Introduction

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In recent decades, there has been much emphasis on the importance of financial inclusion as a key factor in countries' development. Nevertheless, it should be remembered that it was not until the start of the year 2000 that the topic of financial access became an enormously important common objective on the agendas of G20 countries, governments, ministries of finance, international bodies and central banks, among others. There were three main reasons for this. First, the appearance of a series of studies demonstrating the high level of correlation between poverty and exclusion from the formal financial sector. Second, concerns among the bodies responsible for financial stability that stemmed from the fact that some types of financial inclusion could become a source of instability. Finally, that commercial banks had started to view financial access as a niche for expanding their business. It was at this point that the problem of access to financial services began to form part of a wider concept: financial inclusion (Roa, 2013).

In Latin America, access to financial services is growing, as reflected by a sustained increase in supply indicators such as the amount of bank branches and correspondents, number of accounts at formal financial institutions, and number of automated teller machines (ATMs) (Cavallo and Serebrisky, 2016). However, the use of these financial products and services is still limited because of the low levels of financial education among the population (Demirgüç-Kunt et al., 2015).

In recent years, globalization and technological progress have brought a set of changes in patterns of social and economic exchanges. These have increased the complexity and multiplied the number of financial products and services available, which has increased the need to improve levels of knowledge among individuals so they are able to make economic and financial decisions conducive to their well-being. As a result, financial knowledge, attitudes, and behavior can have a major impact on the wealth of households and their standards of living, as well as on the functioning of markets.

One of the most important lessons learned from the 2008 international financial crisis is that the lack of knowledge and information among a large segment of the population concerning basic economics and financial topics limits their capacity to make responsible, conscious, and appropriate decisions. Financial education is therefore crucial for inclusion, not only because it facilitates the effective use of financial products, but also because it helps individuals to develop abilities for purchasing and selecting those best adapted to their requirements and possibilities. This enables them to exercise their rights and responsibilities (Mejía and Rodríguez, 2016).

At the end of 2013, CAF-Development Bank of Latin America conducted a survey to measure the financial capabilities of four Andean countries: Bolivia, Colombia, Ecuador and Peru. The aim of this survey was to carry out a diagnosis of the level of financial inclusion that allowed for identification of the knowledge, skills, attitudes, and behaviors of individuals regarding financial topics and their relation with financial inclusion. The sample size for each country was around 1,200 respondents at the national level (Mejía and Rodríguez, 2016).

The survey consisted of 33 questions on financial behaviors, knowledge, and attitudes, as well as questions on financial inclusion and sociodemographic information. An initial analysis based on comparative indexes according to sociodemographic variables obtained the following preliminary conclusions:

1) It is important to establish different strategies for different population segments, of which those with lower financial capabilities stand out: individuals with low levels of education, low-income individuals, people with irregular income, people living in rural areas, women, young people, old people, and those not able to save.

2) The ability to save, especially through formal arrangements such as savings accounts, has a very significant impact on an individual's financial capabilities. This implies that financial inclusion and education programs should not only focus on the transmission of concepts and knowledge, but also on changing attitudes related to the importance of saving and the relative costs of informal saving.

3) Sex difference does not affect all women in the same way. Women who are heads of household, for instance, exhibit better financial attitudes and behaviors.

4) Recipients of government transfers or subsidies record worse results in ideas and knowledge indexes, and exhibit attitudes opposed to saving. These findings show that beneficiaries of these types of social programs should have training on basic financial concepts, and provide innovative strategies for promoting saving.

The results highlight the importance of carrying out a more detailed and robust empirical study that allows assessment of the different hypotheses and questions that emerge. In 2015, Center for Latin American Monetary Studies (CEMLA) and CAF invited researchers from the central banks of Bolivia, Colombia, Ecuador and Peru to participate in a joint research project based on the database of the CAF survey. The proposal was presented at the 2015 Meeting of the Central Bank Researchers Network in the Dominican Republic. At this technical meeting, the central banks of other countries expressed interest in participating in the research, given that they have already conducted national financial surveys among households in their own countries. For this reason, and with the endorsement of CAF, the invitation to participate in the project "Households' Financial Decision Making" was extended to the research heads of all CEMLA member central banks. By the end of December 2015, the central banks of the following countries had confirmed their participation: Bolivia, Brazil, Colombia (three papers), Ecuador, Mexico (two papers), Dominican Republic (two papers), Peru and Uruguay (two papers) and CEMLA; giving a final total of thirteen research papers.

The idea for a team of central bank researchers to analyze data from the financial capabilities survey stems from two areas. First, studies have found that financial education and inclusion programs in the central banks of the region are of growing importance (García et al., 2013; Roa et al., 2014; Mehrotra and Yetman, 2015). Second, there has been recent interest among central banks in understanding households' financial behavior, and in obtaining data and information on such behavior (Bank of England, 2015; Alamsyah, 2015).

For central banks, financial inclusion is key for increasing the effectiveness of monetary policy, as a large percentage of the population having access to formal financial services enhances monetary policy transmission and its countercyclical role. However, if a process of inclusion is not developed that considers market and regulatory failures, it can have adverse effects on financial stability. Regulation and supervision, financial consumer protection, and financial education programs would appear to be crucial for achieving efficient access and usage of formal financial markets that do not jeopardize financial stability (Roa, 2016).

A recent paper from the Bank for International Settlements (Mehrotra and Yetman, 2015) shows how greater financial inclusion can make interest rates a much more effective policy tool, as they would influence the behavior of a larger number of households and small firms. The authors also state that although financial inclusion has a positive impact on financial stability by providing a more diversified and broader base of depositors, it can also pose a threat to it if greater access results in rapid credit growth and the expansion of some unregulated, or more loosely regulated, parts of the financial sector.

At present, various central banks are increasing their interest in understanding the financial behavior of households, as well as in obtaining detailed periodic data and information on them. The Federal Reserve Bank of New York points to several reasons for this (Dudley, 2015). First, the recent financial crisis highlighted that understanding and anticipating households' behavior is essential for achieving a strong and robust economy. Second, it is crucial to find out how interventions aimed at changing the incentives for household's behavior really affect it. Finally, research on household finance will help to support the central bank's commitment to the community and the fulfillment of its mission and duties.

In achieving a greater understanding of household finance, central banks emphasize the importance of firstly elaborating databases with information on households' financial and economic behaviors. An increasingly large number of central banks are promoting be it from the central bank itself or with the support of other institutions such as ministries of finance or national statistics institutes the preparation of demand-side databases on financial consumers.

Thus, the report elaborated by the Bank of England (2015) underlines the importance of using new data, methodologies, and approaches to help understand households' financial and economic behavior. It also suggests that exploring different assumptions on households' behavior would help in understanding behaviors such as not saving sufficiently for retirement, investing in too risky or too conservative assets, not exploiting tax benefits, having costly mortgages, participating in the informal financial sector, and carrying too much debt. It would also help identify the determinants of waves of enthusiasm or pessimism among the population, which can lead to financial booms or crises (Akerlof and Shiller, 2009). The Bank of England report emphasizes that, as financial stability becomes more important in central bank mandates, it is important to research and gain thorough knowledge of the possible links between households' financial decision-making and subsequent financial crises.

We therefore believe this joint research has enhanced the understanding of households' behavior in the region, providing valuable information on how financial attitudes, knowledge, and sociodemographic variables determine financial decision-making. These results could also be valuable for the design and implementation of effective financial education and inclusion programs.

The research aimed at achieving a greater understanding of the factors underlying and determining financial decisions and behaviors in the countries of the region regarding saving, budget planning, and the use of different formal and informal saving, credit, and insurance instruments. Specifically, the variables were the use of different financial products, participation in formal and informal financial markets, and financial behaviors and attitudes. The initial hypothesis was that these variables could mainly be explained by financial knowledge, respondents' propensity to save versus spend, time and risk preferences, and some sociodemographic variables.

The research identified the sociodemographic gaps that divide populations. This will enable appropriate financial inclusion and education interventions according to needs. The fact that it was a demand-side survey means the results are extremely useful for designing such strategies. We believe surveys related to demand-side financial behavior should serve as a starting point and are the first step towards developing effective financial education and inclusion programs.

One thing of great importance is that because various countries used the same measurement methodology, comparative studies across countries were elaborated. The results of the survey are specific for each country, but important sociodemographic gaps can be identified, particularly those related to sex, geographic environment (urban, rural), and education and income levels.

The joint research was coordinated by María José Roa, Senior Researcher, Economic Research Division, CEMLA, and by Diana Mejía, Senior Specialist, Department of Productive and Financial Development, CAF. Moreover, international experts, specifically Annamaria Lusardi, Dean Karlan, Leora Klaper, Olympia Bover, Diana Mejía, Pratibha Joshi, and Marina Dimova supported the research throughout 2016 with virtual seminars[1]. It also had the assistance of: *1)* regular virtual meetings at which participants made draft presentations of their work (during June, July and August); *2)* one in-person meeting at CEMLA's offices on September 23 and 24, and *3)* three panel discussions during the 2016 Researchers Network held in Brasilia on November 7 and 8. We also counted on the assistance of CAF at all times during the process.

This book brings together the papers elaborated during the joint research on Households' Financial Decision Making. The papers in the first part of the book aim to analyze the main determinants of households' financial decisions related to the use of savings and credit products, and particularly the different use of formal or informal financial products. The latter point is especially relevant in the region, where formal and informal financial products coexist harmoniously (Demirgüç-Kunt et al., 2015). The studies show that sociodemographic variables (mainly sex, education, level of income and employment), financial education, numeracy skills, and

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[1] Virtual seminars are available at: <https://www.youtube.com/watch?v=c38v1u6rgvM&feature=youtu.be>, <https://www.youtube.com/watch?v=PUpFbpBxbEg&feature=youtu.be>, <https://www.youtube.com/watch?v=xJPv5gX39OM&feature=youtu.be>.

personality traits are fundamental in the financial decision-making of households in the region.

For Bolivia, Angélica del Carmen Calle, analyzes the determinants for holding formal and informal financial products. The results show that holding financial products in that country mostly depends on socioeconomic level. Specifically, for informal financial products, the author finds that being a woman, having only a primary education, and earning a low income increases the possibility of having these types of products. The possession of both informal and formal products is more probable in households with an average socioeconomic level, people with a secondary complete or incomplete level of education, and people with medium to high financial knowledge.

Gabriel Garber and Sergio Koyama of the Banco Central do Brasil use a technique that combines variables and weightings to: *1)* produce measures for financial knowledge and financial attitudes; and *2)* allow for measuring the impact of financial knowledge and attitudes. The methodology employs the predicted impact of financial knowledge and attitudes on behavior to assign weightings to consider for policy interventions, such as financial education programs. They carry out the study with the CAF survey for Bolivia, Colombia, Ecuador and Peru. The effects of financial attitudes and knowledge on behavior vary across countries, as do the weightings on which to base the interventions. Although weightings vary from one group of countries to another, the authors conclude that financial attitudes especially the tendency to set long term goals are a key determinant of households' financial decision-making.

For the case of Colombia, Ana María Iregui-Bohórquez, Ligia Melo-Becerra, Maria Teresa Ramírez-Giraldo and Ana María Tribín-Uribe empirically analyze the determinants of saving among low- to middle-income individuals in urban and rural zones. Their results show how the probability of saving increases with education, income, employment, and home ownership. On the other hand, the results indicate that education and income increase the likelihood of saving in banks and decrease the probability of informal saving in both urban and rural zones.

Also for Colombia, in another study in this book, the authors provide empirical evidence on the determinants of the probability of a household having formal or informal credit, as well as the likelihood of households being in arrears with their loan payments. The results show that the probability of a household having credit positively relates to whether a person is married, level of education and income, size of household, home ownership, and employment. The estimates show that income and education positively correlate to having formal credit and negatively correlate to the probability of having informal credit. Finally, income, loan allocation, and some unexpected events explain the likelihood of being in arrears.

Daisy Pacheco and Ana María Yaruro, also analyze the variables that determine whether people decide to acquire financial products and services in Colombia, but with one innovation: they relate the fact of having a financial product to that of knowing about the said product or not. To do this, the authors use two-way contingency tables to estimate the dependence between knowledge and the possession of financial products, using sociodemographic factors and households' financial attitudes, among other variables. The results indicate that not possessing a financial product, in spite of knowing it exists, relates to low levels of education, income, and a lack of a budget, among other things.

María José Roa, Ignacio Garrón and Jonathan Barboza of CEMLA use the survey coordinated by CAF to study the role of cognitive characteristics, personality traits, and financial education in saving and credit decisions in Bolivia, Colombia, Ecuador and Peru. This paper performs an analysis that includes alternative determinants of financial decisions, different from those pointed out by traditional economic theory. Its results show that diligent individuals with greater numerical skills are more likely to participate in formal credit and saving markets, and have a greater tendency to save. According to the paper, financial education is important for having credit and for participating in the formal financial sector.

In Peru, Augusta Alfageme and Nelson Ramírez firstly describe a general overview of the evolution of access to financial services. Their descriptive study shows substantial differences in bankarization according to levels of income, saving possibilities, and the education of the head of household, among others. In spite of these gaps, they also observe unbanked sectors in the wealthiest quintile and among those who have a higher level of education. On the saving side, their analysis shows that lower income households also save, while there are households with high levels of income that are unbanked. Secondly, they analyze the main determinants of the access to financial services through a standard probit model of binary variables. They define access as the situation where one household member has some kind of bank product. The authors find a positive relation between income, education, and age in bankarization levels; and a negative relation between bankarization levels and the population in rural areas that are in a state of poverty.

In the Dominican Republic, Harold Vásquez and Maria del Mar Castaños assess how the lack of information and math skills affect the probability of an individual obtaining informal credit. The authors also try to identify some of the main factors that determine households' financial decisions. Using a multinomial logit model, they find that having low-income levels, not being a bank customer, and not understanding basic financial concepts increase the likelihood of acquiring a loan from informal sources.

In the same country, Carlos Delgado analyzes the determinants for the probability that a household has at least one bank product, using probability models for binary response variables. The results indicate that this probability mainly depends on variables related to employment status, income level, formal education, and households' financial attitudes. With respect to the latter factor specifically, planning purchases and monitoring financial matters displayed the most marginal effects.

In Uruguay, Gerardo Licandro and Miguel Mello diverge from the objectives and themes of previous works in the book by studying factors associated to the financial and cultural dollarization of Uruguayan households. The authors estimate the phenomenon of cultural dollarization using the option for respondents to report by currencies, while they define financial dollarization as the proportion of total bank assets denominated in dollars. On the one hand, the authors find that savings and the household's wealth mainly explains the level of dollarization of bank savings. On the other, they find that cultural dollarization is associated to wealth, being a homeowner, age, and number of years in formal education. The authors conclude that the weight of real assets in wealth, and of those in dollarization and cultural dollarization, suggest that the dollarization of prices of high-value goods in Uruguay (houses and automobiles) is a key factor for explaining cultural dollarization. Furthermore, all the factors that reinforce the idea that large amounts should be quoted in dollars further contribute to deepening cultural dollarization.

Part 2 of the book groups together a set of papers that focus on analyzing the impact of different policies linked to financial inclusion on households' financial decision-making with respect to saving and credit. As we mentioned at the beginning, financial inclusion has become increasingly important on the agendas of organizations, governments, and public and private institutions. In many countries, this importance has translated into practical interventions and even national financial inclusion strategies (Roa et al., 2014).

In Mexico, Mauricio Carabarín, Adrián de la Garza, Juan Pedro González, and Antonio Pompa assess the impact of the correspondent agents model on financial inclusion in that country, specifically on the number of active bank accounts and the total volume of bank deposits. To do this they use a difference-in-differences model. The preliminary results show a positive effect of correspondent agents on both measures of formal saving. The authors do not find different effects for rural communities, but do find evidence of a spillover effect at municipal level, which suggests that bank saving could decrease if clients begin a relation with a correspondent agent.

Also for Mexico, Carolina Rodríguez studies the effect of an increase in the Value-Added Tax (VAT) on the probability of having a bank account, considering that informality is the main channel for this effect. In particular, it is assumed that raising the VAT rate increases the benefits of being informal, which decreases the probability of small firms having a bank account in order to avoid supervision. To achieve her objective the author employs difference-in-differences estimation based on a change in VAT legislation that took place in Mexico in 2014. This tax reform represents a natural experiment, comparing microentrepreneurs in the areas affected by the tax amendment with microentrepreneurs in other areas before and after the reform. The results suggest that an increase in VAT has a negative impact on financial inclusion among microentrepreneurs.

Finally, for the Uruguayan case, María Victoria Landaberry carries out an estimation of models on the default probability of households considering their sociodemographic and financial characteristics. The author finds that household income, the relation between expenses and income, and the age of the head of household are significant for explaining the default probability in all credit segments, while the education of the head of household is only relevant for the non-mortgage credit segment. The paper also evaluates the effect of the obligation to pay wages through electronic media, implemented by the Law of Financial Inclusion, on households' nonpayment of debt. According to the results, access to bank accounts by households increases the number of households with non-mortgage and credit card debt, each of which involve different types of risks.

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