Finagro); Financial Regulations Unit (URF) of the Ministry of Finance and Public Credit; Bancoldex; *Banca de las Oportunidades*; Colombian Agricultural Research Corporation (Agrosavia); Financial Institutions Guarantee Fund (Fogafin); National Guarantee Fund (FNG), National Administrative Statistics Department (DANE), Financial Superintendent's Office, *Colombia Productiva*, and allied institutions such as Desjardins, *Cooperativa Minuto de Dios*, Sparkassenstiftung Foundation, IC+ Foundation, USAID, United Nations Multidonor Fund for the Sustaining of Peace in Colombia, among many others.

These visits made it possible to approach the processes and territories where the projects are managed in a methodological and technical way. Field validation and experiential culture gives a perspective capable of sowing a greater interest in project participation, confirming facts, and maintaining that partnerships are the way to build together new projects that promulgate the development of micro-enterprises in Colombia.

Incorporating all these activities into the management of the sector allows us to continue formulating assets for our associates.

[4] Banco de la República is the Central Bank of Colombia.

PPROJECT :

Sustainable Production Chains Program for Rural Development in Peace

ASOMICROFINANZAS

Supported by: Citi Foundation

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Objetive Project:

This program by Asomicrofinanzas, supported by the Citi Foundation, seeks to strengthen and train associations in entrepreneurial skills to optimize production, sustainability and masrketing systems thas improve the value chain and businesses of rural cocoa and coffee producers, thus contributing to social, economic and fiancial inclusion of the families fron the regions mos affected by the scourge of violence in the country.

CÓRDOBA

Chocolate Colombia

Montelíbano
Puerto Libertador
San José de Uré
Valencia

BOLÍVAR

Chocolate Colombia

Cantagallo
Morales
San Pablo
Santa Rosa del Sur
Simití

ANTIOQUIA

Chocolate Colombia

El Bagre
Cáceres
Chigordó

NARIÑO

Contactar

San Lorenzo
Consacá

CALDAS

Finanfuturo
Acompaña y financia tu futuro

Belalcázar
Viterbo
San José
Anserma
Norcasia
Samaná
Victoria

Project in figures

*Figures to September 2022

DDistribution by Gender:

1.036 Men
69.9%

447 Women
30,1%

Fairtrade Assistance:

1.317 Producers Assessed

AAverage crop area:

2,07 ha Chocolate Colombia

1,49 ha Contactar

1,30 ha Finanfuturo

Distribution by age range:

163 Young people — 10,9%

772 Adults — 52,1%

548 Elderly adults — 37,0%

InFinancial Inclusion:

990
Rural producers with access to credit

COP$4.500.000
Average amount disbursed to producers

Techvical Suport:

1.483 Microentrepreneur producers trained

Financial Education:

793 Producers cocoa and coffee trained

Partnership strengthening:

11 Organizations strengthened

Psycho-social support:

916 Consults

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