Palacký University Olomouc

University of Clermont Auvergne

University of Pavia

MASTER THESIS

Microcredit's impact on wellbeing. A study of Colombia rural and urban areas in 2013 and 2016

María del Mar Andrade Ovalle

Supervisors:

Prof. Fouzi Mourji (University of Hassan II Casablanca)

Prof. Giovanni Vaggi (University of Pavia)

GLODEP 2021

Microcredit's impact on wellbeing. A study of Colombia rural and urban areas in 2013 and 2016

Submitted by

María del Mar Andrade Ovalle

Erasmus Joint Master's Degree in International Development Studies

(GLODEP 2019-2021)

Supervised by:

Fouzi Mourji

Professor of Econometrics

University of Hassan II Casablanca

&

Giovanni Vaggi

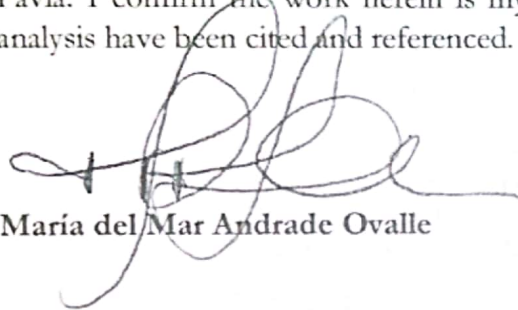Professor of Economics of Cooperation and Development

University of Pavia

Date of Submission: 31 May 2021

GLODEP 2021

Declaration

I, María del Mar Andrade Ovalle, hereby declare that my thesis "Microfinance's effect on wellbeing **A study from Colombia's inequality from Sen's capability approach" is** the result of my own work for the Erasmus Mundus Joint Master's Degree in International Development Studies, under the guidance of Professor Fouzi Mourji, PhD., University of Hassan II Casablanca/LASAARE (Laboratoire de Statistique Appliquée à l'Analyse et la Recherche en Économie) and Professor Giovanni Vaggi , PhD. Professor of Economics of Cooperation and Development, University of Pavia. I confirm the work herein is my own, and the theoretical, empirical literature, dataset and analysis have been cited and referenced.

María del Mar Andrade Ovalle

Date: 31.05.2021

Palacký University Olomouc
Faculty of Science
Academic year: 2020/2021

Study programme: Geography
Form of study: Full-time
Branch/combination: International Development
Studies (MRSA)

Document for registration DIPLOMA THESIS

Name and surname:	**María Del Mar ANDRADE**
Personal number:	**R190777**
Address:	Carrera 8 bis A # 148-31 406, Bogotá, 110131 Bogotá, Kolumbijská republika
Work topic:	Microfinance as a tool for reconciliation and reducing inequality in post-conflict areas
Work topic in English:	Microfinance as a tool for reconciliation and reducing inequality in post-conflict areas
Supervisor:	prof. Gianni Vaggi
	Department of Development and Environmental Studies

Theses guidelines:

Since 1970, microfinance institutions have been recognized as tools aimed to reduce poverty and provide financial services to vulnerable communities. According to the literature, the social benefits of MFIs are mainly related to gender empowerment, an improvement in health and education levels (Weber, 2013). Specifically, in post-conflict areas, authors established that MFIs' impact has been mostly positive since they contribute to "a transition to longer-term development" (Weber, 2013) and promote "reconnection of social ties among community members" (Simmons & Flowers, 2017).

The outcomes analyzed by the literature suggest that the model of trust described by the 'joint (or social) liability' of MFIs, could work as a mechanism to reduce inequality and promote reconciliation between actors affected by the conflict.

In order to explore this idea, this thesis will study Colombia's background, analyzing the social impact of MFIs on inequality and reconciliation. Moreover, the study aims to explore the link between the MFI projects and the fulfillment of Sustainable Development Goal 10.

Recommended resources:

- Chowdhury, H. (2016). Joint-Liability in Microcredit: Evidence from Bangladesh. *Atlantic Economic Journal*, 105-129.
- Foy, D. (2003). The appropriateness and effectiveness of micro-finance as a livelihoods intervention for refugees. *Refugee Livelihoods Network*, 1-5.
- Pati, A. (2017). Contribution of Microfinance in Achieving Millenium Development Goals: Evidences from Global Pool Data. *International Journal of Rural Management*, 182-197.
- Simmons, E., & Flowers, K. (2017). Recovering from Conflict. *Center for Strategic and International Studies (CSIS) (2017)*, 15-27.
- UNCDF. (2005). Microfinance and the Millennium Development Goals. *International Year of Microcredit*, 2-19.
- UNDP. (2008). *Post-Conflict Economic Recovery: Enabling Local Ingenuity.* New York: UNDP.
- Weber, O. (2013). Impact Measurement in Microfinance: Is The Measurement of Social Return on Investment an Innovation in Microfinance. *Journal of Innovation Economics & Management* , 149-171.

Supervisor's signature: Date:

Head of department signature: Date:

ACKNOWLEDGMENTS (1 PAG)

The great experience of studying abroad was a dream that only my family supported unconditionally. This great achievement and this wholesome experience I owe it to my mother, father, brother and stepfather. To my mother, with her tireless efforts and sacrifices to provide me education and every endless conversation to make me believe in myself. To my father Sergio, and his sweetness and nobility which made my heart strong when it was his time to overcome this material world. To my brother Camilo, with his young wisdom and sharp persistence, which my feet on the ground more than once. To Pacho who's organizational skills and patience helped me to stay focused on my goal.

I also owe an acknowledgment to both of my grandmothers. The first one who always had words of encouragement and strength every time I felt it was too much for me. The second one gave me insights to know myself better through tears and struggles inherited and transformed into opportunities.

These acknowledgments are also dedicated to my most truthful friends. To Maria Camila who's unconditional support is the same as a sister would give; to Nati Rios, who tough me about the

opportunities we should reject and the others who don't; to Irem, who embraced me when all this experience started and allowed to call "home" a small room in Olomouc; to Mateo, the most unexpected and unconditional friendship, where I found an econometrics teacher and a guide to learn how to thank my own efforts without judgments; To Jesus, David, Andres, Sebastian

I also owe a special acknowledgement to all my professors of the GLODEP consortium. Since the begginig, the dream to study abroad and the doors and bridges I was able to know was mainly because your selection and my skills. To all the consortium teachers and administrative members, for the huge effort all imply during the pandemic outbreak in new teaching methods and guidance in order to not allow the levee to break. To my thesis supervisors, to Professor Vaggi's orientation regarding my topic of research and to Professor Mourji and his research student Marouane Ikira, for their guidance and patience advicing quantitative steps and research methods to be used.

Finally, this acknowledgement is dedicated to all the members of my GLODEP family. This experience brought us together around the world in the middle of a pandemic, and I couldn't be more thankful for that. Every moment we spend together taught me about empathy, resilience, cooperativism, humbleness and other unmeasurable things, such as the joy of a typical meal of the Philippines and the warm feeling of a chai tea made from a Pakistani. To Ali, Josh, Nathalia, Edo, Jess, Fabi, Ana S.

Sincerely yours

Maria del Mar

Abstract

This research work answers the question Which is the effect of microcredit on wellbeing in Colombia? Through the comparison of rural and urban areas in two separate time lapses in 2013 and 2016. In order to do so, this work will review the concepts of capability approach, multidimensional poverty, inequality of opportunities and how these have been treated from the perspective from microcredit. To test the effect of microcredit in Colombia, this study will assess the impact of access to credit on Household wealth, Education enrollment of young population and Affiliation to health services. The hypothesis will be tested through propensity score matching and will verify its results through ordered logit regression models. Findings of the study suggests that having access to credit impacts positively the wealth level of the Household but is not statistically significant for education and health services. Specifically, findings suggest that in urban and rural areas the impact of having credit is the same for household conditions, contrary on the impact on education and health which is not significant neither for rural nor urban areas.

Keywords: Colombia, Microcredit, Colombia, Inequality, Multidimensional Poverty, Capability Approach, Propensity Score Matching

LIST OF CONTENTS

ABBREVIATIONS

ECV – Encuesta de Calidad de Vida (Quality of Life Survey)

ELCA – Encuesta Longitudinal Colombiana (Colombian Longitudinal Survey)

DANE – Departamento Administrativo Nacional de Estadística, Colombia (National Administrative Department of Statistics)

DNP – Departamento Nacional de Planeación, Colombia (National Planning Department)

IHDI – Inequality Human Development Index

MCA – Multiple Correspondence Analysis

MPM - Multidimensional Poverty Measure, World Bank.

MPI – Multidimensional Poverty Index, Oxford.

MFI- Microfinance Institutions

LAC – Latin American and the Caribbean

SGSSS – Sistema General de Seguridad Social y Salud, Colombia (General System of Social and Health Insurance)

CHAPTER I: INTRODUCTION

Fabiola Esther Robles worked in Cartagena, Colombia, chopping and packing fruit to sell it frozen as what we call "bolis" in the streets of "La Ciudad Amurallada". After selling almost 200 bolis regularly in one day, Fabiola felt she needed a loan to buy a bigger freezer to increase her productivity. She heard about "Fundación de la Mujer" a Colombian foundation specialized in providing microcredit to women head of the household with low income. After asking for a small loan, she managed to start her own business "Rico Boli Fabiola", which now generates 31 jobs and hopes to keep working with the Fundación. Fabiola stated *"They called me crazy, so I said: This crazy woman is going to show how crazy she is, because I'm going to get what I want in my life"* (Estrada & Hernández, 2019).

The story of Fabiola replicates on Luz Estela Castro, a woman who asked for a small loan to Fundación SantoDomingo, a nonprofit organization committed to providing well-being to Colombian families and achieve a more equitable setting for the country. Luz Estela stated "*As an independent I can say Yes you can go forward! if we work with 'berraquera*[1]. *With the help of the Fundación SantoDomingo my business has prospered and I can guarantee the education of my children."* (Domingo, s.f.).

As Fabiola and Luz Estela, almost 1,9 million people and more than 8.000 firms had microcredit in Colombia in 2015. In the same year microcredit has improved the distribution flow of disbursements to the departments with less economic wealth, suggesting that it brought steps towards closing the interregional income gap (Asobancaria, 2015). Other reports also mention that microcredit as a tool of financial inclusion has brought progress to formalization transfers in rural population, and boosted economic growth through the support to micro, small and medium enterprises (Asobancaria, 2019).

The stories of Fabiola and Luz, as well as the evidence of microcredit's presence in Colombia denote the positive impact it has on people's capabilities or *"a person's or groups freedom to promote or to achieve (…) various combinations of functionings (beings and doings)"* (Alkire, 2002).

Studies regarding Colombia's inequality have focused on the income and wealth distribution, but the review on "capabilities" inequality has been covered by scholars recently.

---

[1] In Colombia, "berraquera" is used to describe a person who is strong, clever and persistent.

With the supervision of LASAARE[2] (Laboratoire de Statistique Appliquée à l'Analyse et la Recherche en Économie) and University of Pavia, this work aims to answer the question: Which is the effect of microcredit on well-being in Colombia? Emphasizing on the data collected by the Colombian Longitudinal Survey (ELCA by its initials in Spanish)[3] for 10.000 Colombian households in rural and urban areas in 2013 and 2016[4].

This introductory chapter will expose in Section 1.1. Microcredit background in Latin America and a glimpse to Colombia (more details will be introduced in Chapter 2), while Section 1.2. will expose the relevance of the study. Section 1.3. will mention the purpose and scope of this study while Section 1.4. will expose the research questions and hypothesis. Section 1.5. will describe the assumptions and limitations of this research work. Finally, section 1.6. will expose an outline of the next chapters that will be covered.

1.1. Microcredit Background in LAC Region

One of the mechanisms that surged in order to reduce extreme poverty and income inequality is microcredit. The cases of Bangladesh, Indonesia, and Bolivia are benchmark to stand that the provision of small loans to lower income communities allows gender empowerment and ascend in social mobility.

Harmincova & Janda (2014) define the objective of microcredit as "fill the gap on the credit market" providing an initial capital to people or small businesses who are not considered as the most convenient client for traditional lending institutions. According to the authors, microfinance boost development by "*simply offering a chance (by granting a loan) to clients*" (Harmincova & Janda, pp (2014). In their research work of interregional comparison between Least Developed Countries, Heavily Indebted Poor Countries, Small Island Developing States and Failed States, Latin America is considered as the continent which has the *"greatest expertise in the field of microfinance policy"* ((Harmincova & Janda, pp.7 2014). Other of the most relevant characteristics included by the authors describe the

---

[2] This work was developed during the internship on remote in the LASAARE institute located in Casablanca, Morrocco during the first semester of 2021. LASAARE is an association created in 1995, with the scope to research questions of development, in particular the functioning of the informal sector and the conditions of its financing.
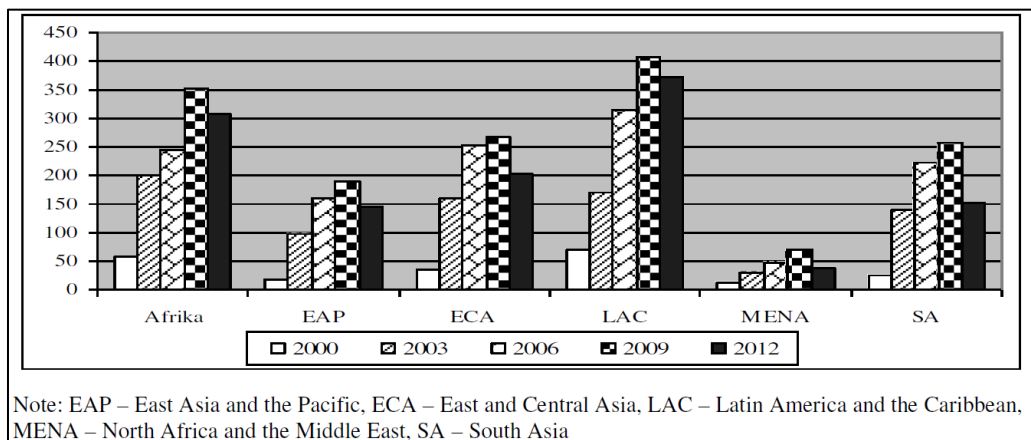[3] The Survey is an initiative of the Faculty of Economics of the University of the Andes, Bogota, Colombia.
[4] This study started its research from 2013 even if the ELCA survey started in 2010. The research took place since 2013 due to the fact that in 2010 the information regarding to credit access was no available.

continent as the one who has the second biggest number of active borrowers in the world (after South Asia) and a total gross loan portfolio over almost 35 billion USD.

In Latin America, the first institutions which brought microcredit to people were the employee cooperatives who experienced a solid economic growth during the 1950 until 1970 (Gerlein, González, & Arias, 2010). LAC region is considered as the one which holds the highest presence of microfinance institutions and expertise in its implementation (Harmincova & Janda, 2014). Figure 1 shows LAC as the region which reports the highest presence of microfinance institutions from 2000 to 2012, surpassing Sub-Saharan Africa and Asia. This due to the significant grants and loans provided from governments and private donors, under a strategy aimed to supply small loans to women and eventually micro entrepreneurs (Harmincova & Janda, 2014).

Figure 1. MFIs presence among individual regions

Note: EAP – East Asia and the Pacific, ECA – East and Central Asia, LAC – Latin America and the Caribbean, MENA – North Africa and the Middle East, SA – South Asia

Source: (Janda & Zetek, 2014).

1.2.   Relevance of the study

To identify the problem this research study wants to carry out, is important to keep in mind the general picture of LAC and Colombia.

According to the World Bank, in 2018 the percentage of people in Colombia living in poverty conditions were 27, making its poverty rate greater than in the rest of the LAC region from a decade ago.

In monetary terms, most recent data of the poverty rate indicator of the World Bank stands by a third of the population of the Latin American and Caribbean (LAC) region is considered as part of the

middle class, while almost 25% of the total lives with $5,50 (2011 PPP) or less every day[5]. Talking specifically about Colombia, Figure 2 shows how despite being part of the Upper-Middle Income countries' category of the IMF, Colombia's poverty rate is greater than in the rest of the region from a decade ago.

Figure 2. Comparison between National Poverty Line of LAC and Colombia
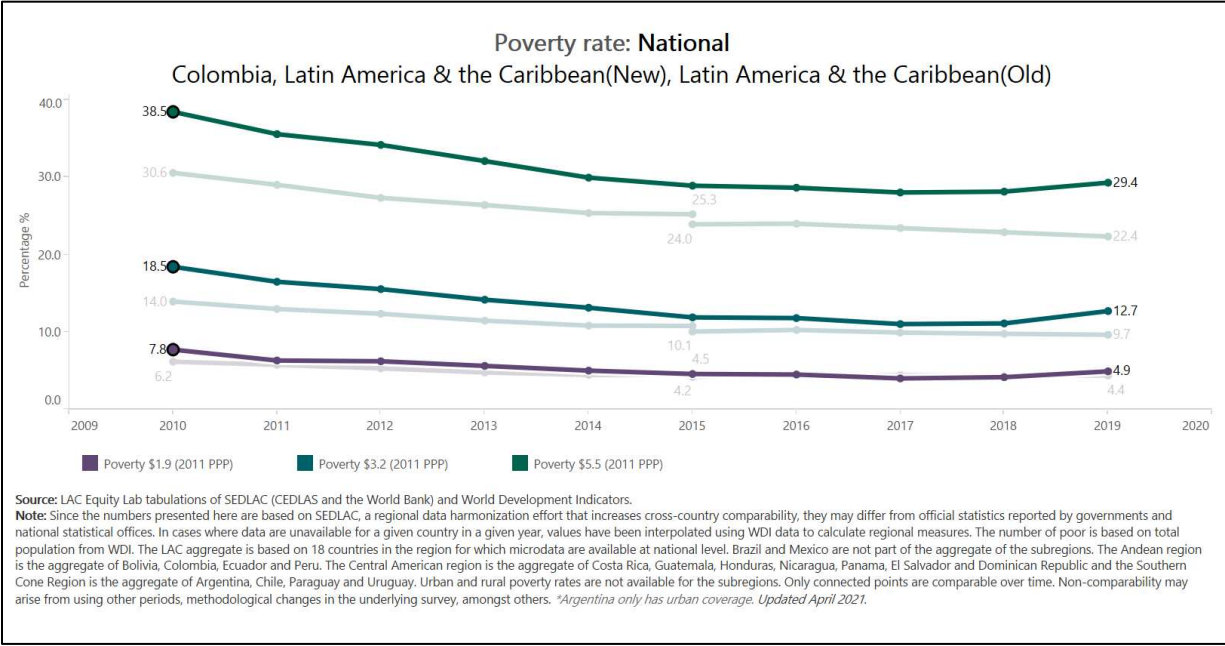
Source: World Bank – LAC Equity Lab

In the case of LAC and Colombia, the most recent data of the World Bank, shows how Colombia is one the countries which presents a highest Gini index in the LAC region. Figure 4 represents the evolution of GINI index from 2013 until 2019 in Colombia, reporting the lowest level of 49.7pts in 2017 and recently reported 51.3pts in 2019. The figure also shows how the country is the second most unequal in the LAC region after Brazil.

---

[5] $5,50 a day 2011 PPP is the World Bank threshold to establish the poverty line for Upper-Middle income countries.

Figure 3. GINI Index – Colombia, LAC, 2021.
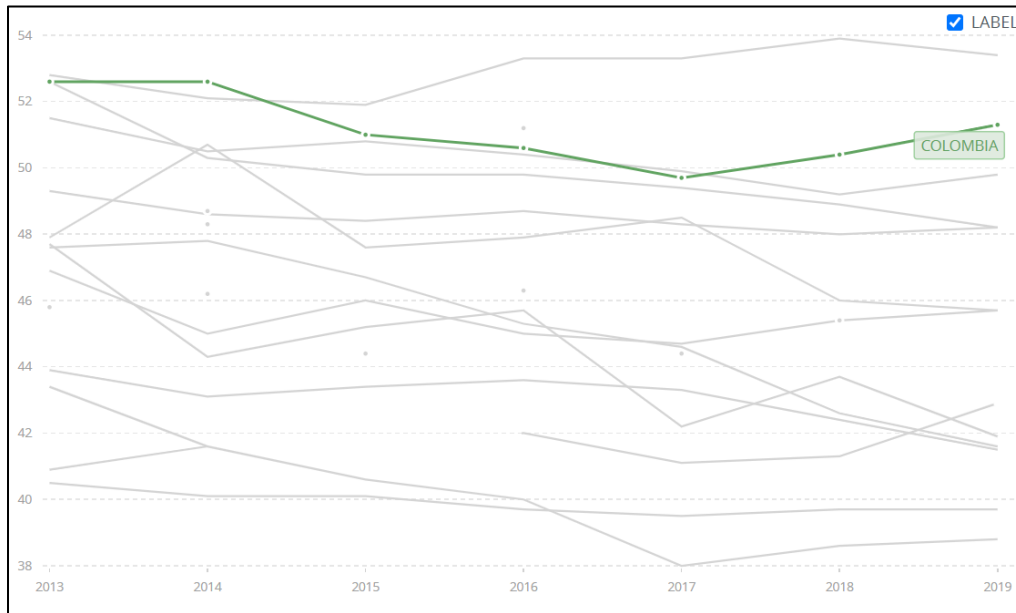
Source: (Bank, World Bank Gini Index Estimate , 2021)

At the same time, according to Mix Markets data, Colombia is among the top 10 countries with highest number of active borrowers among the world and in the top five among the countries of LAC region. Table 1 and Figure 4 shows the rank of countries:

Table 1. Top 10 countries by active borrowers around the world

Figure 4: Top five countries by active borrowers in LAC region.

| Top 10 countries by active borrowers | | | |
Country	Number of Active Borrowers '000	Gross Loan Portfolio (GLP) (USD) m	Number of Depositors '000	Deposits (USD) m
India	37,891.7	21,033.0	4,166.5	6,102.4
Bangladesh	26,916.4	7,896.5	23,846.5	5,038.6
Vietnam	7,317.3	8,675.8	9,227.1	4,320.4
Mexico	6,465.0	3,068.8	2,537.5	779.6
Philippines	5,187.4	1,043.6	6,996.3	678.8
Pakistan	5,062.2	1,681.2	27,705.6	1,679.9
Peru	4,921.4	12,443.3	6,771.1	10,294.1
Colombia	2,743.1	6,334.6	7,966.7	4,864.0
Cambodia	2,172.9	7,713.1	3,999.9	5,660.4
Brazil	2,090.8	998.6	0.0	0.0

1.3.   Purpose of the study

This research work aims to research the effect of having access to microcredit and it's impact on individuals' and households' "well-being", intending the concept as *"the freedoms and capability to make choices and act effectively with respect to, for example, health, education, nutrition, employment, security, participation, voice, consumption, and the claiming of rights"* (Lancet Commission on post-2015 MDGs, 2010)[6]

In 2018, a similar study was made by Sandrine Michael and Holimalala Randriamanampisoa, in order to assess the role of microcredit in rural households in Madagascar. This research aims to explain how microcredit turns into a tool for a household to optimize their profits after choosing on 'latent opportunities'. Their findings suggest that *"microcredit represents robust means to obtain a higher level of capability"* (Michael, S. & Randriamanampisoa, pp. 1, 2018) due to the fact having microcredit a household is more likely to reach a higher level of wellbeing, by accomplishing investment projects that eventually can generate additional income.

Following that line, this study aims to contribute to the research of wellbeing, in terms to contribute to the measurement of development beyond economic growth. In light of the situation exposed before, it becomes evident how the Colombia results regarding inequality of income and wellbeing don't go in the same line as being an Upper-Middle Income and a new member of the OCDE, where "*the aim of having "better policies" is to give citizens "better lives"* (Gurria, 2021). Therefore, the purpose of this study is to provide a quasi -experimental research work, in order to contribute to the holistic measurement of inequality in Colombia.

1.4.   Research questions

The following are the main research question of this study:

- In which aspects are rural and urban areas in Colombia unequal?
- Is microcredit a tool to reduce inequality?
- Is microcredit a tool to promote sustainable development?
- Measures against inequality of wealth and income in Colombia have been successful?
- Does microcredit have an impact on quality of the household in Colombia?

---

[6] As cited in OPHI, slide 6 (2015)

- Does microcredit have an impact on school enrollment of young population in Colombia?

- Does microcredit have an impact on getting covered by healthcare services in Colombia?

- What is the effect of microcredit in individual's and household's well-being in Colombia?

1.5.   Assumptions and limitations of the study

This study tested the hypothesis of the effect of having access to credit on three dimensions: Household wealth level, education of young population and access to healthcare services, assuming that these dimensions are considered as "opportunities" that if they are granted, would become a tool that will boost "development". However, as Michael and Randriamanampisoa explained, the effect of microcredit on education is more complex to analyze since it relies on the *"productive possibilities that education could improve"* (Michael and Randriamanampisoa, pp. 14, 2018). The same interpretation could be applied for the health dimension that was assessed.

Moreover, the propensity score matching used for the estimation models was based on treatment and control groups constructed by three variables regarding access to credit (more details will be explained in Chapter IV). The access to credit was assumed as a benchmark for the study since by the end of 2016, people had the lowest rate on access to credit[7]. As Figure 5 shows, the grey line denotes the low access of credit of natural people which by December of 2016 faced -60% of access to credit of financial entities and financing companies and almost -80% access to credit of cooperatives.

---

[7] According to Figure 5, the importing sector was the second lowest rate on access to credit (dotted line) and the third one is the construction sector (yellow line).

Figure 5. Access to credit of different economic sectors

Acceso al crédito de los diferentes sectores económicos

Bancos — CFC — Cooperativas

(porcentaje)

Legend: Industria, Servicios, Comercio, Comunicaciones, Agropecuario, Importadores, Personas naturales, Exportadores, Construcción

Nota: la evolución del acceso al crédito solo puede hacerse de manera ordinal debido a las limitaciones que presenta la encuesta en cuanto a su muestra.
Fuente: *Encuesta sobre la situación del crédito en Colombia*, diciembre de 2016; cálculos del Banco de la República.

Source: Banco de la Republica, 2016

On the side of limitations this research work is based on three propensity score matchings to assess the hypothesis of each of them (More details will be provided in Chapter IV). The methodology does not include the amount or destination of credit as control variables for the estimation methods. As it mentioned before, the access of credit means to "have opportunities" and therefore was considered more relevant for the scope of this study.

Moreover, the static evaluation of the hypothesis of this research work does not allow to assess the effect of microcredit on the long run nor the macro level.

1.6.   Outline of the chapters

This research work is divided into four subsequent chapters. Chapter II is dedicated to the literature review considered relevant to answer the research question and to operationalize the measurement used in this study. Chapter III is dedicated to the description of the applied methodology and its details. Chapter IV presents the results obtained and discuss its findings. Chapter V stands the conclusion of the research work and provides recommendations to microcredit provision in Colombia.

CHAPTER 2: LITERATURE REVIEW

2. This chapter presents a literature review divided into three categories, which were considered relevant to expose the impact of microcredit on well-being in rural and urban areas of Colombia:

- **Development and Multidimensional Poverty. Context of Colombia**
- **Inequality and Wellbeing. Context of Colombia.**
- **Microcredit Impact on Development, Multidimensional Poverty, and Inequality.**
- **Microcredit in Colombia.**

2.1. Development and Multidimensional Poverty. Context of Colombia

Lindauer, D. et al (2012) established if economic growth is conceived as the *"heart of the development process"* it cannot occur without sustained development and poverty reduction. The traditional components of "economic growth" were focused mainly on three pillars: 1. Capital accumulation, 2. Population Growth (thus growth in labor force) and 3. Technological Progress. However, after 1970 the concept started to include strategies aimed to reduce poverty, unemployment and inequality in order to follow the principle of "Redistribution from growth" (Todaro, S. & Smith, S, 2015).

The vision of development focused on the allocation of resources and its effects on people's quality of life (regarding access to education, health care, employment, etc.) is one of the pillars of the view of sustainable development concept (Soubbotina, 2000).

The perspective of sustainable development introduced the concept of "human development" in 1990 in order promote the new approach of well-being beyond the measurement of economic growth. "Human Development" refers therefore to people's opportunities and choices (UNDP, 2020).

In the same line, (Haughton & Khandker, 2009) mention that conventional poverty is defined by the World Bank as the *"pronounced deprivation of well-being"* (pp.1, 2009) intending the lack of commodities some individuals have, in order to reach a minimum threshold of standard of living.

2.2. Multidimensional Poverty Theoretical Framework and Measurement in Colombia

Understanding poverty beyond monetary deprivations started to being studied since the XX century, with the measurement of income, wealth and consumption distribution among the households and

countries. The aim was to study and stand out the existing gaps between the richest and the poorest sectors of society and its repercussions in the accurate measurement of economic growth.

According to (Haughton & Khandker, 2009) poverty is divided into three dimensions:

1. Material deprivations, which analyses if people have the commodities to satisfy their needs. This is the reason why its measurement has been focused mainly on income or consumption of individuals and households, therefore its estimated in absolute monetary terms;

2. Do people have enough goods? For instance, to say people is educated, are they just literate or have enrolled in at least basic education. This measurement is focused on relative terms;

3. Lack of capabilities, understood as a situation in which people are not able to "enjoy valuable things and doings" (Alkire, 2002). The opposite of poverty then is defined as the situation in which people have access to resources which allows them to choose the most optimal situation for them.

This part will specifically explore the second and third dimension of poverty mentioned before, in order to understand multidimensional poverty and inequality.

As it was mentioned above, the measurement of multidimensional of poverty is relevant to extend the understanding of 'wellbeing' that goes beyond monetary terms (Villatoro, 2017). Multidimensional poverty is therefore the measurement of how many people are poor and its depth, in terms of relative disadvantages (Oxford, 2021).

According to Alkire, Foster et. al (2015) the measurement of Multidimensional Poverty has been divided into two categories: 1. Methods which use aggregate data, avoiding the measurement of deprivations in joint distributions and 2. Methods which aim to observe every unit of analysis and dimensions, using microdata to measure the joint distributions.

The first group is composed of the Dashboard Approach and Composite Indexes. On one hand, the Dashboard Approach aims to measure each poverty dimension separately, avoiding a hierarchical order between them and not including a definition of which individuals should be considered multidimensionally poor (Alkire, et.al, 2015). An example of this approach application is the Basic Needs Approach or the Net Enrollment Ratio, which are set of unidimensional indicators that report the individual level of deprivation dimension they are assessing. On the other hand, the Composite Indexes take the dimensions measured by the Dashboard and aggregates them in order to create a

unique component, which will describe the overall situation desired. An example of these is the Human Development Index (HDI) or the Inequality-Adjusted HDI.

The second group of approaches is composed of the use of Venn Diagrams, Dominance Approach, Statistical Approaches, Fuzzy Sets Approach and Axiomatic Approach. To summarize, these measurements overall have the disadvantage of not being able to provide summary measures (Venn Diagrams and Dominance Approach), and in case they do so (Statistical Approaches and Fuzzy Sets Approach), they mostly done it through statistical methods that don't allow cross country comparisons and don't provide a concept to identify the "multidimensionally poor".

This study focuses on the Axiomatic Approach from the second group, which was used to create Multidimensional Poverty Index by Alkire and Foster (2008). The motivation of Axiomatic Approach is to measure poverty under a set of desirable properties. As Figure 6 shows, the predictable structure of axioms used in this approach allows to characterize a unique estimation, by selecting a set of desirable properties and build a measure which complies them.

Figure 6. Axiomatic Approach
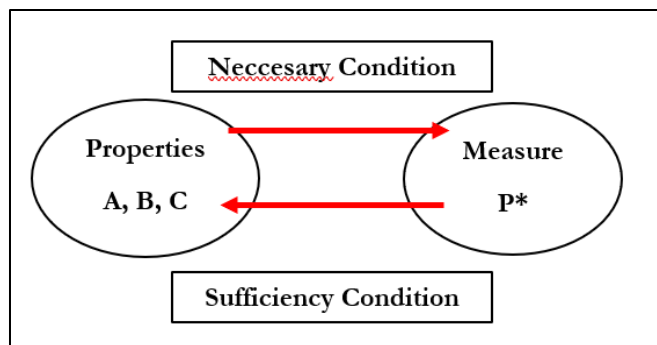
Source: (Alkire, Multidimensional Poverty Measurement Methodologies, 2015)

The Axiomatic Approach provided the insights to create the Multidimensional Poverty Index (MPI). According to Angulo (2016) the Alkire & Foster methodology considers poverty as the coexistence of several deprivations faced by individuals or households in a simultaneous way. The MPI establishes if a person is poor or not by aggregating all the data available for household members. The variables included assume sharing factors between the household members, like provision of electricity or sanitation (Alkire, Roche, Santos, & Seth, 2011).

Talking specifically about Colombia, the MPI measurement was adapted by the National Planning Department (DNP by its initials in spanish) in 2011. This adjustment was done in order to measure poverty directly, according to Amartya Sen classification (1981).

The estimation is composed of five dimensions which are measured at the household level: 1. Educational Conditions, 2. Youth and Children Conditions, 3. Health, 4. Labor conditions, 5. Household conditions and access to public services. These dimensions are divided in 15 variables which identify if a household is multidimensionally poor if it is deprived in at least five of these variables (which will represent 33% of the entire deprivations) (Cepeda, Rivas, Álvarez, Rodríguez, & Sánchez, 2019). To have a clearer description of each dimension and its variables, Table X explains on detail each component included.

**Table 2. Variable's description MPI Colombia**

Dimension	Variable	Description
Educational Conditions of the Household (0,2)	Low Educational Achievement (0,1)	Average schooling level of people in the household with 15 years old or more. A household is considered as deprived when the average schooling of this sampe is less than 9 schools years.
	Iliteracy (0,1)	Percetage of people in the household who knows how to read and write. Households are considered deprived if at least one of the household members with 15 years old or more doesn't know to read or write.
Youth and Children Conditions (0,2)	School Absence (0,05)	Proportion of school-age children (6 to 16 years old) in a household who attend an educational establishment. Households are considered deprived if less than 100% of children between 6 and 16 years old attend school
	School Lag (0,05)	Percentage of children between 7 and 17 years of age who do not have school behind. Households are considered deprived if any of the children between 7 and 17 years old is behind in school
	Barriers to accessing early childhood care services (0,05)	Percentage of children from 0 to 5 years old in the household who have access to child care services (health, nutrition, care and initial education) simultaneously. Households are considered deprived if at least one of the children between the ages of 0 and 5 in the household does not have simultaneous access to the essential childcare services
	Child labour (0,05)	Amount of children between 12 and 17 years old who are currently employed. A household is considered deprived if least one child of the sample is employed.
Labor Conditions (0,2)	Long-term unemployment (0,1)	Percetage of economically active people who compose the household and are unemployed for more than a year. A household is considered deprived if at least one member of the household is economically active but is in long-term unemployment.
	Informal Employment (0,1)	Share of the population economically active in the household who is currently employed and covered with a pension system. A household is considered deprived if less than 100% of the members who are employed have formal jobs.
Health (0,2)	Without health insurance (0,1)	Percentage of people who are covered with the Social Security System in Health (Sistema General de Seguridad Social y Salud in spanish). A household is deprived if any of its members isn't covered with health insurance
	In case of need, barriers to access to health services (0,1)	Share of households members who, given a need, accessed public health service. A household is considered deprived if at least one of its members felt need to have medical attention and did'nt go to a general practitioner, specialist, dentist, therapist or health institution to treat the problem.
Household conditions and access to public services (0,2)	Access to improved water source (0,04)	For urban areas, a household is considered deprived if it doesn't have a connection to water public service. For rural areas, households are considered deprived if having or not connection to water public service, obtain water to prepare food from a well without a pump, rainwater, river, spring, public sink, tank car, water tank or other source.
	Waste disposal (0,04)	For urban areas, households are considered deprived if they don't have connection to public sewage service. For rural areas, households that have an unconnected toilet, latrine or low tide, or simply do not have a sanitary service, are considered deprived.
	Floor materials (0,04)	Households are considered deprived if have floors of soil/sand
	External walls materials (0,04)	For urban areas, households are considered deprived if the exterior walls are made of rough wood, board, plank, 'guadua', other vegetable, zinc, cloth, cardboard, waste or does not have walls. For the rural areas, households are considered deprived if the exterior walls are made of guadua, another vegetable, zinc, cloth, cardboard, waste or when it does not have walls
	Critical Overcrowding (0,04)	A household is considered overcrowded if the number of people per room to sleep, excluding kitchen, bathroom and garage, is greater than or equal to 3 people in urban areas and more than 3 people per room in rural areas.

From 2013 to 2016 the amount of people who were multidimensionally poor has reduced in Colombia overall. Figure 7 shows how in 2013 almost 25% of the total population in Colombia were considered multidimensionally poor and in 2016 this percentage decreased to 17,8%.

Figure 8: MPI at national level – Colombia[8]
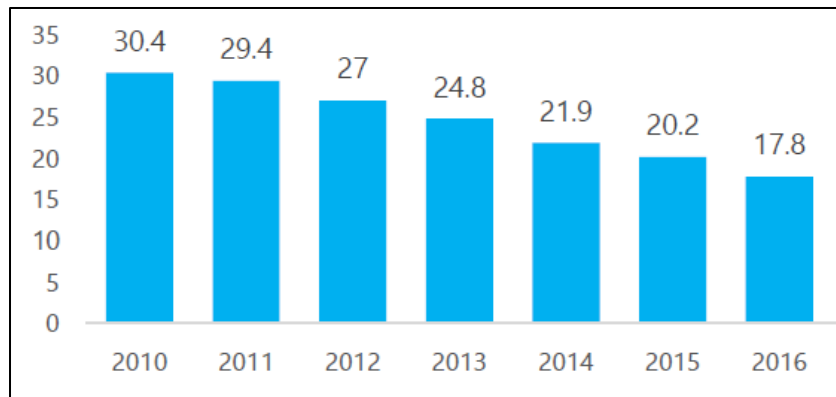
A detailed look at the MPI in Colombia shows how the multidimensional poverty is more evident in the rural areas than in the urban headlands. As Figure 9 shows, from 2013 to 2016 both areas got a significant reduction of the multidimensional poor population share (Rural areas got a reduction of 8,3% while the Urban areas a 6,4%). However, the gap between the center and the periphery is yet persistent, since it reported an average gap of 27,91 percentual points, and a closure of 1,9 percentual points from 2013 to 2016.

---

[8] In this graph, the y axis describes the percentage of people in Colombia considered as multidimensionally poor.

Figure 9: MPI by area – Colombia[9]
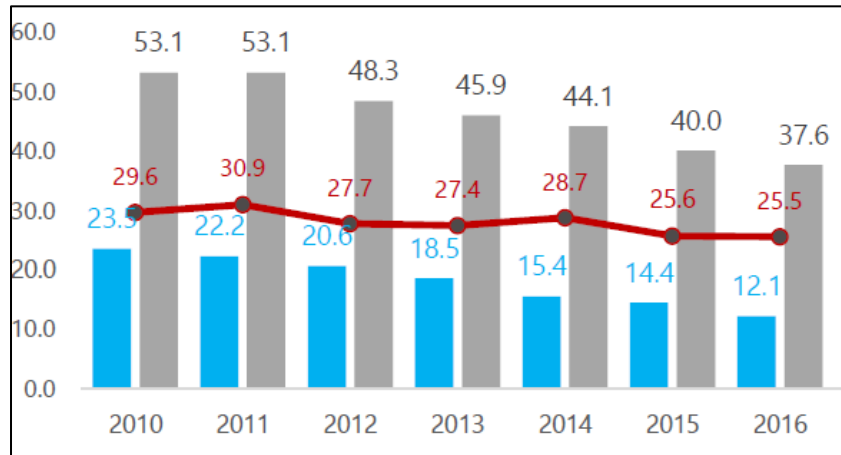
2.2. Inequality and Well-Being theoretical framework. Context of Colombia

By the beginning of XX century, the measurement of development beyond economic growth started to focus on the distribution of aggregate indicators such as income, expenses, and wealth, among different sectors of society.

According to Lindauer, D. et al (2012) if the goal to reach economic growth is make people overcome poverty, then is fundamental to understand inequality, since it will determine the amount of poverty "produced" by the level of wages people receive, and high inequality *"not only produces social strains but can also ultimately retard growth"* (Todaro & Smith, pp. 33, 2015). The dimensions to understand inequality include other concepts such as expenditure (i.e. household consumption), land ownership, tax collection, gender, social participation, opportunities, etc (Todaro & Smith, 2015), (Piketty, T. 2014), (Clark, A. & D'Ambrosio, C. 2015), (Alkire, 2005).

Talking about income inequality, Boix (2010) stands that the distribution of income has been characterized by historical facts which include productive and technological shocks (such as the Industrial Revolution), the regulatory presence of government/institutions regarding the ownership of assets and tax rates. The economic and political context provided the inputs to inequality and

---

[9] In this figure, the y axis describes the percentage of population living in conditions of multidimensional poverty in Colombia. The percentage of population in MP conditions in urban areas are showed in blue bars, while the rural percentage are in grey. The red line denotes between the two areas measured in percentual points.

economic long run stagnation converged to same place and time (Banejree, A. & Duflo, E. 2000), (Boix, 2010)

However it becomes more complicate if the scope is to measure the consequences of inequality and thus to development.

Ray (1998) stands that economic inequality is the *"disparity that permits one individual certain material choices, while denying another individual those very same ones."* (pp. 169, 1998). The author also introduces that economic inequality is strictly related with the imbalanced wealth and income among the population, how much people earn and how they obtain it (functional and personal income distribution). This distinction is useful to understand that all the earnings a person or a household acquires, are considered as "payments" for their jobs, productive activities, rents, etc. (i.e.: Household A has one member working, then has only one source of "payments", in contrast to household B who owns one business, and their members work in different areas, thus has more wages) (Ray, 1998). The author therefore claims that economic inequality is based on who owns which and how many factors of production.

Atkinson, A. & Bourguignon (2000) talk about the importance of look the *"cake division problem" (pp.43, 2000)* and what does it means in terms of wellbeing (How much "cake" do people obtain and how much it means to them). After a detailed revision of philosophical utilitarian and welfarism approaches, the authors mention that the issue of measuring inequality by income distribution only becomes evident when all individuals start from a *"perfectly competitive environment"* (pp.45, 2000) with the same preferences, because the difference of income will result in difference of material well-being. However, the natural heterogeneity across individuals, their preferences (Kolm, 1972)[10] and needs (Atkinson, A. & Bourguignon, 1987)[11] makes the problem of distribution and measurement deeper.

Understanding development as tool to make people's freedoms equal is key to understand the perspective of inequality in terms of well-being (Initiative, 2015). Specifically, inequality of opportunities becomes evident when in terms of well-being, freedom and opportunities (OPHI, 2015) (Alkire, 2002), (Alkire, 2011) (EBRD, 2016) (Barros et. al 2008).

The theoretical framework of the concepts of inequality and well-being, provide inputs to describe the situation of Colombia regarding these two measurements of development.

---

[10] As cited in Atkinson, A. & Bourguignon (2000) pp.44.
[11] Ibidem.

According to the World Bank data, the annual percentage of GDP growth rate in Colombia was of 3,26% in 2019, after a rose from 1,3% in 2017 (World Bank, 2020). Figure 10 shows the GDP per capita percentage growth since 2010:

Figure 10. Annual % GDP Growth
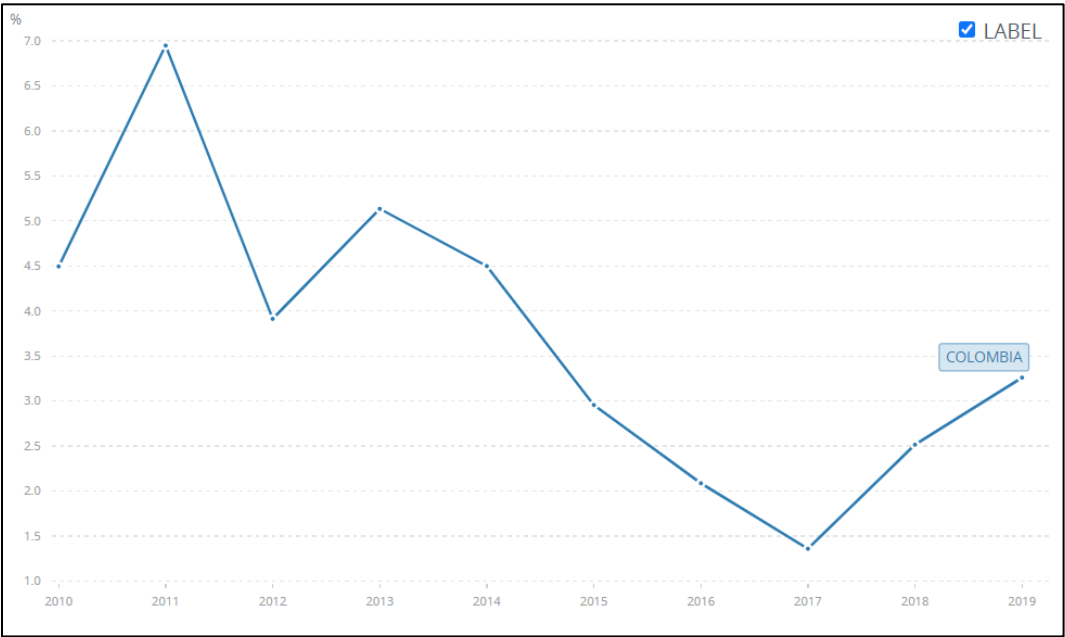
Source: (World Bank, 2020)

In the same line, OECD most recent data before COVID-19 outbreak stranded that the GDP per capita in Colombia is 73% lower than OECD countries, as well as the national productivity which is 71% lower.

In terms of income distribution, according to the OECD Colombia's inequality is higher than in the median of emerging economies and the poorest 20% of households earn 3,7% of total income. Figure 11 helps to understand the position of Colombia's inequality regarding other economies:

Figure 11: Inequality in Colombia according to other economies.
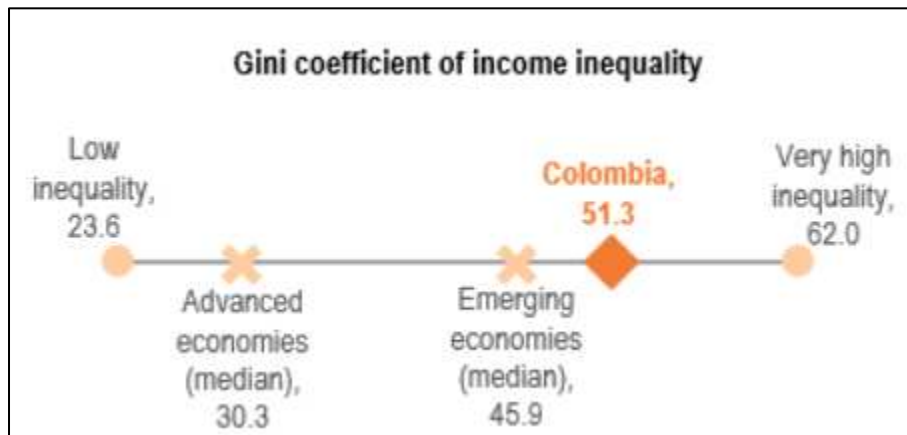
Source: (OECD, 2020)

2.3. Microcredit Impact on Development, Multidimensional Poverty, Inequality

2.3.1. Microcredit theoretical framework

After the successful introduction of Grameen Bank in Bangladesh in 1976 by Muhammad Yunus, the original aim to reach the poor with formal financial tools started to attract the economic active poor people who wanted to start small business asking for loans. (Rutherford, S. 2013).

Microcredit is currently understood as an innovative service provided by Microfinance Institutions (MFIs) (Banerjee, A. 2013). The main scope of MFI is to include clients into the formal financial system (Ledgerwood, 2013) that were traditionally excluded from the commercial entities, due to their lack of guarantees, banking information, repayment low rates, among the most important motives.

The provision of small loans and "credit democratization" to poor people has had an impact in mixed terms. In some cases, the microcredit and the provision of other MFIs services (such as saving accounts, ROSCAs, etc) can be related to boost of entrepreneurial initiatives, poverty alleviation, in terms of depth and severity, reduction of income inequality (Imai, K., 2012), (Mushtaq, R. & Bruneau, C., 2019) (Bangoura, L. 2016).

However, the provision of microcredit can be also related to not positive impacts, mostly in low and middle-income countries. Randomized evaluations have shown that the provision of microcredit was used more for consumption, rather than investments did not help the poor to have high return

investments, significative long-term changes on average income or long-term consumption (Poverty Lab, 2018).

2.3.2. Microcredit impact on Development, Multidimensional Poverty, Inequality and Wellbeing

The impact of microcredit on development has been considered as a "bottom-up" tool since it empowers the poor to *"pursue their own destiny"* (Roy, M. 2003). According to the author, the traditional tools implemented by the World Bank and the IMF to provide solutions to poverty are mostly projects with a "top-down" approach, since they have been characterized by *"large, rapid and often painful change"* (Roy, M. pp 5, 2003). The author justifies that as DeSoto (2009)[12] stablishes, if capital is the main boost of productivity, then the provision of "property rights" intended as formal means to access it, should be guaranteed.

In the same line, the author explains that the provision of microcredit impacts positively to the definition of development provided from Nobel Prize Amartya Sen (2000) since "Access to small loans through microfinance provides the poor with opportunities to pursue growth opportunities which would ultimately allow them to escape poverty" (Roy, M. pp. 17, 2003).

Other authors claim that the impact of microcredit into wellbeing is mostly positive since it boosts household consumption, acquisition of assets (Ha Thu, V. & Goto, D, 2020), (Monzur, et.al, 2016), (Thanh, P., Saito, K., Doung, P., 2019), and boost of "capabilities" (Michela & Randriamanampisoa, 2018), intending them as *"the extent of their opportunity set and of their freedom to choose among this set, the life they value"* (Stiglitz, 2009)[13].

2.3. Microcredit in Colombia

2.3.1. Microcredit framework and context in Colombia

The history of one of microfinance modalities in Colombia started under microcredit since the early 1930. The creation of public entities such as the "Caja Agraria" had the aim to overcome poverty by supplying small credits to the poor in order to boost productivity (Barona, 2004). However, the loans which were aimed to workers of the agricultural sector, with low interest rates and reduced guarantees,

---

[12] As cited in Roy, 2003
[13] As cited in OPHI, slide 8. (2015)

did not accomplish the poverty alleviation expectations, since subsidies were not used by people who need them, and it didn't increase productivity. The institution was later closed and replaced by the Banco Agrario in 1990.

Following Barona (2004), the international MFIs widespread between 1990 and 1996, started to notice in Colombia with "Programas para credito" (Programs for credit) to support micro entrepreneurs and therefore boost productivity. After the new Constitution in 1991, the government assigned a specific unit leaded by the National Planning Department to manage the public resources aimed to support micro entrepreneurs. Later, in 1993 the efforts to provide mechanisms to reduce poverty by closing the gap between informal and formal entities, was intervened by local private actors such as business foundations and international cooperation organizations such as the International Development Bank or the International Monetary Fund.

More recent studies stablished that microfinance in Colombia can be identified under five categories as Table 3 shows:

Table 3. IMFs Categories in Colombia

IMFs Categories in Colombia	
Category	**Actors**
Credit Establishments	Commercial banks and finance companies
Cooperatives	Financial, savings and credit. Financial ones are under the surveillance of the Financial Superintendence of Colombia, while the savings and credit ones are under the surveillance of the Solidarity Economy Superintendence.
NGOs	Banco de la Mujer, Actuares
Private Entities	Business Foundations such as Fundación SantoDomingo, Fundación Corona, Fundación Carvajal
Public Entities	National Guarantee Fund, Bancoldex (Foreign Trade Bank), Ministry of Foreign Trade and Tourism (Banca de las Oportunidades)

Source: Made by the author with information of Serrano (2009)

Serrano (2009) establishes that *"Microfinance in Colombia its reduced mainly to microcredit with a low development in other areas such as insurances".* Estrada & Hernández (2019) stand that the formal implementation of microcredit in Colombia started with the Law 590 in 2004, with aim to support micro, small and medium enterprises with public funds. Later in 2006 the document CONPES 3424 promoted the creation of Banca de las Oportunidades (Bank of the Opportunities) a formal entity conceived to raise the financial depth in Colombia and promote the access to loans and amplify the formal financial services (Serrano, 2009). More recently, microcredit provision in Colombia has been concentrated on official financial entities such as Banco Agrario, Banco Caja Social Colmena, Bancolombia, Banco de Bogotá, Banca M[ia, Procredit, Banco de la Mujer (and other NGOs that follow the same scheme of Women's World Bank), Actuar Famiempresas, Foundations (which provide direct credit such as Fundación Mario SantoDomingo mentioned at the beginning) and local cooperatives (Serrano, 2009).

Microcredit provision in Colombia has addressed its support to micro and small enterprises, households and individuals, specifically women. Credits provided from formal and informal financial entities aimed to support consumption and housing (Oportunidades, 2019).

In terms of the barriers of access to credit, Estrada & Hernández (2019) citing the World Bank (2013), stand that the high interest rates, long credit process and rigorous conditions for credit approval are part of the problem. As a sample of this, the most recent report[14] about the results of the *Survey on the current situation of microcredit in Colombia[15]* (López, Sánchez, & Segovia, 2019), stand that the three most relevant obstacles to provide a higher volume of microcredits are: Client's capacity to pay (32,2%), client's over-indebtedness (15,4%) and the debt amount clients have with more than three entities (13,4%). Other factors include client's credit history (11%), low experience in their economic activity (4,9%), lack of interest of clients/enterprises to accomplish their obligation (3,5%).

However, after the significant progress Colombia made after the 1990 with its market liberalization, the microcredit market expansion across the country is yet constrained (Estrada & Hernández, 2019) by several structural barriers such as: Lack of an integrated client's credit history (Information

---

[14] The most recent report intended as the last made before pandemic COVID-19.

[15] The *Survey on the current situation of microcredit in Colombia* is designed by the National Bank of Colombia and Asomicrofinanzas, in order to know the perception of entities that carry out microcredit intermediation credit activities, including those that are not supervised by the Financial Superintendence of Colombia (López, Sánchez, & Segovia, 2019).

asymmetries), agency problems, limit of interest rates and financial transactions (Rey, Ruiz, & Lacouture, 2017)[16].

Moreover, authors such as Karpowicz (2016) emphasize that the financial inclusion for households in Colombia is below the average of the upper middle-income countries and the LAC region. In addition, the latest figures reported by Banca de las Oportunidades (2019) about financial inclusion, establish that by the end of 2019, 82,5% of the total adult population in Colombia had access to at least one financial product, but 20% of this portion do not use their product and at the same time there's still a 17,7% of people that yet is not included in the financial system.

2.3.2.   Microcredit's impact in Colombia.

Microcredit impact in Colombia has been studied for its effects on poverty alleviation, banking inclusion, quality of life and support to micro, small and medium enterprises.

Regarding poverty alleviation, Nuñez and Cuesta (2006) stand that poverty in Colombia is conditioned under several tramps which condemn households to live in a vicious cycle of poverty over generations. Among the poverty tramps the authors identify, in which they include child labor, illiteracy, malnutrition and disease, etc. they establish Lack of Working Capital as determinant. Their proposal suggests that the strengthen of MFIs, together with conditional saving programs and other several techniques to include people in the financial system, will help to reduce illegal credit intermediaries. Moreover, small growers in the rural sector should have financial technical assistance in order to improve their employment/economic activity conditions.

Other authors such as Gerlein, Gonzalez & Arias (2010) and Gutierrez (2010) stand those entities like BO scope is to reduce poverty, through mechanisms that will promote financial depth, in order to promote economic growth and improve individual's quality of life. In order to reduce operational costs, the implementation of microcredit in the most unattended zones promoted local alternative savings and credit mechanisms, such as Self-help Groups and Communal Banks.

To fulfill financial depth, microcredit presence on the most neglected rural areas affected positively microenterprises by include them in the formal financial system. This make the entrepreneurs to avoid

---

[16] As cited in (Estrada & Hernández, 2019 , pág. 35).

informal intermediaries (known as: Gota a Gota, Agiotistas, Cadenas, Piramides) with high interest rates (Aristizabal, 2007).

Regarding banking inclusion, Gerlein, Gonzalez & Arias (2010) mention that the performance of BO in remote areas brought the inclusion of credit banks, private entities and NGOs, in order to amplify microcredit provision coverage. This amplified network also promoted new programs such as subsidies to informal intermediaries, co-financing productive initiatives and technical assistance to intermediaries and informal entities. Other techniques to stimulate population to be part of the formal financial system included financial education training, women's credit card, access and use of mobile phones, electronic savings accounts, etc.

Microcredit positively impacts the physical accumulation of assets in households, which allows it to be a good indicator of its wellbeing. Microcredit improves the life conditions of people with low income, in areas such as housing, education, health and women empowerment (Aristizabal, 2007), Villada, et. al (2015). Moreover it's effects also have been considered positive since it boosts individuals capital accumulation (Joya, et. al. 2017).

Authors like Mendez (2011) studied the impact of microcredit on micro and small enterprises in Colombia. Their findings suggests that from the statistical point of view, there's no positive effect of microcredit on income or employment generation in micro/small/medium enterprises. The impact of microcredit improves enterprises functioning because of its intensive use, not because of its provision (Henriquez, 2009)[17].

Several experiments like Grameen Bank tried to be implemented in Colombia. In 2009 after the visit of Proffessor Yunus, he was invited to advise the implementation of a similar program in Caldas[18], in order to alleviate the 70% of poverty and 25% of extreme poverty in the department (Loeffer, 2013). It was proposed to create a Holistic Social Business Movement, which basically tried combine microfinance services with a social business fund aimed to provide support to social businesses. However the model didn't succeded due to lack of financial and political support.

---

[17] As cited in Mendez, p. 97 (2011).
[18] Caldas is one of the 33 political departments of Colombia. Its capital is Manizales and is part of the Colombian Coffee-Grower Axis region.

CHAPTER 3: METHODOLOGY

3. Methodology

This chapter will describe the operationalization methods used in this research to analyze the impact of access to microcredit on individuals' or households' well-being. 3.1. Section will provide a quick summary of the problem, hypothesis identified and some ethical consideration, 3.2. will describe the research design. Section 3.3. will enter in more details of the sample, data collection and the instrumentation of variables. Section 3.4. will mention operational definition of research variables and section 3.5. will describe the procedure to test hypothesis and answer questions.

3.1. Problem summary, Hypothesis and Considerations.

The theoretical and empirical literature stated that microcredit has been considered as a tool with a positive impact in developing countries. To recap, according to the literature, this positive impact can be described in these categories:

- Provide new sources of capital accumulation: Capital accumulation allows households who are considered poor to invest/create in productive initiatives such as micro, small or medium enterprises. This can potentially bring new source of income to the household.

- Promote inclusion in the formal financial system: Households who are considered poor and live in the of rural areas can have access to capital in a safe way, avoiding illegal intermediaries who charge high interest rates and lack of guarantees.

- Promote gender empowerment: As the Grameen Bank experience reported, microcredit that is provided to women allows them to be an active actor in the process of decision making of both the household and the society.

- Promote empowerment of the poor: Microcredit provision to poor households allows them to achieve a higher quality of life. This is measured by: Higher consumption per capita, or new sources of capital accumulation, having access to fulfill their basic needs in education, health coverage, avoiding malnurishment, etc.

The description of the overall situation of Colombia and the positive impacts of microcredit mentioned by the literature, provide the inputs to formulate the main hypothesis of this study. The logical process of the hypothesis definition and each step is clarified in Table X:

Table 4. Logical Process Description: Hypothesis Construction

Steps	Logical process
1	Considering development as a concept equal to economic growth has been problematic because it avoids dimensions to understand "human development"
2	An example of the problem of this contradictory measurement is Colombia. Colombia has reported a positive economic growth during the last years. However, their poverty figures maintain over a decade and its Gini index is considered as the second highest of the LAC region.
3	Measures to reduce poverty in Colombia have tackled the problem of deprivation of basic needs in terms of material goods. However, people in rural areas still cannot access to the same "set" of opportunities of people in urban areas because they are not in the same space. (buscar alguien que hable sobre la desigualdad entre zonas rurales y urbanas)
4	According to Amartya Sen, if people have the same "space" or "freedom" to choose the alternative that will optimize more its life functionings and beings, then society will be more equal.
5	Microcredit is a tool with a positive impact on inequality since it allows to improve the individuals and households well-being. With microcredit individuals and households have better standards of living (their capital accumulation diversifies, their access to education, health coverage, food consumption improves, etc.).
6	Having access to microcredit has a positive effect on Household Conditions, Education of young population and Access to healthcare services. (Aristizabal (2007), Villada, et. al (2011) and Ramirez, et. al (2020)
7	**Having access to microcredit has a positive impact on well being in rural and urban areas**

Source: Made by the author.

It's also important to keep in mind that to carry out this research, the following considerations were acknowledged:

- Definition of concept of Well-Being:
    - Access to microcredit has a positive impact on people's and household's wellbeing. However, the process to determine people's "wellbeing" is an inevitable result of the subjective perspective of the researcher, including his/her context, experiences, and preferences. To avoid this biased perspective, this research covered quantitative and

qualitative research and data regarding people's well-being and more specifically, what people in rural and urban areas do when they have access to credit in Colombia specific case.

- This research work also acknowledge that the definition of 'well-being' incurs in problematic assumptions for its measurement, regarding inequality and multidimensional poverty. Grusky and Weeden (2013) stand that the process to identify if a population A is poorer than population B should also include the questioning of *"whether poverty in either population takes on a gradational form, a class form, or a 'postmodern' form in which advantage and disadvantage are partly compensating" (*Grusky, D. & Weeden, K., pag. 3. 2013). Moreover, the authors also mention that the measurement of multidimensional poverty and the process of inclusion and exclusion of dimensions is a matter of consensus that economists have not reached yet (Alkire, 2008). To avoid this issue, this research work based the testing of well-being based on the same dimensions of the MPI official measurement in Colombia.

- Implications of having a wider choice set:
    - If access to microcredit has a positive impact on people's well-being, it's because it allows to have a wider choice set of alternatives, thus people are freer to choose (Alkire, 2002). However, this research work acknowledged statements such as Markus, H & Schwartz, B. (2010) who noticed *"The meaning and significance of choice are cultural constructions"* (Markus, H & Schwartz, B., pag. 344. 2010). And *"Choice is good. It is essential in enabling people to have the opportunity to live the kinds of lives they want. But choice is not always and only good, and it does not mean the same thing to all people in all contexts and all cultures."* (Markus, H & Schwartz, B., pag. 352. 2010).

3.2.   Research Design

This work is based on a quantitative research design to test the hypothesis: Having access to microcredit has a positive impact on individual's and household's well-being.

To test the hypothesis, this research aimed to design a methodology to discover the relationship between conditions that can constraint the well-being (including access to credit) at the individual and household level, and the dimensions of well-being measured by the official MPI in Colombia. Thus,

this work is a comparative/quasi experimental research since its scope is to find the effects of independent variables (conditions that could constraint well-being) on a unique dependent variable (dimensions of well-being measurement).

The dimensions considered to test well-being are three: Household level of wealth, Education level and Affiliation to health services. These three dimensions were constructed at the household and individual level and were tested for rural and urban areas (more details about the dimensions construction will be found in the upcoming sections).

3.3.   Data collection, Sample and Data Preparation

3.3.1.   Data Collection

The quasi-experimental research conducted by this study is based on the data of the Colombian Longitudinal Survey – ELCA, carried out by the Center of Economic Development Studies (CEDE), Faculty of Economics of Universidad de los Andes located in Bogota, Colombia. The survey was implemented in approximately 10.000 Colombian households in rural and urban areas in 2010, 2013 and 2016. The scope of the survey is to have a detailed look to the social and economic changes of rural and urban households and its members.

The data collection method implemented by the ELCA aimed to observe the individuals and households' dynamics and environment over time (ELCA, 2013). To accomplish its objective, the survey was conducted with five forms:

- Urban households
- Rural households
- Urban Communities
- Rural Communities
- Anthropometric tests, cognitive tests, and evaluation of social-emotional development for children.

The data collection carried out by this research was based on the data bases of rural and urban areas of 2013 and 2016[19] in STATA format available in the ELCA website. Each year contains three

---

[19] The dataset of 2010 was not included in this study since there was not data available to construct the variable "Access to credit". For any required consultation, these datasets are uploaded on the ELCA website and are available for public consultation in: https://encuestalongitudinal.uniandes.edu.co/en/.

different "levels" (Children, Urban, Rural) and within each level there are six datasets. Figure X describes the composition of the ELCA datasets:

Figure X: Composition of ELCA datasets
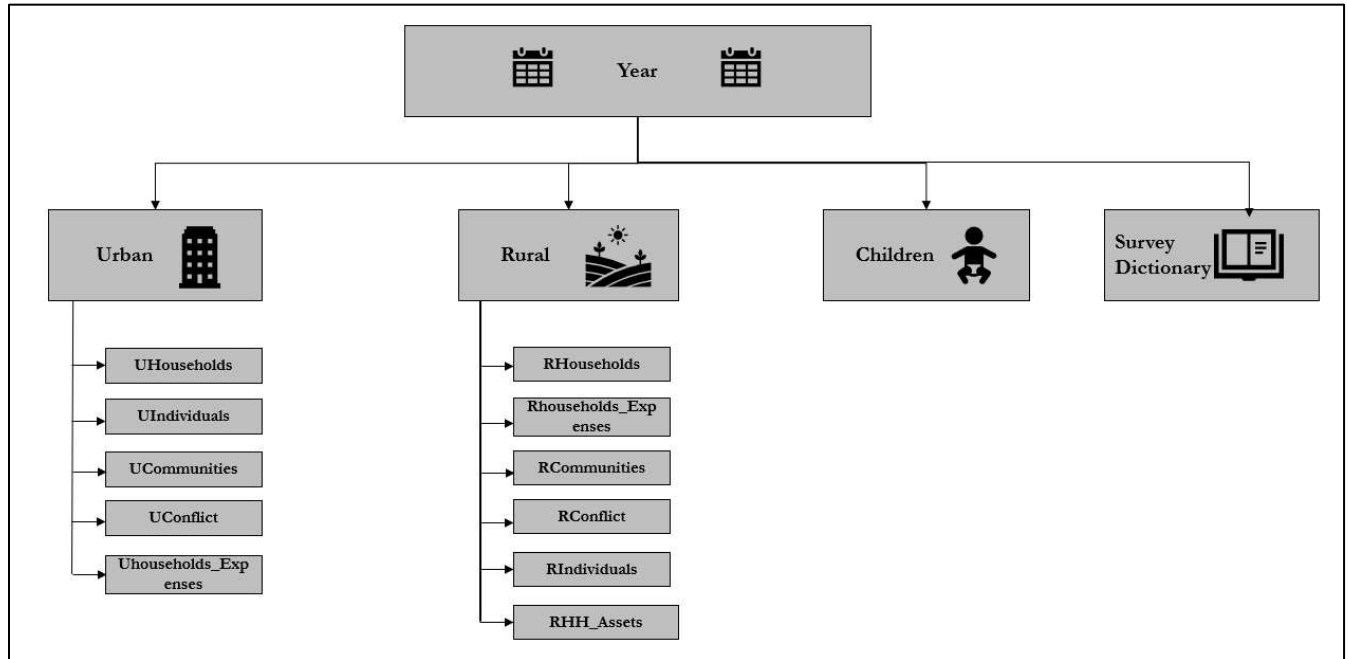
To accomplish the purpose of this study, this research constructed two unique datasets for each year (2013 and 2016): Urban and Rural. This data management implied the merge of UHouseholds and UIndividuals to create the dta file "UrbanINDHh", and the same process was done to create "RuralINDHh". The merging preparation was made using the command "m:1" to unite the two datasets by a unique variable in common. In 2013 the common variable was "llave" while in 2016 was "llave_n16". In both cases, these variables were the unique identifiers of the household interviewed.

3.3.2. Sample

According to ELCA's reports, the sample defined by the survey is 10.800 households, composed of 6.000 located in the urban area and 4.800 in the rural area. The sample is characterized for being *"probabilistic, stratified, multistage and cluster, with a selection of municipalities based on demographic and socioeconomic characteristics"* (ELCA, 2020). The urban sample is considered representative for households that were

identified as part of socioeconomical stratum one to four[20] among the national level and five geographical regions: Bogotá, Central-Eastern, Atlantic, and Pacific[21]. The rural sample is representative only for small farmers identified as part of four rural micro-regions (Mid-Atlantic, Coffee Region, Cundiboyacense and Center-East)[22].

3.3.3. Data Preparation

The scope of this research is to analyze the impact of access to credit into individuals and households' wellbeing. As it was mentioned by the literature, wellbeing, or the absence of it (Poverty) in Colombia is measured through two official indicators: Monetary Poverty and Multidimensional Poverty. To understand poverty beyond monetary deprivations, this study is based on the MPI measurement of Colombia to test its main hypothesis.

As Table 2 showed, the MPI measurement in Colombia intends to identify how poor a household is through five dimensions: 1. Educational Conditions, 2. Youth and Children Conditions, 3. Health, 4. Labor conditions, 5. Household conditions and access to public services. This research work created its own three dimensions based on the concepts of MPI to assess Household conditions, Education and Health Coverage.

3.3.3.1. Response variables construction

This section explains the construction of the response variables who were measured as dimensions of wellbeing.

- **Dimension 1: Household Conditions**

Table 5 shows the construction of the Household Wealth Level dimension, using the variables available in the ELCA dataset for urban and rural areas, separately:

---

[20] The Socioeconomic Stratification in Colombia is the classification of residential properties in a municipality, according to the provision of domestic public services (Law 142 of 1994). Among the national territory, the socioeconomic strata in which the dwellings and/or properties can be classified are 6: 1. Low-low, 2. Low, 3. Medium-Low, 4. Medium, 5. Medium-High, 6. High. The households who belong to strata 1,2 and 3 are identified with less economic resources and are beneficiaries of state subsidies for their provision of public services. Households who belong to strata 5 and 6 pay costs overrun on the value of domestic public services provision (DANE, 2020)

[21] Anex 1 and 2 shows a detail of urban sample for 2013 and 2016, the departments and municipalities covered by the ELCA.

[22] Annex 3 and 4 shows a detail of rural sample for 2013 and 2016, the departments and municipalities covered by the ELCA.

Table 5: Dimension 1- Variable Description

Dimension of Well-being	Components	ELCA Variables	Values description
Household wealth level	**Critic Overcrowding**	Household overcrowding	0. Not overcrowded; 1. Overcrowded
	Household physical conditions	Floor material	1 Carpet, marble, parquet, polished wood 2 Tile, vinyl, tablet or brick 3 Cement, gravel 4 Rough wood, poorly matched wood, plank or plank 5 Earth or sand 6 Other
		Wall material	1 Block, brick, polished wood 2 Tapia tread, adobe 3 Bahareque 4 Precast material 5 Coarse wood, board, plank 6 Guadua, cane, mat, other vegetable 7 Zinc, cloth, cardboard, cans, waste, plastics 8 No walls
	Household tenancy	Household type	1 House 2 Apartment 3 Quart 4 Other type of dwelling unit 5 Indigenous Household
		Household ownership	1 Own, fully paid 2 Own, they are paying for it 3 For lease or sublease 4 In usufruct or other type of tenure 5 Occupant in fact

	Provision of public services	Energy used for cooking	1 Electricity
			2 Natural gas connected to the public grid
			3 Propane gas (in cylinder or pipette)
			4 Kerosene, petroleum, gasoline, coccol, alcohol
			5 Firewood, wood, charcoal
			6 Mineral coal
			7 Waste material
			8 Does not prepare food
		Source of water	1 Public aqueduct
			2 Communal aqueduct or veredal
			3 Well with pump
			4 Well without pump, jagüey
			5 Rain water
			6 River, stream, spring, source
			7 Public battery
			8 Tank car
			9 Aguatero
			10 Other source (bottle, bag, etc.)
		Waste disposal	1. Yes; 2. No
		Household sanitary service	1. Yes; 2. No
		Household economic strata	1. Yes; 2. No
		Electricity Provision	1. Yes; 2. No
		Natural Gas Provision	1. Yes; 2. No
		Water Provision	1. Yes; 2. No
		Sewerage Provision	1. Yes; 2. No
		Phone Line Provision	1. Yes; 2. No
		Waste Public Collection	1. Yes; 2. No
	Households Assets	Internet	1. Yes; 2. No
		Fridge	1. Yes; 2. No
		TV	1. Yes; 2. No
		Cellphone	1. Yes; 2. No

		Owen	1. Yes; 2. No
		Cars	1. Yes; 2. No
		Motorcycle	1. Yes; 2. No
		Bike	1. Yes; 2. No

Source: Made by the author based on ELCA 2013, 2016.

The Household Conditions dimension has five components: 1. Household overcrowding, 2. Household Physical conditions, 3. Household tenancy, 4. Provision of public services, 5. Household Assets. The following details are important to understand the dimension construction:

- Critic overcrowding: This component is the result of the ratio between the total rooms per household and the total of the people who live in the household. This measurement is different for urban and rural areas, since according to CEPAL (2011) and CONPES (2012), a household in the urban areas is considered overcrowded if there is three or more people per dormitory, while in the rural areas a household is overcrowded if there are more than three people per room (dormitories, living room, kitchen, etc). The following equations explain this process:

$$HH\ Overcrowding\ Urban = \frac{Total\ HH\ dormitories}{Total\ people\ who\ live\ in\ the\ HH} \geq 0,33$$

$$HH\ Overcrowding\ Rural = \frac{Total\ HH\ rooms}{Total\ people\ who\ live\ in\ the\ HH} > 0,25$$

- Household Physical Conditions and Household Tenancy: According to Ledgerwood, J. & Earne, J. (2013), the housing loans have become popular since they are different than the traditional mortgage modality offered by a financial entity. CGAP (2004)[23] stands that the house loans are aimed to low-income population, who usually use them to improve the

---

[23] As cited in pag. 227 by Ledgerwood, J. & Earne, J. (2013)

conditions of their current home (renovation, expansion, etc.), the purchase of a new one or a land to construct it.

- Provision of public services: This component was included in the dimension in order to follow the MPI measurement in Colombia and have control variables to check the dimension contruction results. However, the relationship between the provision of public services and access to credit still needs to be studied since it has been reviewed recently (Mader, P. 2011). However, there is potential *"for using microfinance to meet the financing needs of poor and low income groups for improved access to higher-quality water and sanitation services"* (Gates Foundation, 2008)[24].

- Household Assets: The inclusion of this component differs from MPI methodology of Colombia. Its inclusion was considered relevant for this research since poor people use loans also for non-productive purposes, such as the purchase of domestic assets to deal with *"life's big occasions"* (Rutherford, S. et. al, 2013).

The final step towards the Household Wealth Level construction was the use of Multiple Correspondence Analysis to create an index that will compute a final result of this characteristics. The MCA seeks to identify associations between the levels of the categorical variables included. To run and MCA analysis is STATA, the command "global" was used to identify the variables to be used, the unique household identifier and the number of components, to finally run the "mca" command and "predict index".

- **Dimension 2: Education**

The Education dimension differs from the MPI measurement in Colombia. In this study the Education Dimension measures young population under 24 years old who live in the surveyed household are currently studying.

The construction of this dimension implied two variables: 1. Is the member currently studying? and 2. Working age.

- **Dimension 3: Health Coverage**

According to the MPI methodology of Colombia, Health dimension is measured by the percentage of people who are covered with the Social Security System of Health (SGSSS) and the share of households who can access to health services if they need them. Due to data management constraints,

---

[24] As cited in pag. 10 by Mader, P. (2011)

this study considers if members of the household (adults and children) are affiliated or are beneficiaries of the SGSSS.

To build the Health Dimension, two variables were considered:

- Current membership to any SGSSS entity (Are you currently affiliated, are you a contributor or are you a beneficiary of any Social Security in Health entity?)
- Current beneficiary of any SGSSS entity (Are the children currently affiliated or are beneficiaries of any Social Security in Health entity?).

To accurately understand these variables, is important to clarify that the first one captures the sample of adults who are members of any entity of the SGSSS, while the second one captures the children who are beneficiaries or are members to any entity of the SGSSS.

The SGSSS in Colombia is the set of institutions and regulations through which the Colombian State guarantees the provision of healthcare services to all the resident population in the country (Bogota, 2021). According to the Ministry of Health of Colombia (2014) to get access to the SGSSS healthcare services you must contribute (be a member) to the system with your taxes (tax regime) or being covered by subsidies (subsidize regime)[25]. Usually in a Colombian household, the contributor is the chief or his/her spouse, and the rest of their family are the beneficiaries.

3.3.3.2. Explanatory Variables Selection and Construction

This section presents the explanatory variables which were considered to test the hypothesis: Having access to credit has a positive impact on individual's or households' wellbeing. Each propensity score matching made for rural and urban areas test of hypothesis included the following variables:

- Level of education of the head of the household
- Head of the household is employed or unemployed.
- Sex of the household members
- Age
- Marital Status
- **Access to credit**

---

[25] The population who are member of the SGSSS through the subsidize regime are classified in the levels 1 and 2 of the Sisben. The Sisben is a is a socioeconomic classification survey, which allows to identify the needs of the poorest and most vulnerable people in Colombia (Ministerio de Salud, 2014).

- Ethnicity
- Region in which the household is established.

The selection of the former independent variables followed a process of two steps: 1. As a consequence of the literature reviewed about the impact of credit on wellbeing, this study selected each variable in order to assess its impact on: Household conditions, Education, Access to healthcare services, 2. The correlation between variables was tested with the "correlation" command on STATA.

The selected explanatory variables provide a multilevel analysis to review individual and household level variables that could affect the dimension of well-being.

The variable of interest "Access to credit" is the result of the combination between other three variables:

- Does the household currently have a credit?
- During the last 12 months, did the household asked for a credit with the financial system?
- If the household asked for a credit in the las 12 months, was it approved?

Furthermore, the construction of this variable assumed "microcredit" and "credit" as equal concepts. This assumption was taken into account on the grounds of two statements:

- The microcredit provision in Colombia has been absorbed mainly by the financial system. (revisar autores que digan esto, probablemente Estrada, Aristizabal, Lorena bla, el banco de la republica, asomicrofinanzas)
- The questions regarding access to credit in the ELCA survey did not distinguish between having credit with a financial entity, cooperative funds, employees savings funds, etc

3.4. Econometrical Framework

3.4.1. Methodology to test hypothesis: Propensity Score Matching

This study aims to test the hypothesis: Microcredit has a positive impact on individuals' and household's well-being. To do so, the description of the problematic situation has created three research questions and therefore, three more hypotheses to test:

- Having access to credit has a positive impact on household conditions in Colombia

- Having access to credit has a positive impact on school enrollment of young population in Colombia

- Having access to credit has a positive impact on getting covered by healthcare services in Colombia

To test each hypothesis, this research work used the Propensity Score Matching method. The scope of this quasi-experimental method is to match a treated and a control group, with similar characteristics to estimate the effect of a "treatment" or an "intervention". In this study, the treatment variable is a dummy variable "treatment_GR", equal to 0 if people did not have any access to credit and equal to 1 if people did have access to credit.

Moreover, other methods were used in order to test the results of the PSM process. Ordered logistic regression, "pstest" and was also run to test the results of the PSM made for rural and urban areas in 2013 and 2016. The com

CHAPTER 4: FINDINGS AND DISCUSSION

4. Findings and Discussion

This chapter presents the findings of the data analysis as a result of the test of the three-hypothesis mentioned above, in order to evaluate the impact of having access to credit on individuals' and household's wellbeing in Colombia. Section 4.1. shows the descriptive statistics for the models formulated, while Section 4.2. presents the findings of the econometric PSM estimation over the three dimensions of Household conditions, Education and Healthcare Coverage.

4.1. Descriptive Statistics

The following section presents the descriptive statistics of the relationship between the explanatory variables and the dependent variables intended as dimensions of well-being. First, Section 4.1.1. presents a detail of the explanatory variables sample in each area, for 2013 and 2016. Section 4.1.2. display the results of the influence of demographic explanatory variables, first in 2013 and then in 2016 in rural and urban areas, while Section 4.1.3. shows the relationship between socioeconomic explanatory variables and the dimensions measured in 2013 and 2016 in areas of study.

4.1.1. Presentation of explanatory variables

The independent variables that were considered relevant for evaluate the impact of having access to microcredit to individuals' and households' wellbeing in Colombia, in 2013 and 2016. This list contains qualitative and quantitative variables which were measured in frequency and percentage, to describe them in the population of the survey.

As t Tables 7 and 8 expose, there are some aspects to remark in 2013 and 2016 for rural and urban areas.

In 2013 there is mostly the same distribution regarding the variables analyzed for sex and marital status. In the urban areas there is also a similar percentage of people under 15 years old and over 35 years old, but the population between 15 and 34 years old is higher than in the rural areas. In urban areas the percentage of people that had worked at least one hour and had generated income are more (52.69%) than in rural areas (32.27%)

The level of education in rural and urban areas do not differ only in terms of basic elementary, where the percentage of people in rural (32.13%) is higher than in urban (15.19%). However, the distribution

changes for basic secondary, since the percentage of people in rural is less (17,39%) than in urban (26,14%). Moreover, the results regarding bachellor and postgraduate degrees are higher in urban (4.98%) than in rural areas (0,70%)

Regarding credit, the distribution between rural and urban areas was mostly the same, since there is a high percentage of people who currently don't have credit (rural 48,28% and urban 40,38%). However its important to notice how in both areas the percentage of people who asked for credit is almost the same who got it rejected. Moreover, the variable constructed for the treatment groups shows how the highest percentages relies on the people who don't have currently credit and didn't asked for it (44.81% in rural areas and 36,84% in urban areas) and people who currently have credit and they didn't asked for it in the last 12 months (therefore is not approved).

In 2016, In 2016 we can see the same distribution of the variables analyzed for both rural and urban areas in terms of sex and marital status. In the urban areas there is a higher percentage of population between 25 and 50 years old but less percentage of people under 15 years old.

The percentage of people who worked at least one hour and generated some income was higher in the rural areas than in the urban ones. Aspects like the percentage of population who worked as a family helper without being paid was higher in rural than in urban areas.

In terms of education, urban areas have a high percentage of people with basic secondary education, as well as technological, tecnician education, bachellor degree. Besides the reasons that could favour education provision more in urban areas than in rural, its important to keep in mind the level of education and the age of people who were surveyed.

Regarding credit, both in the rural and urban areas the highest percentages rely on people who currently don't have credit and people who have it but didn't ask for one in the last 12 months

Table 7. Explanatory variables for 2013

Year	Category	Variable	Values	Percentage/Mean	
				Rural	Urban
2013	Demographic	Age		30 years old	29 yrs old
		Working age	0 Population under 15 yrs old	30,45%	28.38%
			1 Population between 15 and 24 yrs old	16,89%	17.98%
			2 Population between 25 and 34 yrs old	11,56%	15.20%
			3 Population between 35 and 50 yrs old	19,89%	20.06%
			4 Population older than 50 yrs old	21,21%	18.37%
		Sex	0. Male	51,17%	46.86%
			1. Female	48,83%	53.14%
		Marital Starus	1 In common law	22,96%	19.66%
			2 Married	17,34%	16.84%
			3 Separated or divorced	4,34%	8.15%
			4 Widowed	3,50%	3.31%
			5 Single	51,85%	52.04%
		Relationship with the head of the household	1 Head of the HH	22,50%	15.46%
			2 Spouse or partner	17,16%	37.18%
			3 Child	38,35%	2.39%
			4 Stepchild	2,11%	8.10%
			5 Grandchild of the head of the household or his / her spouse	8,55%	0.23%
			6 Father or mother	0,22%	2.97%
			7 Stepfather or stepmother	3,10%	0.09%
			8 Brother / Sister	0,02%	2.42%
			9 Stepbrother	1,92%	0.01%

			10 Son-in-law or daughter-in-law	0,01%	1.48%
			11 Grandparent	1,81%	0.13%
			12 Father-in-law	0,09%	0.93%
			13 Uncle	0,82%	0.23%
			14 Nephew	0,25%	1.82%
			15 Another relative of the Head of the HH	1,10%	1.20%
			16 Domestic service, caretaker and their relatives	0,76%	0.05%
			17 Pensioners	0,06%	0.05%
			18 Another non-relative of the Head of the HH	1,17%	1.39%
		Ethnic Self-recognition	0 Indigenous	9.22%	2.17%
			1 Raizal	0.03%	0.02%
			2 White	12.63%	14.49%
			3 Mestizo (Mixed, half blood)	20.98%	22.13%
			. Afrodescendent	0.91%	3.94%
			None	56.23%	57.25%
		Job Activity Members of the Household	1 He/she is worked for at least an hour in an activity that generated some income	35,27%	52.69%
			2 He/she worked as a family helper without being paid for at least one hour	5,53%	1.69%
			3 He/she is did not work but had a job or job for which she receives income	0,61%	1.07%
			4 He/she is worked at least an hour and looked for work	0,24%	0.39%

2013	Socioeconomic				
			5 He/she is permanently unable to work	0,92%	0.80%
			6 None of the above	34,94%	43.02%
			88 Don't Inform	0,05%	0.35%
		Level of education of all HH members	1 None	5,79%	2.82%
			2 Preschool	0,13%	0.17%
			3 Basic elementary	32,13%	15.19%
			4 Basic secondary and middle (6 to 13)	17,39%	26.14%
			5 Untitled Technician	0,35%	1.03%
			6 Technician with title	1,17%	4.58%
			7 Untitled Technological	0,10%	0.33%
			8 Technological with title	0,25%	1.50%
			9 Untitled University	0,24%	1.82%
			10 University degree	0,34%	2.92%
			11 Untitled Prostrate	0,01%	0.04%
			12 Postgraduate degree	0,11%	1.02%
			88 Don't Inform	0,09%	0.06%
			Missing	41,90%	42.38%
		Level of Education Head of the HH (created by author)	0 None	2,65%	1.22%
			1 Basic Primary or Basic Secondary, or both	19,07%	16.95%
			2 Tecnitian and/or Technical Professional level, with or without diploma	0,29%	2.54%
			3 Bachellor and/or Postgraduate, with or without diploma	0,22%	2.22%

			4 Other members of the household level (Not included in the sample of study but useful for the data management)	77,50%	76.13%
		Job Activity Head of the HH (created by author)	0 None or Unable to work	3,28%	4.54%
			1 He/she worked for at least one hour (without monetary payment) OR, worked at least one hour and looked for a job	1,16%	0.23%
			2 He/She worked for at least one hour (with monetary payment) OR didn't worked but had a current employment with income	18,05%	18.99%
			3 Job activities of the other family members (Not included in the sample of study but useful for the data management)	77,50%	76.13%
		Do you currently study? (Asks for all family members)	1 Yes	30,51%	31.75%
			2 No	56,60%	56.46%
			88 Don't Inform	1,56%	11.79%
		Young population currently study (created by author)	0 People older than 24 yrs old who currently study or not (Not included in the sample of study but useful for the data management)	52,67%	53.64%
			1 Population below 24 yrs old who currently DON'T study	17,63%	17.04%

		2 Population under 24 yrs old who currently study	29,70%	29.32%
	Members of the HH are current members of the SGSSS	1 Yes	37,63%	36.87%
		2 No	2%	2.26%
		88 Don't Inform	0,03%	0.19%
	Members of the HH are beneficiaries of the SGSSS	1 Yes	25,75%	23.62%
		2 No	1,42%	1.25%
		88 Don't Inform	0,02%	0.13%
	Access to Health Services (created by author)	0 Population who don't have any access, don't contribute and are not beneficiaries	33,16%	35.68%
		1 Population who are NOT beneficiary of healthcare services (Mostly children under 15yrs old)	1,42%	1.25%
		2 Population who DON'T contribute to healthcare services (Mostly adults)	2%	2.26%
		3 Population who are beneficiaries of healthcare services (Mostly children under 15yrs old)	25,75%	23.62%
		4 Population who contribute to healthcare services (mostly adults)	37,63%	36.87%
	Region	Atlántica	0,36%	
		Oriental	0,25%	25.35%
		Central	0,25%	24.93%
		Pacífica	0,18%	7.92%

			Atlántica Media	29,02%	21.10
			Cundi-Boyacense	24,65%	21.10%
			Eje Cafetero	20,62%	8.70%
			Centro-Oriente	24,66%	11.97%
			Orinoquia-Amazonas		0.03%
2013	**Credit**	**Does the HH has currently a credit with entities, family or friends?**	1 Yes	51,72%	59.62%
			2 No	48,28%	40.38%
		During the last 12 months, did the household try to obtain a credit in the financial system?	1 Yes	6,38%	7.09%
			2 No	62,71%	59.42%
		Was this credit approved?	1 Yes	0,87%	0.93%
			2 No	5,50%	6.15%
		Credit Access (created by author)	0 People who don't have credit neither currently nor in the past 12 months	44,81%	36.84%
			1 People who don't have currently credit, they ask for it in the past 12 months but it wasn't approved	2,79%	3.00%
			2 People who don't have current access to credit, they asked for it in the past 12 months and it was approved	0,68%	0.53%
			3 People who currently have credit and they didn't asked for it in the last 12	51,53%	59.22%

				Percentage/Mean	
		months (therefore is not approved)			
		4 People who have currently credit, they asked for one during the last 12 months but it wasn't approved	0,20%	0.40%

Table 8. Explanatory variables for 2016.

Year	Category	Variable	Values	Percentage/Mean	
				Rural	Urban
2016	Demographic	**Age**		33 yrs old	31 yrs old
		Working age	0 Population under 15 yrs old	27,26%	26,16%
			1 Population between 15 and 24 yrs old	15,89%	17,07%
			2 Population between 25 and 34 yrs old	10,55%	14,42%
			3 Population between 35 and 50 yrs old	20,71%	21,01%
			4 Population older than 50 yrs old	25,59%	21,34%
		Sex	0. Male	51,38%	46,81%
			1. Female	48,62%	53,19%
			1 In common law	23,98%	20,16%

			2 Married	18,23%	17,20%
		Marital Starus	3 Separated or divorced	4,63%	8,55%
			4 Widowed	3,75%	3,47%
			5 Single	49,40%	50,62%
			1 Head of the HH	24,11%	25,18%
			2 Spouse or partner	18,06%	15,92%
			3 Child	35,88%	36,72%
			4 Stepchild	2,08%	2,55%
			5 Grandchild of the head of the household or his / her spouse	9,61%	8,64%
			6 Great-grandson	0,24%	0,23%
			7 Father or mother	2,43%	2,30%
			8 Stepfather or stepmother	0,02%	0,06%
		Relationship with the head of the household	9 Brother / Sister	1,77%	1,87%
			10 Stepbrother	0,02%	0,04%
			11 Son-in-law or daughter-in-law	1,94%	1,61%
			11 Grandparent	0,05%	0,09%
			12 Father-in-law	0,77%	0,88%
			13 Uncle	0,18%	0,15%
			14 Nephew	0,98%	1,42%
			15 Another relative of the Head of the HH	0,87%	1,15%
			16 Domestic service, caretaker and their relatives	0,01%	0,02%
			17 Pensioners	0,01%	0,01%
			18 Another non-relative of the Head of the HH	0,95%	1.16%
		Ethnic Self-recognition	0. No Report	91,61%	90,19%
			1 Indigenous	1,31%	0,42%
			2 ROM or gypsy	0,01%	0,01%

			3 Raizal	0,25%	0,96%
			4 Palenquero	2,19%	3,20%
			5 Black, 'mulatto' (Afro-descendant)	4,64%	5,21%
		Job Activity Members of the Household	1 He/she is worked for at least an hour in an activity that generated some income	45,64%	42,06%
			2 He/she worked as a family helper without being paid for at least one hour	6,63%	1,21%
			3 He/she is did not work but had a job or job for which she receives income	0,80%	1,36%
			4 He/she is worked at least an hour and looked for work	0,21%	0,32%
			5 He/she is permanently unable to work	1,13%	0,93%
			6 None of the above	45,58%	34,27%
			88 Don't Inform/Miss	20.48%	19,86%
2016	**Socioeconomic**	**Level of education of all HH members**	1 None	6,69%	1.81%
			2 Preschool	0,18%	0,41%
			3 Basic elementary (1 to 5)	40,47%	12,50%
			4 Basic secondary and middle (6 to 13)	43,62%	42,83%
			5 Untitled Technician	1,06%	3,88%
			6 Technician with title	4,73%	13,96%
			7 Untitled Technological	0,31%	1,96%

		8 Technological with title	1,14%	5,04%
		9 Untitled University	0,66%	5,08%
		10 University degree	0,97%	8,28%
		11 Postgraduate degree without diploma	0,18%	0,64%
		12 Postgraduate degree without diploma		3,61%
	Level of Education Head of the HH (created by author)	0 None	18,65%	22,92%
		1 Basic Primary or Basic Secondary, or both	5,22%	1,13%
		2 Tecnitian and/or Technical Professional level, with or without diploma	0,16%	0,59%
		3 Bachellor and/or Postgraduate, with or without diploma	0,07%	0,54%
		4 Other members of the household level (Not included in the sample of study but useful for the data management)	75,89%	74,82%
	Job Activity Head of the HH (created by author)	0 None or Unable to work	4.82%	5,68%
		1 He/she worked for at least one hour (without monetary payment) OR, worked at least one hour and looked for a job	0,99%	0,30%

		2 He/She worked for at least one hour (with monetary payment) OR didn't worked but had a current employment with income	18,31%	19,21%
		3 Job activities of the other family members (Not included in the sample of study but useful for the data management)	75,89%	74,82%
	Do you currently study? (Asks for all family members)	1 Yes	27,31%	30,50%
		2 No	60,34%	57,83%
		88 Don't Inform	12,35%	11.67%
	Young population currently study (created by author)	0 People older than 24 yrs old who currently study or not (Not included in the sample of study but useful for the data management)	56,85%	56,77%
		1 Population below 24 yrs old who currently DON'T study	16,66%	15,47%
		2 Population under 24 yrs old who currently study	26,49%	27,76%
	Members of the HH are current members of the SGSSS	1 Yes	73,02%	73,56%
		2 No	2,78%	4,49%

		Members of the HH are beneficiaries of the SGSSS	1 Yes	18,77%	17,04
			2 No	0.42%	0,62%
		Access to Health Services (created by author)	0 Population who don't have any access, don't contribute and are not beneficiaries	5,03%	4,29%
			1 Population who are NOT beneficiary of healthcare services (Mostly children under 15yrs old)	0,41%	0,62%
			2 Population who DON'T contribute to healthcare services (Mostly adults)	18,76%	17,04%
			3 Population who are beneficiaries of healthcare services (Mostly children under 15yrs old)	2,78%	4,49%
			4 Population who contribute to healthcare services (mostly adults)	73,01%	73,56%
		Region	Atlántica	0,53%	25,14%
			Oriental	0,57%	18,11%
			Central	0,40%	16,53%
			Pacífica	0,28%	17,36%
			Atlántica Media	31,50%	2.58%
			Cundi-Boyacense	24,27%	2.41%

			Eje Cafetero	**18,95%**	3.68%
			Centro-Oriente	**23,48%**	2.13
			Bogotá		12.07%
		Does the HH has currently a credit with entities, family or friends?	1 Yes	52,90%	55,90%
			2 No	47,10%	44,10%
		During the last 12 months, did the household try to obtain a credit in the financial system?	1 Yes	21,52%	22,72%
			2 No	78,48%	77,28%
		Was this credit approved?	1 Yes	15,55%	14,34%
			2 No	5,97%	8,37%
2016	**Credit**	**Credit Access (created by author)**	0 People who don't have credit neither currently nor in the past 12 months	43,64%	39,43%
			1 People who don't have currently credit, they ask for it in the past 12 months but it wasn't approved	2,93%	4,01%
			2 People who don't have current access to credit, they asked for it in the	0,54%	0,66%

		past 12 months and it was approved		
		3 People who currently have credit and they didn't asked for it in the last 12 months (therefore is not approved)	34,85%	37,85%
		4 People who have currently credit, they asked for one during the last 12 months but it wasn't approved	3,04%	4,36%
		5 People who currently have credit, they asked for one in the past 12 months and it has been approved	15,01%	13,69%

4.2. Propensity Score Matching Results

This study aimed to test four hypotheses:

- Having access to credit has a positive impact on the household conditions
- Having access to credit has a positive impact on the education of young population
- Having access to credit has a positive impact on the access to healthcare service
- Having access to credit has a positive impact on wellbeing

In order to do so, the methodology of Propensity Score Matching was used and it results were also tested with the use of ordinal logistic regression. The results are presented first for 2013 and then for 2016, for both rural and urban areas:

2013

1 Dimension: Household Conditions

Rural:

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
HH_wealth_terc	Unmatched	209,438,069	189,422,658	.200154109	.01168310 8	11.74
	ATT	209,438,069	18,400,277	.254352988	.07412650 9	4.77

Urban:

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
HH_wealth_terc	Unmatched	2.25893665	2.00163773	0.257298918	0.012975	19.83
	ATT	2.25893665	1.9010181	0.357918552	0.065084	5.5

According to the results, in 2013 having access to credit was statistically significant to household conditions. Therefore: Having access to credit had a positive impact on the household conditions in rural areas

Dimension 2: Education of young population

Rural:

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
young_current_~s	Unmatched	.797685002	.743899782	.05378522	.012656387	4.25
	ATT	.797685002	.777305105	.020379897	.046549281	0.44

Urban:

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
young_current_~s	Unmatched	0.758484163	0.74729774	0.011186	0.014605	0.77
	ATT	0.758484163	0.744230769	0.014253	0.041568	0.34

In 2013, having access to credit was not statistically significant neither for rural and urban areas in terms of education of young population.

Dimension 3: Access to healthcare services

Rural:

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
health_service~d	Unmatched	233,504,849	232,247,167	.012576821	.024956053	0.50
	ATT	233,504,849	129,437,958	104,066,891	.149519001	6.96

Urban:

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
health_service~d	Unmatched	2.27046021	2.20509031	0.06537	0.029379	2.23
	ATT	2.27046021	2.29245069	-0.02199	0.121553	-0.18

In 2013, having access to credit was slightly significant more for the rural areas than in the urban ones.

Moreover, here will be presented the results regarding 2016:

2016

<u>Dimension 1: Household Conditions</u>

Rural

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
HH_wealth_terc	Unmatched	2.01744982	1.97776033	0.039689	0.012777	3.11
	ATT	2.01744982	1.97582117	0.041629	0.096952	0.43

Urban

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
HH_wealth_terc	Unmatched	2.04082197	1.94392973	0.096892	0.011882	8.15

		Treated	Controls	Difference		S.E.	T-stat
	ATT	2.04082197	2.08284187	-0.04202		0.071279	-0.59

In 2016, having access to credit was more statistically significant for urban areas than for rural ones.

Dimension 2: Education of young population

Rural

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
young_current_~s	Unmatched	0.715898723	0.674123496	0.041775	0.01347	3.1
	ATT	0.715898723	0.702212591	0.013686	0.08912	0.15

Urban

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
young_current_~s	Unmatched	0.717102838	0.70352545	0.013577	0.012728	1.07
	ATT	0.717102838	0.69627718	0.020826	0.071764	0.29

Following the same line, having access to credit wasn't statistically significant both in rural and urban areas, therefore it didn't have a significant impact.

Dimension 3: Access to healthcare services

Rural

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat

	Sample	Treated	Controls	Difference	S.E.	T-stat
young_current_~s	Unmatched	0.717102838	0.70352545	0.013577	0.012728	1.07
	ATT	0.717102838	0.69627718	0.020826	0.071764	0.29

Urban

Variable	Sample	Treated	Controls	Difference	S.E.	T-stat
health_service~d	Unmatched	3.45162182	3.40777283	0.043849	0.015354	2.86
	ATT	3.45162182	3.35836712	0.093255	0.114617	0.81

In 2016, both for rural and urban areas the effect of having credit was slightly statistically significant. The impact of having access on healthcare services wasn't significative.

Table X and X show the distribution of both the samples of the treatment and control groups made for 2013 and 2016.

Tables X Rural and urban distribution of treatment and control group in 2013

Rural:
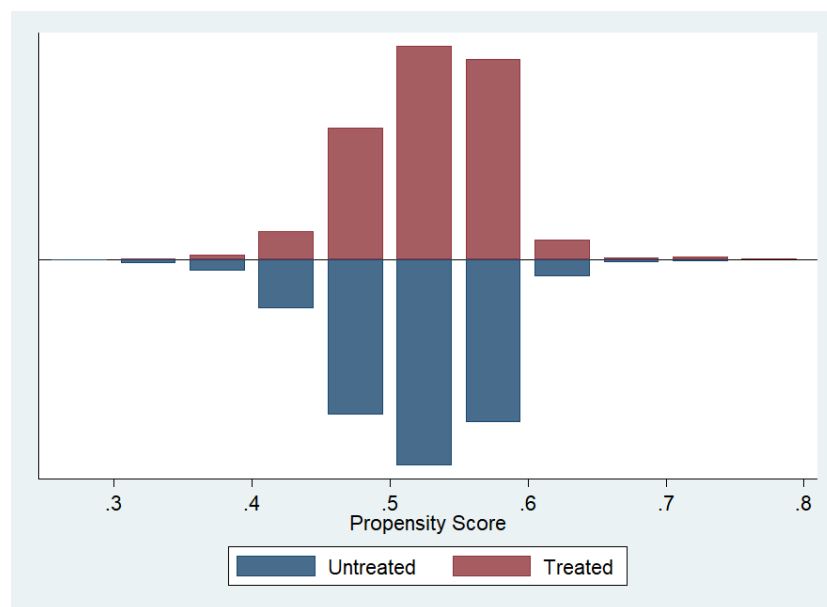
Urban

For 2016 the distributions are showed in the following graphics:

Rural

Urban

CHAPTER V: CONCLUSIONS AND RECCOMENDATIONS

This study carried out the assessment of the impact of having access to credit into rural and urban areas in 2013 and 2016. The PSM methods developed to evaluate the impact of a treatment group (sample of population with access to credit) and control group (sample of people without access to credit) showed different aspects to remark:
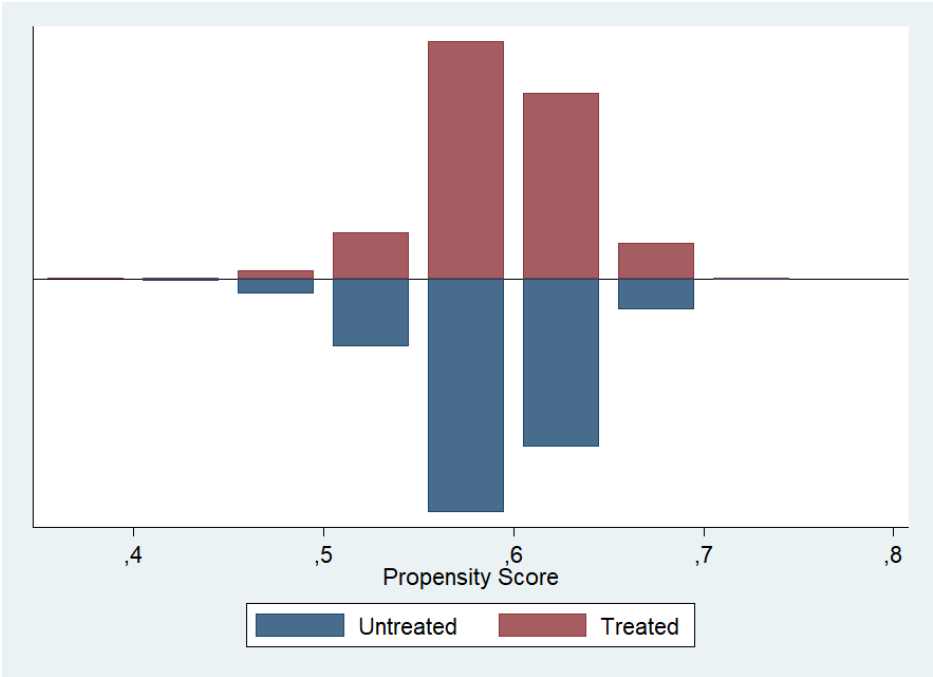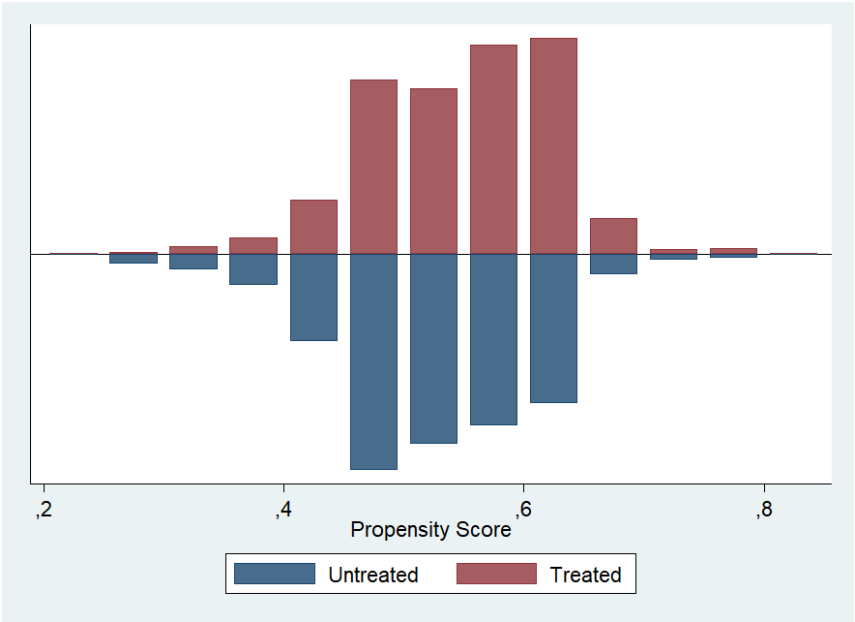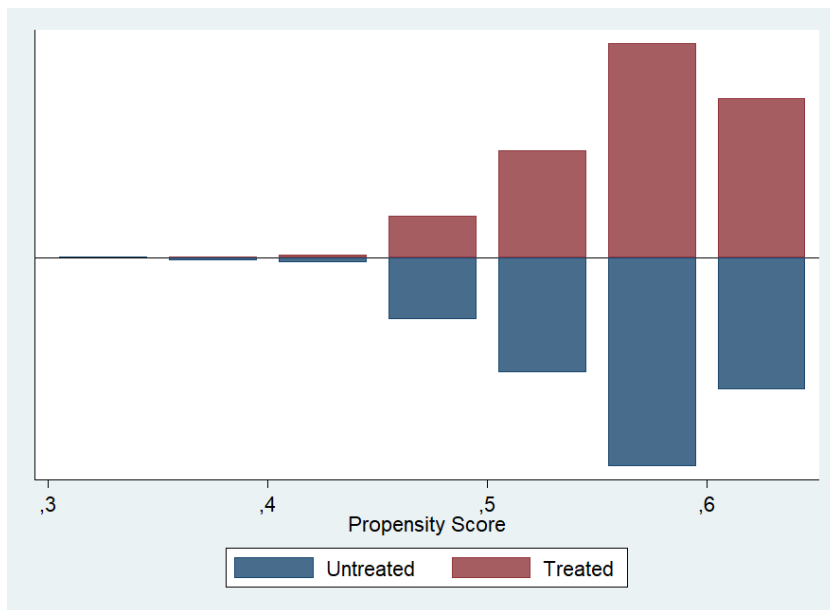
- There is a high percentage of people who are not having access to credit and don't try to ask for it to formal financial institutions. The motives for this client's preference can be related with a lack of trust in the financial system, different ways to access to capital (by income, rent or other type of loans) or auto selection, due to the fact that individuals could prefer to not participate or ask for credit because they don't want to.

- Having access to credit has a positive impact of the household conditions both for rural and urban areas. This confirms the statements of the empirical studies reviewed, which affirm that credit provision is more linked with consumption than with other investments, such as small business or education. In this case, the impact of having credit, both in rural and urban areas confirm that clients use credit for improvement of household physical conditions, as well as the acquisition of assets.

- Having access to credit doesn't impact significantly neither the current education of young population, nor the access to health care services both in rural and urban areas. According to this research, this result can be related with two events: 1. Clients who have access to credit invest it predominantly in household assets, therefore in immediate and durable goods and 2. The similarity between rural and urban areas suggest that there is a weakness in the structure of the Colombian state the service provision. Again, as the literature suggested, the context in terms of political reality, armed conflict institutions provide a restrictive scenario for population in terms of inequality reduction and poverty alleviation.

Moreover, this study would recommend:

- Even if the effect of having access to credit has not been verified as significant, it still has a positive effect on household conditions. Tools to reach economically active population who are informal should then expand even more, considering new technologies such as Daviplata.

- Since social, political and economic context has been identified as a determininant factor for the success of tools for development such as microcredit, its important to keep in mind

structural changes that should aim rural and urban areas in Colombia, mostly in terms of education and health access.

REFERENCES:

Aguirre A, e. a. (2016). *Reporte de la situación del crédito en Colombia* . Bogotá: Banco de la República .

Alkire, S. &. (2008). *Counting and multidimensional poverty measurement.* Oxford: University of Oxford.

Alkire, S. (2002). *Valuing Freedoms: Sen's Capability Approach an Poverty Reduction.* Oxford: Oxford University Press.

Alkire, S. (2005). Needs and Capabilities. *Royal Institute of Philosoohy Supplement*, 1-13.

Alkire, S. (20 de February de 2015). *Multidimensional Poverty Measurement Methodologies.* Obtenido de OPHIOxford: https://www.youtube.com/watch?v=_DQ-D2gvOlQ

Alkire, S., Foster, J., Seth, S., Santos, M., Roche, J., & Ballón, P. (2015). *Multidimensional Poverty Measurement and Analysis* . Oxford: Oxford University Press.

Alkire, S., Roche, J., Santos, M., & Seth, S. (2011). *Multidimensional Poverty Index 2011: Brief Methodological Note.* Oxford: OPHI.

Angulo, R. (2016). From Multidimensional Poverty Measurement to Multisector Public Policy for Poverty Reduction: Lessons from the Colombian Case. *OPHI Working Paper 102*, 1-27.

Angulo, R., Díaz, Y., & Pardo, R. (2013). A Counting Multidimensional Poverty Index in Public Policy Context: The Case of Colombia. *OPHI Working Paper 62*, 1-52.

Aristizabal, R. (2007). El Microcredito como alternativa de crecimiento en la economia colombiana. *Revisata Ciencias Estrategicas* , 39-57.

Asobancaria. (2015). *Semana Económica.* Bogotá: Asobancaria.

Asobancaria. (2019). *Informe de Sostenibilidad.* Bogota: Asobancaria.

Banerjee, A. (2013). Microcredit Under The Microscope: What We Have Learned in the Past Two Decades and What Do We Need To Know. *The Annual Review of Economics*, 487-519.

Banerjee, A., & Duflo, E. (2000). Inequality and Growth: What Can The Data Say? *NBER Working Papers*, 1-46.

Bangoura, L. e. (2016). IMPACT OF MICROFINANCE ON POVERTY AND INEQUALITY A HETEROGENEOUS PANEL CAUSALITY ANALYSIS. *LXIVe CONGRÈS ANNUEL DE L'AFSE,*, 790-804.

Bank, W. (2021). *Multidimensional Poverty Measure.* Obtenido de The World Bank: https://www.worldbank.org/en/topic/poverty/brief/multidimensional-poverty-measure

Bank, W. (2021). *World Bank Data.* Obtenido de GDP growth annual: https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CO

Bank, W. (2021). *World Bank Gini Index Estimate* . Obtenido de The World Bank Data : https://data.worldbank.org/indicator/SI.POV.GINI?contextual=region&end=2019&locations=CO&start=2013

Barona, B. (2003). MICROCRÉDITO EN COLOMBIA. *Estudios Gerenciales*, 79-99.

Barros, R. e. (2009). *Measuring inequality of opportunities in Latin America and the Caribbean.* Washington D.C.: World Bank .

Bogotá, A. d. (2020). *Seguridad y Salud.* Obtenido de Secretaría de Bogotá: https://guiatramitesyservicios.bogota.gov.co/tramite-servicio/informacion-sobre-afiliacion-al-sistema-general-de-seguridad-social-en-salud/

Boix, C. (2010). *Origins and Persistence of Economic Inequality.* New Jersey: Annual Review of Political Science.

Cepeda, L., Rivas, G., Álvarez, S., Rodríguez, R., & Sánchez, W. (2019). *Pobreza Monetaria y Pobreza Multidimensional: Análisis 2008-2018.* Bogotá : Departamento Nacional de Planeación (DNP).

Clark, A., & D'Ambrosio, C. (2015). Attitudes to Income Inequality: Experimental and Survey Evidence. En A. Atkinson, & F. Bourguignon, *Handbook of Income Distribution* (págs. 1147-1208). Amsterdam.

Cuasquer, H., & Maldonado, R. (2011). *Microfinanzas y Microcredito en LA Estudios de Caso: Colombia, Ecuador, El Salvador, México y Paraguay.* Centro de Estudios Monetarios Latinoamericanos.

DNP, D. D. (2012). *Documento CONPES Social: Metodologías Oficiales y Arreglos Institucionales para la Medición de la Pobreza en Colombia .* Bogotá : DNP.

Domingo, F. S. (s.f.). *Testimonios .* Obtenido de Fundación Santo Domingo : https://www.fundacionsantodomingo.org/desarrollo-empresarial/testimonios/

EBRD. (2016). *Inequality of Opportunity.* EBRD.

ELCA. (2021). *ELCA.* Obtenido de https://encuestalongitudinal.uniandes.edu.co/es/

Estrada, D., & Hernández, A. (2019). *Situación Actual e Impacto del Microcrédito en Colombia .* Bogotá : Asomicrofinanzas - Banco de la República.

Financiera, S. (2021). *About CFS.* Obtenido de Superintendencia Financiera : https://www.superfinanciera.gov.co/inicio/nuestra-entidad/acerca-de-la-sfc-60607

Foy, D. (2003). The appropriateness and effectiveness of micro-finance as a livelihoods intervention for refugees. *Refugee Livelihoods Network*, 1-5.

Franco, F. (2018). Estructura y Evolución del Sistema Financiero Colombiano de la Banca Comercial a la Banca de Inversión. *SENA*, 13-34.

Gerlein, E., González, S., & Arias, A. (2010). *ANÁLISIS DE LA POLÍTICA BANCA DE LAS OPORTUNIDADES.* Bogotá : Contraloría General de la Nación.

Grusky, D., & Weeden, K. (2007). *Measuring Poverty: The Case for a Sociological Approach1.* UNDP.

Gurria, A. (2021). Remarks by Angel Gurría. *Commemoration of the First Anniversary of Colombia's Mmembership of the OECD.* Paris: OECD.

Harmincova, Z., & Janda, K. (2014). Microfinance around the world – regional. SWOT analysis. *Munich Personal RePec Archive* , 2-62.

HaThu, V., & Goto, D. (2020). Does Microfinance Improve the Household Welfare of Ethnic Minorities? Evidence from Bac Kan Province, Vietnam. *Progess in Development Studies* , 65-83.

Haughton, J., & Khandker, S. (2009). *Handbook of Poverty an Inequality.* Washington D.C.: World Bank.

Imai, K. &. (2010). Does Microfinance Reduce Poverty in Bangladesh? New Evidence from Household Panel Data. *Economics Discussion Paper Series*, 1-39.

Initiative, O. P. (2015). *Summer School on Multidimensional Poverty Analysis.* Washington D.C.: Oxford.

Jameel, A. (2018). *Poverty Action Lab.* Obtenido de Microcredit impact and limitations: https://www.povertyactionlab.org/policy-insight/microcredit-impacts-and-limitations

Janda, K., & Zetek, P. (2014). Survey of Microfinance Controversies and Challenges . *Munich Personal RePEc Archive*, 1-28.

Joya, G. e. (2017). *IMPACTO DEL MICROCRÉDITO SOBRE LA POBREZA RURAL EN LOS MUNICIPIOS DE TUNJA Y SAMACÁ, COLOMBIA.* Medellín: Universidad de Medellín.

Karpowicz, I. (2016). Financial Inclusion, Growth and Inequality: A Model Application to Colombia. *Journal of Banking and Financial Economics*, 63-89.

Loeffler, M. e. (2014). The Holistic Social Business Movement in Caldas (HSBM), Colombia. En A. Grove, & G. Berg, *Social Business: Theory, Practice, and Critical Perspectives* (págs. 45-63). California: Springer.

López, D., Sánchez, C., & Segovia, S. (2019). *Reporte de la situación actual del microcrédito en Colombia (Diciembre).* Bogotá: Banco de la República.

Mushtag, R., & Bruneau, C. (2019). Microfinance, financial inclusion and ICT: Implications for poverty and inequality. *Technology in Society*, 1-19.

Nuñez, J., & Cuesta, L. (2006). *LAS TRAMPAS DE POBREZA EN COLOMBIA; ¿QUE HACER? DISEÑO DE UN PROGRAMA CONTRA LA EXTREMA POBREZA1.* Bogota: CEDE UniAndes.

Oportunidades, B. d. (2019). *Reporte de Inclusión Financiera.* Bogota: Punto Aparte.

Oxford. (2021). *Oxford Poverty & Human Development Initiative.* Obtenido de University of Oxford: https://ophi.org.uk/research/multidimensional-poverty/

Perkins, D., Radelet, S., Lindauer, D., & Block, S. (2012). *Economics of Development.* London: W. W. Norton & Company.

Piketty, T. (2014). *Capital In The Twenty-First Century.* Cambridge : Harvard University Press.

Piketty, T., & Saez, E. (2014). Inequality in the long run. *Science Magazine*, 838-842.

Ray, D. (1998). *Development Economics.* Princenton: Princenton University Press.

Rey, M., Ruiz, C., & Lacouture, D. (2017). Nivel Óptimo de profundización financiera en Colombia. *Ensayos sobre inclusión financiera en Colombia*, 71-114.

Roy, M. (2003). *Microfinance as a tool for development.* BSUS.

Rutherford, S. e. (2013). Client. En J. Ledgerwood, *The New Microfinance Handbook* (págs. 49-71). Washington D.C: World Bank.

Sen, A. (1981). *Poverty and Famines.* Oxford: Oxford University Press.

Serrano, J. (2009). Microfinanzas e instituciones microfinancieras en Colombia. *CEPAL: Financiamiento y Desarrollo*, 1-96.

Soubbotina, T. (2004). *Beyond Economic Growth.* Washington D.C.: World Bank.

Thanh, P. e. (2019). ScienceDirectImpact of microcredit on rural household welfare and economic growth in Vietnam. *Journal of Policy Modelling*, 120-139.

Todaro, M., & Smith, S. (2015). *Economic Development.* Washington D.C.: Pearson.

UNDP. (2020). *The Next Frontier: Human Development and the Anthropocene. Briefing note for countries on the 2020 Human Development Report.* UNDP .

Villatoro, P. (2017). *Medición Multidimensional de la Pobreza.* Ciudad de Panamá: CEPAL.

ANNEX 1

ELCA – Urban Sample 2013

Región	Departamento	Municipio	Código DANE	Cantidad de hogares encuestados LB para seguimiento
Bogotá	Bogotá	Bogotá	11 - 001	915
Atlántica	La Guajira	Fonseca	44 - 279	97
Atlántica	La Guajira	Riohacha	44 - 001	93
Atlántica	Magdalena	Santa Marta	47 - 001	64
Atlántica	Magdalena	El Retén	47 - 268	100
Atlántica	Atlántico	Barranquilla	08 - 001	229
Atlántica	Atlántico	Soledad	08 - 758	27
Oriental	Cundinamarca	Zipaquirá	25 - 899	58
Central	Quindío	Armenia	63 - 001	52
Pacífica	Valle del Cauca	Alcalá	76 - 020	64
Pacífica	Valle del Cauca	Cartago	76 - 147	71
Atlántica	Córdoba	Monteria	23 - 001	78
Atlántica	Córdoba	Ayapel	23 - 068	80
Oriental	Cundinamarca	Madrid	25 - 430	70
Atlántica	Sucre	San Pedro	70 - 717	113
Oriental	Cundinamarca	Soacha	25 - 754	76
Oriental	Boyacá	Chiquinquirá	15 - 176	64
Oriental	Boyacá	Paipa	15 - 516	54
Atlántica	Bolívar	El Carmen De Bolívar	13 - 244	80
Atlántica	Bolívar	Cartagena	13 - 001	146
Pacífica	Nariño	Ipiales	52 - 356	92
Pacífica	Nariño	Pasto	52 - 001	86
Pacífica	Nariño	Leiva	52 - 405	69
Pacífica	Cauca	Popayán	19 - 001	55
Oriental	Meta	Vistahermosa	50 - 711	49
Oriental	Meta	Villavicencio	50 - 001	75
Central	Antioquia	Itaguí	05 - 360	30
Central	Antioquia	Envigado	05 - 266	14
Central	Antioquia	Bello	05 - 088	49
Central	Antioquia	Caldas	05 - 129	7
Central	Antioquia	Copacabana	05 - 212	10
Central	Antioquia	Girardota	05 - 308	10
Central	Antioquia	Medellin	05 - 001	325
Central	Antioquia	Sonsón	05 - 756	57
Central	Antioquia	Urrao	05 - 847	56
Central	Antioquia	Turbo	05 - 837	39
Central	Antioquia	Rionegro	05 - 615	39
Oriental	Cundinamarca	Tabio	25 - 785	53
Oriental	Norte de Santander	Cúcuta	54 - 001	132
Oriental	Norte de Santander	Los Patios	54 - 405	9
Oriental	Norte de Santander	El Zulia	54 - 261	11
Oriental	Norte de Santander	Gramalote	54 - 313	18

Oriental	Norte de Santander	Lourdes	54 - 418	10
Oriental	Norte de Santander	Ocaña	54 - 498	67
Oriental	Santander	Barrancabermeja	68 - 081	97
Oriental	Santander	Bucaramanga	68 - 001	101
Oriental	Santander	Floridablanca	68 - 276	64
Oriental	Santander	Piedecuesta	68 - 547	20
Pacífica	Valle del Cauca	Cali	76 - 001	503
Pacífica	Valle del Cauca	Yumbo	76 - 892	32
Pacífica	Valle del Cauca	Palmira	76 - 520	49
Pacífica	Valle del Cauca	El Cerrito	76 - 248	60
Central	Tolima	Ibague	73 - 001	64
Central	Tolima	Rovira	73 - 624	58
Central	Huila	Neiva	41 - 001	47
Central	Tolima	Espinal	73 - 268	58
Central	Risaralda	Pereira	66 - 001	48
Central	Risaralda	Dosquebradas	66 - 170	19
Central	Risaralda	La Virginia	66 - 400	10
Central	Risaralda	Santa Rosa De Cabal	66 - 682	47
Central	Caldas	Manizales	17 - 001	49
Central	Caldas	Villamaria	17 - 873	10
Oriental	Cundinamarca	El Rosal	25 - 260	46
TOTAL HOGARES URBANOS				5275

Source: (ELCA, 2013)

ANNEX 2

ELCA – Urban Sample 2016

Región	Dpto.	Mcpio	Código DANE	Cantidad de hogares encuestados LB para seguimiento
Bogotá	Bogotá	Bogotá	11 - 001	915
Atlántica	La Guajira	Fonseca	44 - 279	97
Atlántica	La Guajira	Riohacha	44 - 001	93
Atlántica	Magdalena	Santa Marta	47 - 001	64
Atlántica	Magdalena	El Retén	47 - 268	100
Atlántica	Atlántico	Barranquilla	08 - 001	229
Atlántica	Atlántico	Soledad	08 - 758	27
Oriental	Cundinamarca	Zipaquirá	25 - 899	58
Central	Quindío	Armenia	63 - 001	52
Pacífica	Valle del Cauca	Alcalá	76 - 020	64
Pacífica	Valle del Cauca	Cartago	76 - 147	71
Atlántica	Córdoba	Montería	23 - 001	78
Atlántica	Córdoba	Ayapel	23 - 068	80
Oriental	Cundinamarca	Madrid	25 - 430	70
Atlántica	Sucre	San Pedro	70 - 717	113
Oriental	Cundinamarca	Soacha	25 - 754	76
Oriental	Boyacá	Chiquinquirá	15 - 176	64
Oriental	Boyacá	Paipa	15 - 516	54
Atlántica	Bolívar	El Carmen De Bolívar	13 - 244	80
Atlántica	Bolívar	Cartagena	13 - 001	146
Pacífica	Nariño	Ipiales	52 - 356	92
Pacífica	Nariño	Pasto	52 - 001	86
Pacífica	Nariño	Leiva	52 - 405	69
Pacífica	Cauca	Popayán	19 - 001	55
Oriental	Meta	Vistahermosa	50 - 711	49
Oriental	Meta	Villavicencio	50 - 001	75
Central	Antioquia	Itagüí	05 - 360	30
Central	Antioquia	Envigado	05 - 266	14
Central	Antioquia	Bello	05 - 088	49
Central	Antioquia	Caldas	05 - 129	7
Central	Antioquia	Copacabana	05 - 212	10
Central	Antioquia	Girardota	05 - 308	10
Central	Antioquia	Medellín	05 - 001	325
Central	Antioquia	Sonson	05 - 756	57
Central	Antioquia	Urrao	05 - 847	56
Central	Antioquia	Turbo	05 - 837	39
Central	Antioquia	Rionegro	05 - 615	39
Oriental	Cundinamarca	Tabio	25 - 785	53
Oriental	Norte de Santander	Cúcuta	54 - 001	132
Oriental	Norte de Santander	Los Patios	54 - 405	9
Oriental	Norte de Santander	El Zulia	54 - 261	11
Oriental	Norte de Santander	Gramalote	54 - 313	18
Oriental	Norte de Santander	Lourdes	54 - 418	10
Oriental	Norte de Santander	Ocaña	54 - 498	67
Oriental	Santander	Barrancabermeja	68 - 081	97
Oriental	Santander	Bucaramanga	68 - 001	101
Oriental	Santander	Floridablanca	68 - 276	64
Oriental	Santander	Piedecuesta	68 - 547	20
Pacífica	Valle del Cauca	Cali	76 - 001	503
Pacífica	Valle del Cauca	Yumbo	76 - 892	32
Pacífica	Valle del Cauca	Palmira	76 - 520	49

Pacífica	Valle del Cauca	El Cerrito	76 - 248	60
Central	Tolima	Ibagué	73 - 001	64
Central	Tolima	Rovira	73 - 624	58
Central	Huila	Neiva	41 - 001	47
Central	Tolima	Espinal	73 - 268	58
Central	Risaralda	Pereira	66 - 001	48
Central	Risaralda	Dosquebradas	66 - 170	19
Central	Risaralda	La Virginia	66 - 400	10
Central	Risaralda	Santa Rosa De Cabal	66 - 682	47
Central	Caldas	Manizales	17 - 001	49
Central	Caldas	Villamaria	17 - 873	10
Oriental	Cundinamarca	El Rosal	25 - 260	46
TOTAL HOGARES URBANOS				**5275**

Source: (ELCA, 2016)

ANNEX 3

ELCA – Rural Sample, 2013

Región	Departamento	Municipio	Código DANE	Cantidad de hogares encuestados LB para seguimiento
Atlántica	Córdoba	Cereté	23 - 162	294
Atlántica	Córdoba	Ciénaga De Oro	23 - 189	260
Atlántica	Córdoba	Chinú	23 - 182	166
Atlántica	Córdoba	Sahagún	23 - 660	279
Atlántica	Sucre	Sampues	70 - 670	125
Centro-Oriente	Tolima	Ortega	73 - 504	494
Centro-Oriente	Tolima	Natagaima	73 - 483	189
Centro-Oriente	Tolima	Purificacion	73 - 585	254
Centro-Oriente	Cundinamarca	Tocaima	25 - 815	156
Cundi-Boyacense	Santander	Puente Nacional	68 - 572	334
Cundi-Boyacense	Boyacá	Saboyá	15 - 632	444
Cundi-Boyacense	Cundinamarca	Simijaca	25 - 745	181
Cundi-Boyacense	Cundinamarca	Susa	25 - 779	211
Eje Cafetero	Quindío	Córdoba	63 - 212	95
Eje Cafetero	Quindío	Circasia	63 - 190	268
Eje Cafetero	Quindío	Filandia	63 - 272	228
Eje Cafetero	Risaralda	Belén De Umbria	66 - 088	577
TOTAL HOGARES RURALES				4.555

Source: (ELCA, 2013)

ANNEX 4

ELCA – Rural Sample 2016

Región	Departamento	Municipio	Código DANE	Cantidad de hogares encuestados LB para seguimiento
Atlántica	Córdoba	Cereté	23 - 162	294
Atlántica	Córdoba	Ciénaga De Oro	23 - 189	260
Atlántica	Córdoba	Chinú	23 - 182	166
Atlántica	Córdoba	Sahagún	23 - 660	279
Atlántica	Sucre	Sampues	70 - 670	125
Centro-Oriente	Tolima	Ortega	73 - 504	494
Centro-Oriente	Tolima	Natagaima	73 - 483	189
Centro-Oriente	Tolima	Purificación	73 - 585	254
Centro-Oriente	Cundinamarca	Tocaima	25 - 815	156
Cundi-Boyacense	Santander	Puente Nacional	68 - 572	334
Cundi-Boyacense	Boyacá	Saboyá	15 - 632	444
Cundi-Boyacense	Cundinamarca	Simijaca	25 - 745	181
Cundi-Boyacense	Cundinamarca	Susa	25 - 779	211
Eje Cafetero	Quindío	Córdoba	63 - 212	95
Eje Cafetero	Quindío	Circasia	63 - 190	268
Eje Cafetero	Quindío	Filandia	63 - 272	228
Eje Cafetero	Risaralda	Belén De Umbría	66 - 088	577
TOTAL HOGARES RURALES				4555

Source: (ELCA, 2016)