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## SOCIODEMOGRAPHIC DETERMINANTS OF FINANCIAL LITERACY LEVELS

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### **Abstract:**

*This article analyses the sociodemographic determinants associated with the financial literacy levels of the Chilean population based on three dimensions: (1) knowledge; (2) behaviour; and (3) attitude. The study draws from data of the first and, thus far, the only national survey that has measured financial competency, conducted in 2016 by the Organisation for Economic Cooperation and Development (OECD), funded by the Financial Market Commission (CMF in Spanish) and the Andean Development Corporation (CAF in Spanish). It analyses the impact sociodemographic factors such as sex, age, education, and employment situation have on the financial literacy level of the population surveyed (N = 1.224). For each dimension, logistic regression models were adjusted consistent with the global financial literacy index. This method aimed to calculate, based on these variables, the probability that an individual may possess adequate knowledge, behaviour, and financial attitude. The findings indicate that a person between 30 and 60 years old, with a high education level, who earns a high income, will have a greater probability of possessing an adequate financial literacy level.*

**Key words:** *Financial Literacy, Financial Education, Financial Inclusion, Sociodemographic Determinants, Chile.*

### **1. Introduction**

Chile is an upper-middle-income country according to the World Bank. In 2010 it entered the OECD (Organisation for Economic Cooperation and Development), being the first South American country to be accepted. It has a modern banking system with

adequate regulation in terms of capital requirements (Basel II and III, BIS) and with growing activity in the capital markets due to institutional investors and insurance companies. Also Chile has a dynamic retail industry which also offers consumer loans and long-term purchases of goods. But the level of indebtedness of families are high, reaching 75% of income in 2019. In this context, financial literacy becomes essential and necessary for the population to correctly assess the credit offers with its corresponding interest rates.

In this context, several countries and public and private organisations and institutions consider financial literacy as a significant issue and point the importance of good financial management in the domestic economy. Social and demographic changes, for instance, have increased life expectancy and reduced the birth rate. In conjunction with the rapid development of financial markets, these elements have made financial literacy essential to achieve higher levels of wellbeing (García et al. 2013; Ormazábal, Sepúlveda & Silva, 2016).

The concept was promoted in 2005 by the OECD when it defined financial education as “the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being” (OECD, 2005:13). Financial education proliferated after the Subprime crisis of 2008, with the evident need to develop a vision of financial inclusion that goes beyond mere access to financial instruments, to attain adequate and effective consumer financial education and protection. The actors that spearheaded this mission included governments, businesses, and international entities. In regard to the latter, most notable was the work carried out by the OECD (OECD, 2005, 2020; OECD/CAF, 2020; OECD/INFE, 2015, 2018). Indeed, it is possible to identify several milestones that shaped that agenda: in 2008 the Alliance for Financial Inclusion was founded; in 2010 the G20 drafted its Action Plan for Financial Inclusion; in 2016 the G20 adopted principles concerning digitalization of financial inclusion; and in 2018 the World Bank included the term in its 2030 Agenda and Sustainable Development Objectives (Saavedra, 2020).

In keeping with these guidelines, several Latin American countries began to develop an agenda that focused on the financial inclusion of populations, and, consequently, their financial education (García et al., 2013; Saavedra, 2020). According to Roa (2013), the concern for the issue of regional financial inclusion can be attributed to three explanations: (1) the correlation between poverty and exclusion of the formal financial sector; (2) the institutional instability that some types of financial inclusion might generate; and (3) the potential business niche of the traditional banking sector.

In Chile, during President Michelle Bachelet’s second term in office, in 2014, the government created the Financial Inclusion Advisory committee. The committee’s main objective was to provide a National Financial Education Strategy (ENEF). In the framework of this strategy’s development, the committee produced a new definition of financial education, adapted to the country’s reality, guided by the OECD definition. Thus, in Chile, financial education came to be known as a “Process by which people, throughout the course of their life, improve their understanding of the financial world, concepts, and risks;

and, through access to information, teaching, and objective guidance, they gain skills, attitudes, and confidence to enable acquisition of greater awareness of the financial risks and opportunities, make informed decision, know where to turn to for help, or to seek protection for their rights, and take effective action to better their wellbeing and that of society” (ENEf, 2018) This conceptualization, reflecting the national reality, recognizes the influence of economic, social, and cultural factors that shape the financial literacy of the Chilean population. For example, according to the OECD’s PISA Survey, 38% of Chilean students fail to attain minimum competencies for participating in the market (ENEf, 2018).

These findings are directly endorsed by specialized literature that signal the importance of socio-demographic factors in citizen financial literacy. Such publications have found that people lack adequate financial understanding; moreover, people’s financial understanding actually is lower than they perceive (Lusardi and Mitchell, 2011; OECD, 2005). It is a gap that widens with age: financial understanding tends to decline as people grow older, causing the elderly to be the group at greatest risk to financial swindles. (Deevy, Lucich and Beals, 2012; Finke, Howe and Huston, 2011). Similarly, factors related to gender, ethnic background, and type of territory have been identified (Lusardi y Mitchell, 2014). Also, contrary to common belief, the degree of formal education is not always an optimum indicator of financial literacy level (Lusardi and Mitchell, 2011).

Mindful of the above considerations, this article studies the impact of sociodemographic determinants on the Chilean population’s level of financial literacy. This analysis draws upon the Survey for Measurement of Financial Capabilities of Andean Countries: Chile 2016. The survey was the first national representative measurement of the Chilean population’s financial education ( $N = 1.224$ ). It was developed by the OECD with funding from the CMF and CAF.

This article is structured in five sections that develop these concepts. First, the introduction underscores the importance of financial literacy and education as well as its significance for the case of Chile. Then, the second section presents a brief literature review to describe the major theoretical-empirical findings about the impact of socio-demographic factors on financial literacy. The third section goes on to address methodological aspects, describing the survey, data management, operationalisation of variables and the method. The fourth section presents the major findings, and, lastly, the fifth section submits conclusions.

## **2. Literature review**

The governmental and academic agendas focused on financial inclusion, education and literacy are relatively new topics of study, primarily promoted by international entities such as the OECD and the World Bank during the first decade of the XXIst century. Broadly speaking, financial education is a cognitive process that enables individuals, either consumers or investors, to expand their understanding of financial instruments through instruction or objective consultancy (OECD, 2005). It is a process that brings about the acquisition of information and skill development to better understand both formal and informal financial system and instruments. Such studies aim to satisfactorily appraise the risks as well as the opportunities, facilitating informed and adequate financial

decision-making, and thus the effective exercise of our rights and obligations (Cohen and Nelson, 2011; Saavedra, 2020). In short, financial education refers to a process that equips people with financial knowledge and habits so as to achieve an adequate level of financial literacy. It encompasses specific instruction on financial concepts and products, whereas literacy implies the level of knowledge and applicability of those concepts (CPP-UC, 2017). The OECD/INFE defined financial literacy as individual performance of a combination of awareness, knowledge, skill, attitude, and behaviour in financial decision-making (OECD, 2018).

From this approach, studies on financial literacy have focused on assessing and evaluating the population's financial knowledge, attitudes, and behaviour. It is vital to analyse these aspects in light of the proven positive relation between financial literacy and adequate decision-making in this area (Lusardi and Mitchell, 2014). In this light, a central research concern has been to identify the minimum financial literacy level a person needs in order to act responsibly. At the same time, other studies have described the degree of financial literacy by gender, age, and educational level, to name a few of the most evident socio-demographic indicators.

A number of notable studies have used this approach to analyse financial literacy based on these types of factors. For example, in regard to age, Jappelli and Padula (2013) found that a quality early education will increase a person's wealth. This can be explained by the fact that financial literacy and economic wellbeing are positively interrelated with a person's life cycle. With this in mind, most financial education programs target children and young people (Roa et al., 2014). The World Bank has supported a program of this kind in Brazil, where it conducted one of the most comprehensive studies on the impact of financial education when incorporated in secondary education curriculum. (Bruhn et al., 2016). Michaud (2017) studied the relation between age and financial education, concluding that the average financial knowledge can be traced throughout a life cycle, increasing until reaching 65-70 years of age, when it tapers.

From a different perspective, Lusardi, Mitchell and Curto (2010) analysed the financial education of young people, and identified the concepts of inflation, interest, and risk diversification as the topics on which they have the lowest level of literacy. In this regard, García et al. (2013) indicate that financial education should focus on the varying needs people have at different ages.

Lusardi and Mitchell (2011) also indicate that financial illiteracy is widespread even in highly developed financial markets, such as Germany, Holland, and Japan. In these countries, they identified two significant trends. First, related to sex, women in those countries tend to have less financial understanding than men. Second, they observed that people with higher education levels are better informed, but this does not necessarily imply that they have a better level of financial literacy. In any case, it is important to note that while financial illiteracy can be found in countries of different economic development levels, other factors also affect this problem. For example, the prevalence of informal work and finance practices, institutional deregulation, and weak social security systems are all factors that comprise a much more risky setting for a population, exposing it to low indexes of financial literacy. Developing countries, for example, exhibit a substantial percent of the population that makes use of informal savings, loan and payment instruments; in fact, in

these countries, people who engage in the formal finance system complement their market participation with informal instruments (Roa and Mejia, 2018). Along these lines, Saavedra (2020) notes that “according to the World Bank’s Global Findex, nearly 50% of adults in the world are outside the formal banking system, while an estimated 250 million people of Latin America and the Caribbean (ALC) do not have bank accounts or access to financial products or services” (Saavedra, 2020: 2). In this regard, Cubillos-Rocha et al. (2018) studied the case of Colombia and found that the governmental policy of reduction of loan barriers had a positive impact on financial inclusion of the population as part of the formal financial system.

In Latin America, a number of works of research and reports have studied the financial literacy situation of some countries. These include works by Bruhn et al. (2016), Cubillos-Rocha (2018), García et al. (2013), Mejía, Pallota and Egúsquiza (2015), Roa (2013, 2015), Roa, Alonso, García and Rodríguez (2014), Roa and Mejia (2018), and Saavedra (2020). As a case in point, Mejía, Pallota and Egúsquiza (2015) studied the results of the Survey of Financial Capacity Measurement of the Andean Countries, specifically, Colombia, Peru, Bolivia and Ecuador. They found similarities as well as differences in comparison with financial markets of industrialized countries. Mejía, Pallota and Egúsquiza (2015) also revealed a gap between men and women, regarding their financial knowledge and behaviour. They found that women attained lower results on both scores. Saavedra (2020) notes that although the gender gap has been bridged somewhat, women are still at a disadvantage in comparison with men on almost all financial indicators. They attribute this to less access and less use of financial services and instruments by women. This situation is critical, considering that most financial inclusion programs are designed for the general public, not vulnerable groups, such as women and recipients of government assistance (Roa et al., 2014). Nevertheless, it is important to note that some studies posit that the gap is not attributable to characteristics of sex. For example, Fonseca, Mullen, Zamarrí and Zissimopoulos (2012) concluded that the gender gap cannot be explained by sex alone, but rather by the characteristics of financial literacy, and, in some cases, may be related to a household’s financial education level.

Additionally, Mejía, Pallota and Egúsquiza (2015) identified a direct relation between educational level and financial education. They found this pattern also in regard to socioeconomic level. They reached the definitive conclusion that the greater the education and socioeconomic level, the greater the levels of financial education attained by the population. In practical terms, García et al. (2013) noted that less than half the Latin American population understands the term “interest rate” and can perform basic calculations of simple and compound interest rates. Chile, with slightly higher indicators, is an exception.

In regard to Chile, Behrman et al. (2012) conclude that higher financial literacy levels positively affect personal wealth. Similarly, Landerretche and Martínez (2013) showed that a higher financial literacy is accompanied by better savings management in the Chilean pension fund system (AFP). They also found that literacy opens the door to inclusion in the formal financial system, through bank or commercial borrowing, for example (Álvarez y Ruiz-Tagle, 2016). Moreover, from a sociodemographic focus, Ormazábal, Sepúlveda and Silva (2016) revealed that men tend to have greater financial

education than women. The financial education level is also associated with the age bracket, with increased financial literacy up to 50 years of age. In addition, they identified a growing linkage between educational level and financial literacy. In Chile, the financial education level is greater in men, between 30 and 49 years of age with a high general education level. Likewise, a CPP-UC study (2017) assessed the degree of financial literacy in the Chilean population and found that the youngest and the elderly have the lowest financial education levels. Additionally, the study detected the existence of a gender gap, showing that women have a lower financial literacy than men.

### **3. Methodology**

#### **3.1 Data and measurement**

Our study is based on the National Survey on Financial Capacity Measurements of the Andean countries (Chile 2016) conducted by the OECD and funded by the CMF and the CAF. This survey was the first representative national measurement of financial education and literacy of the Chilean population, producing an assessment of the degree of knowledge, attitudes and behaviour of Chilean men and women. The survey design translated and adapted the questionnaire produced in 2015 by OECD and INFE to the Chilean national context.

The survey was applied in person ( $N = 1.224$ ) and the fieldwork was carried out between July and August of 2016. The probability sample was accurate for the home setting and satisfied sociodemographic variable quotas such as sex, age and socioeconomic level. The survey population consisted of adult men and women of every socioeconomic level, who live in urban and rural areas of the country's 15 regions. The simple regional distribution was designed to be proportional to the population size but was weighted to represent the most densely populated zones, specifically, Valparaíso, Bio-Bío and the Metropolitan regions. Survey reliability is 95% and the margin of error is  $\pm 2,8\%$ .

Another consideration concerning the variables employed for this article is that we worked with the variables of sex, age bracket, zone of residence, level of education, employment status, monthly household income and unstable/sporadic income of independent workers (see table 1). Regarding the dependent variables, we measured the global financial literacy index and its three disaggregated dimensions, as shown in table 2.

**Table 1. Operationalisation of independent variables**

| <b>VARIABLE</b> | <b>TYPE</b>       | <b>VALUES</b>                                           |
|-----------------|-------------------|---------------------------------------------------------|
| Sex             | Binary            | Man<br>Woman                                            |
| Age bracket     | Dummy by category | 18 - 29 (as reference)<br>30 - 45<br>46 - 60<br>Over 61 |
| Residence zone  | Binary            | Urban<br>Rural                                          |

|                             |                       |                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Education Level             | Ordinal               | Without complete formal education = 1<br>Preschool = 2<br>Primary incomplete = 3<br>Primary completed = 4<br>Secondary incomplete = 5<br>Secondary completed = 6<br>Technical Higher incomplete = 7<br>Technical Higher completed = 8<br>University incomplete = 9<br>University completed = 10<br>Masters/Doctorate = 11 |
| Employment Status           | Dummy and by category | Unemployed (reference)<br>Inactive<br>Independent Worker<br>Dependent Worker                                                                                                                                                                                                                                              |
| Monthly household income    | Ordinal               | Under \$250,000 = 1<br>Between \$250,001 and \$500,000 = 2<br>Between \$500,001 and \$750,001 = 3<br>Between \$750,001 and \$1,000,000 = 4<br>Between 1,000,001 and \$1,400,000 = 5<br>Between \$1,400,001 and \$1,800,000 = 6<br>Over \$1,800,000 = 7                                                                    |
| Unstable or sporadic income | Binary                | No, it is not regular and stable<br>Yes, it is regular and stable                                                                                                                                                                                                                                                         |

Source: Prepared by author based on the survey.

**Table 2. Operacionalisation of dependent variables**

| Variable            | Question                                                                                                                                                                                                                                                                                                                     | Values                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Financial Knowledge | The financial knowledge dimension consists of eight questions related to financial concepts and basic calculations. These are (1) division; (2) value of money over time; (3) inflation; (4) interest rate; (5) simple interest calculation; (6) compounded interest calculation; (7) risk; and (8) diversification of risk. | The financial knowledge score was calculated from the results of the eight questions. The responses were recodified, assigning the value 1 to the correct responses and zero to the incorrect responses. The index was built from the sum of these values.<br>Therefore, the financial knowledge score varies between a minimum of zero and a maximum of 8. Following the Atkinson and Messy (2012) methodology, scores higher than 6.0 were considered adequate. |
| Financial Behaviour | The financial behaviour dimension consists of eight questions that measure aspects related to possessing and using a budget, financial resource management, savings practice, and how financial products are chosen.                                                                                                         | The financial behaviour score was calculated from the results of the eight questions related to this dimension. The questions were recodified, assigning the value of 1 to correct responses and zero to the rest. The index is built on the sum of these values.<br>Therefore, the financial behaviour score varies between a minimum of zero and a maximum of 8. Following the Atkinson and Messy (2012) methodology, scores higher than 6.0 were considered    |



|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | adequate.                                                                                                                                                                                                                                                                                                                                                                    |
| Financial attitude | The financial attitude dimension measures the respondents' opinions on a five-point scale - from completely agree to completely disagree - regarding the following statements: "Money is there for spending," "I prefer living day by day and not worrying about tomorrow" and "I prefer spending money now rather than saving for the future." This dimension aims to determine whether or not respondents prefer short-term gratification (completely agree) or long-term security (completely disagree). | The financial attitude score is calculated based on the results from the questions, whose responses have values between 1 and 5. In this case, the score corresponds to the simple average, with 1 as minimum and 5 as maximum. For methodological convenience, scores above 3.0 were considered adequate.                                                                   |
| Financial Literacy | The global financial literacy index is based on measurements of financial knowledge, behaviour, and attitude.                                                                                                                                                                                                                                                                                                                                                                                               | The global financial literacy index is obtained by summing the three previous dimensions. These vary between 1 and 22. In this case, the methodological convenience is that scores higher or equal to 13 are considered adequate. It is important to note that for an aggregate index, the score (13) is lower than the simple sum of the individual base scores (6+6+3=15). |

Source: Prepared by authors based on the survey.

### 3.2 Method

This work analyses the sociodemographic factors that affect financial knowledge, behaviour, attitude, and to the global financial literacy index. The methodology consists of a descriptive analysis that described the phenomenon of financial literacy in Chile and a statistical analysis based on logistic regression models (*maximum likelihood logic models*) to assess the sociodemographic variables as determinants of each one of the dimensions and the aggregate financial literacy index. For this case, the logistic regression models measure the existence of an adequate level of financial knowledge, behaviour, attitude, and literacy, based on the thresholds defined by the OECD ( $Y = 1$ ).

The operationalization of the dependent variables in logistic regression models employs a dichotomous coding system, based on surpassing the range methodologically defined as adequate, and that, according to the dependent variable, corresponds to different thresholds. Based on this coding system, four dependent variables were measured: an adequate level of knowledge ( $Y_1$ ), an adequate level of behaviour ( $Y_2$ ), an adequate attitude ( $Y_3$ ) and an adequate financial literacy level ( $Y_4$ ). The existence of adequate knowledge ( $Y_1$ ) and behaviour ( $Y_2$ ) can be observed when the individual surpasses six points on every dependent variable. The presence of an adequate attitude ( $Y_3$ ) is observed when the respondent surpasses three points on the dependent variable. Lastly, the presence of an adequate financial literacy ( $Y_4$ ) can be seen on the aggregate index when the dependent variable surpasses the range of 13 points.

Consequently, consistent with the literature and the methodological design described above, the following hypotheses may be proven:

H<sub>1.a</sub> Men over 50 who live in urban zones have greater probability of having *an adequate level of financial knowledge* (Y<sub>1</sub>)

H<sub>1.b</sub> Men over 50 who live in urban zones have greater probability of having *an adequate level of financial literacy* (Y<sub>4</sub>)

H<sub>2.a</sub> Men with a higher education and highest monthly income (over \$1,800,000) have a greater probability of having *an adequate level of financial behaviour* (Y<sub>2</sub>)

H<sub>2.b</sub> Men with higher education level and highest monthly income (over \$1,800,000) have a greater probability of having *an adequate level of financial literacy* (Y<sub>4</sub>)

H<sub>3.a</sub> Men who are independent workers and earn unstable or sporadic income have greater probability of having *an adequate level of financial literacy* (Y<sub>3</sub>)

H<sub>3.b</sub> Men who are independent workers and earn unstable or sporadic income have a greater probability of having *an adequate level of financial literacy* (Y<sub>4</sub>)

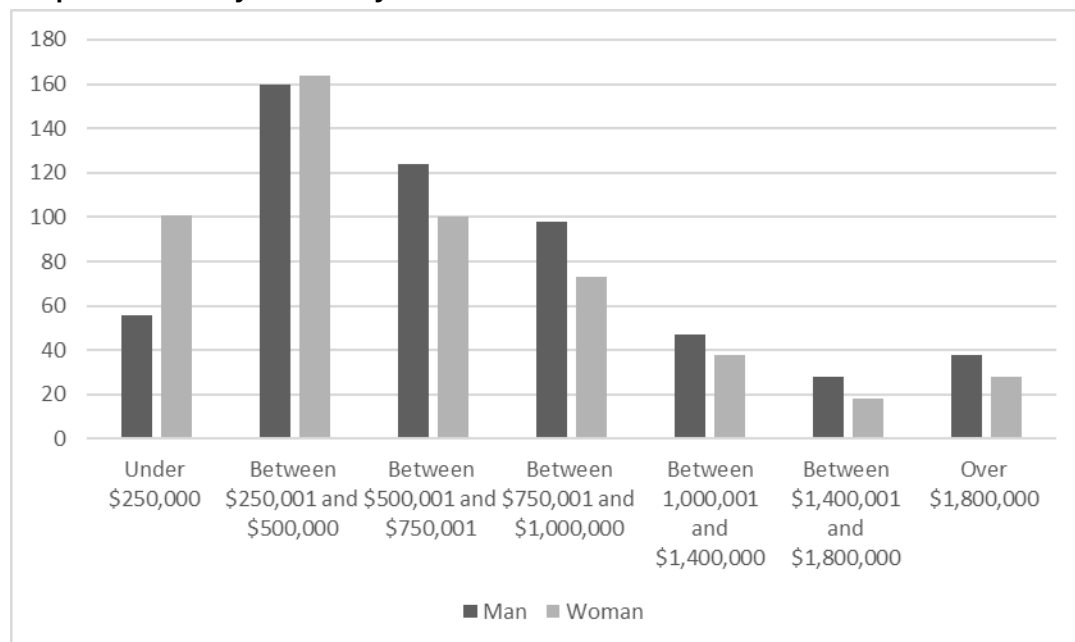
These hypotheses aim to assess different theoretical and empirical assumptions related to socio-demographic determinants according to the dependent variable measured. Thus, H<sub>1a</sub> assesses the concept of life cycle as it effects financial knowledge, associating age with people's information level. This hypothesis also probes the information gap that exists by territory. Also, H<sub>2a</sub> measures theorization on the effect of education and socioeconomic level on people's financial conduct. Most clearly, individuals with higher education and socioeconomic levels are expected to have more adequate behaviour when it comes to financial resource management, the use of a budget, saving, and choosing financial products. Regarding the financial attitude, H<sub>3a</sub> assesses the assumption that independent workers tend to be more responsible and make less risky decisions, on account of the uncertainty that can be associated with this employment category. Finally, H<sub>1b</sub>, H<sub>2b</sub> and H<sub>3b</sub> test all the previous assumptions on the financial literacy. Additionally, all the hypotheses assess the gender gap.

#### **4. Results**

In the first place, we present descriptive analyses of the sociodemographic characteristics of the Chilean population, from a gender focus. Graphic 1 indicates the comparative monthly income between men and women. In general, men show greater participation in practically all income brackets, except for the two lowest income brackets for which women show a higher percentage. Graphic 2 indicates employment by sex. Women tend to have less representation in the two types of active employment situations: dependent worker and independent worker. In contrast, a higher percentage of women is located in the inactive employment category. Similarly, Graphic 3 exhibits the

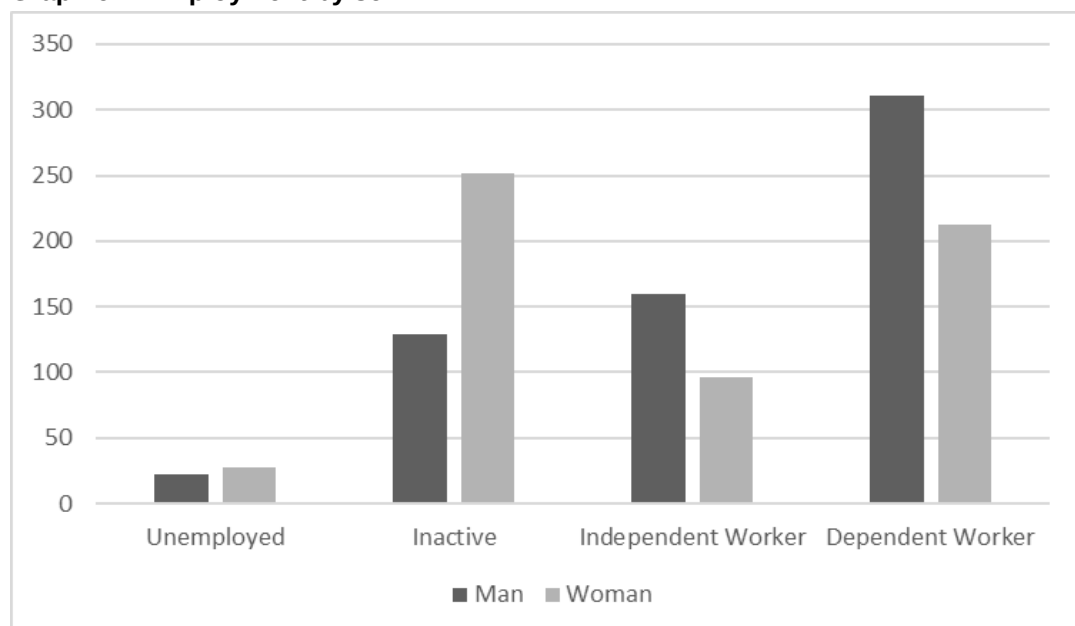
characteristics of education levels of men and women. Men tend to have higher representation in higher education brackets.

**Graphic 1. Monthly income by sex**



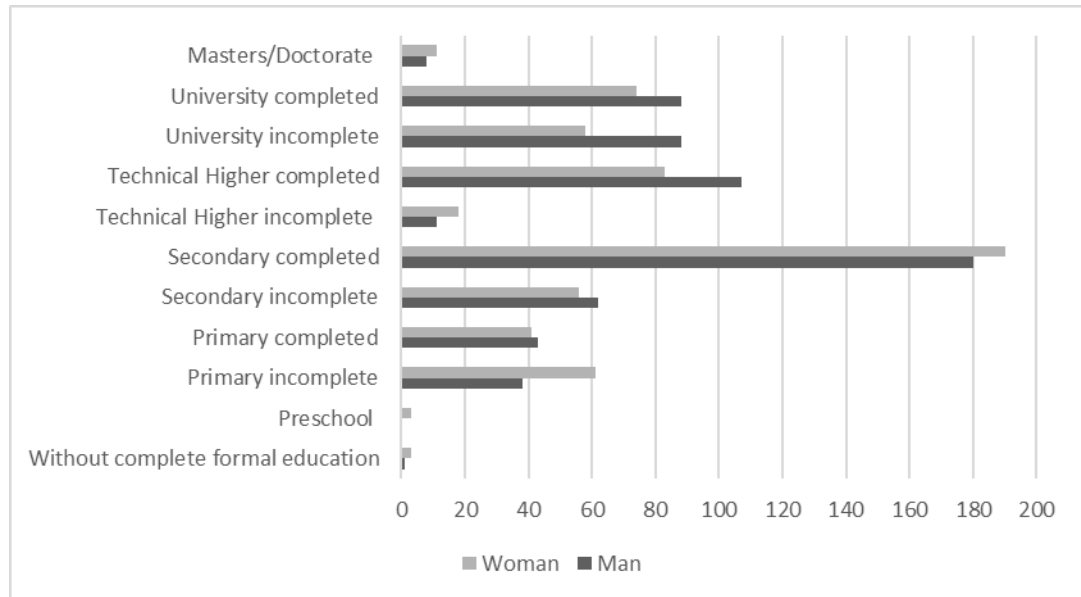
Source: Prepared by the authors

**Graphic 2. Employment by sex**



Source: Prepared by the authors

**Graphic 3. Education level by sex**



Source: Prepared by the authores

Below, tables 3 and 4 present the results of logistic regression models for each one of the dependent variables. Specifically, Table 3 illustrates the models that cover the independent variables, posed by the hypotheses. The table shows six models, with each group of independent variables tested for the particular dimension of the hypothesis and for the global index. The models show the beta coefficients and the standard error.

The first model shows that being a man increases the probability of attaining an adequate level of financial knowledge ( $OR = 1,362$ ;  $CI_{95\%} = 1,082; 1,716$ ), whereas the place of residency increases the probability of an adequate level of knowledge but only with 90% reliability ( $p = 0,094$ ). Age turns out not to be a significant variable in any of these brackets ( $p = 0,241; 0,339; 0,260$ ). In addition, the second model assesses these independent variables according to the global financial literacy index, identifying the place of residence as a factor that raises the probability of achieving an adequate level of financial literacy ( $OR = 1,445$ ;  $CI_{95\%} = 1,014; 2,059$ ), unlike the age span older than 61 that, for this index, lowers the probability ( $OR = 0,454$ ;  $CI_{95\%} = 0,311; 0,663$ ). In this model, the sex variable is not significant ( $p = 0,402$ ).

In regard to financial behaviour, the education level variable turns out to be significant. The table indicates that the greater the education level, the greater the probability of achieving an adequate financial behaviour level ( $OR = 1,114$ ;  $CI_{95\%} = 1,041; 1,192$ ). Similarly, the household monthly income variable is also significant, as the probability of attaining adequate financial behaviour increases in par with increased income ( $OR = 1,168$ ;  $CI_{95\%} = 1,063; 1,283$ ). For this dimension, the sex variable is not significant ( $p = 0,732$ ). Likewise, when we test this group of independent variables with the global financial literacy index, we see the same behaviour: both the education level

variable as well as the income variable are significant. The education level variable elevates the probabilities of attaining an adequate financial literacy level (OR = 1,125; CI<sub>95%</sub> = 1,161; 1,353), as does the monthly household income variable (OR = 1,303; CI<sub>95%</sub> = 1,164; 1,460). The sex variable is not significant for this model either ( $p = 0,478$ ).

Lastly, for the financial attitude dimension, none of the variables tested for this dimension were significant: sex ( $p = 0,118$ ); age brackets ( $p = 0,771$ ; 0,823; 0,255); and unstable/sporadic income ( $p = 0,919$ ). When we assess this set of variables against the global index, only the unstable or sporadic income variable is significant, as this variable lowers the probability of attaining an adequate financial literacy level (OR = 0,710; CI<sub>95%</sub> = 0,506; 0,996). Neither the sex variables ( $p = 0,924$ ) nor any of the categories of the employment status variable ( $p = 0,655$ ; 0,572; 0,148) are significant.

**Table 3. Logistic Regressions for Financial Education**

|                              | Knowl.<br>(M1)       | EF<br>(M2)           | Behav..<br>(M3)      | EF<br>(M4)           | Attitude<br>(M5)  | EF<br>(M6)          |
|------------------------------|----------------------|----------------------|----------------------|----------------------|-------------------|---------------------|
| Sex (man)                    | 0.309***<br>(0.118)  | 0.107<br>(0.127)     | 0.044<br>(0.128)     | -0.101<br>(0.142)    | -0.197<br>(0.126) | -0.013<br>(0.133)   |
| Age 30-45                    | 0.183<br>(0.156)     | 0.253<br>(0.172)     |                      |                      |                   |                     |
| Age 46-60                    | 0.150<br>(0.157)     | 0.147<br>(0.171)     |                      |                      |                   |                     |
| Age 61 or more               | -0.220<br>(0.196)    | -0.790***<br>(0.194) |                      |                      |                   |                     |
| Urban Zone                   | 0.300*<br>(0.179)    | 0.368**<br>(0.181)   |                      |                      |                   |                     |
| Education level              |                      |                      | 0.108***<br>(0.035)  | 0.226***<br>(0.039)  |                   |                     |
| Monthly household income     |                      |                      | 0.155***<br>(0.048)  | 0.265***<br>(0.058)  |                   |                     |
| Employment Sit. I (inactive) |                      |                      |                      |                      | -0.093<br>(0.319) | -0.146<br>(0.327)   |
| Employment Sit. (indep.)     |                      |                      |                      |                      | -0.073<br>(0.327) | 0.192<br>(0.339)    |
| Employment Sit. (dependent)  |                      |                      |                      |                      | 0.360<br>(0.316)  | 0.473<br>(0.327)    |
| Sporadic/unstable Income     |                      |                      |                      |                      | -0.017<br>(0.170) | -0.343**<br>(0.173) |
| Constant                     | -0.880***<br>(0.205) | 0.497**<br>(0.207)   | -0.785***<br>(0.211) | -1.311***<br>(0.234) | 0.566*<br>(0.308) | 0.750**<br>(0.317)  |
| Pseudo-R2                    | 0.009                | 0.024                | 0.154                | 0.201                | 0.031             | 0.047               |
| VIF                          | 1.124                | 1.124                | 2.532                | 2.532                | 1.024             | 1.024               |
| N                            | 1224                 | 1224                 | 1073                 | 1073                 | 1194              | 1194                |

|                |          |          |          |          |          |          |
|----------------|----------|----------|----------|----------|----------|----------|
| Log Likelihood | -817.831 | -728.421 | -697.897 | -596.383 | -774.507 | -711.875 |
|----------------|----------|----------|----------|----------|----------|----------|

\*\*\*p < .01; \*\*p < .05; \*p < .1

Source: Prepared by the authors based on SBIF-CAF (2016) Survey data.

Complementing the previous data, Table 4 shows the results of logistic regression for each one of the dimensions and the global financial literacy index, as it assesses the entire set of independent variables referenced. This measures the impact of independent variables that were not employed in the previous models, in order to identify sociodemographic factors that might have been omitted by previous models that tested sets of specific variables against the hypotheses posed.

For the knowledge dimension, the education level variable has been shown to be significant, increasing the probability of achieving an adequate level of financial knowledge (OR = 1,177 CI<sub>95%</sub> = 1,094; 1,268), as does the household monthly income variable which increases the probability of achieving a high score on that dimension (OR = 1,155; CI<sub>95%</sub> = 1,050; 1,270). This shows the existence of new socioeconomic determinants for the dimensions, aside from those theorized in literature. The sex variable ( $p = 0,091$ ) and the 46 - 60 age span ( $p = 0,061$ ) are only significant with 90% reliability. The rest of the variables are insignificant.

The behaviour dimension model proved significant in assessing the education and income level variables with a positive coefficient. Consequently, the education level raises the probability of attaining an adequate behaviour level (OR = 1,158; CI<sub>95%</sub> = 1,075; 1,248), as is the case of the monthly household income variable (OR = 1,174; CI<sub>95%</sub> = 1,061; 1,299). For this model, all the age brackets, especially after 30 years of age, are significant, elevating the probability of obtaining an adequate behaviour level (OR = 1,714; CI<sub>95%</sub> = 1,206; 2,436/OR = 2,053; CI<sub>95%</sub> = 1,431; 2,946/OR = 1,747; CI<sub>95%</sub> = 1,122; 2,718). In contrast, the urban zone variable proves to be significant but with a negative coefficient, that is, it lowers the probability of achieving a high score for this dimension (OR = 0,628; CI<sub>95%</sub> = 0,424; 0,928).

Two significant variables are associated with the attitude dimension: the age span over 61 and the education level. Having over 61 years of age, in fact, diminishes the probability of an adequate financial attitude (OR = 0,473; CI<sub>95%</sub> = 0,301; 0,742). However, the education level raises the probability of achieving adequate financial attitude (OR = 1,236; CI<sub>95%</sub> = 1,145; 1,335). The variables of sex ( $p = 0,060$ ) and unstable/sporadic income ( $p = 0,410$ ) are only significant with 90% reliability.

Lastly, in regard to the global financial literacy model, the 30-45 (OR = 1,490; CI<sub>95%</sub> = 1,006; 2,208) and 46-60 age brackets (OR = 1,761; CI<sub>95%</sub> = 1,180; 2,626) prove to be significant. In other words, both age bracket increases the probability of that an individual will have an adequate level of financial literacy. Additionally, the education level variable is also significant, as it raises the probability of attaining a high score for that index (OR = 1,269; CI<sub>95%</sub> = 1,169; 1,379), as is the case of the household monthly income (OR = 1,283; CI<sub>95%</sub> = 1,139; 1,446).

**Table 4. Logistic Regressions by Dimension and Financial Education Global Index**

|                                  | Knowledge<br>(M7)    | Behaviour<br>(M8)    | Attitude<br>(M9)     | Financial Education<br>(M10) |
|----------------------------------|----------------------|----------------------|----------------------|------------------------------|
| Sex (man)                        | 0.231*<br>(0.137)    | -0.096<br>(0.139)    | -0.269*<br>(0.143)   | -0.170<br>(0.153)            |
| Age 30-45                        | 0.244<br>(0.179)     | 0.539***<br>(0.179)  | 0.038<br>(0.191)     | 0.399**<br>(0.201)           |
| Age 46-60                        | 0.342*<br>(0.182)    | 0.719***<br>(0.184)  | -0.297<br>(0.188)    | 0.566***<br>(0.204)          |
| Age 61 or more                   | 0.159<br>(0.233)     | 0.558**<br>(0.226)   | -0.750***<br>(0.230) | -0.122<br>(0.237)            |
| Urban Zone                       | -0.252<br>(0.201)    | -0.466**<br>(0.200)  | 0.064<br>(0.197)     | -0.223<br>(0.208)            |
| Education Level                  | 0.163***<br>(0.038)  | 0.147***<br>(0.038)  | 0.212***<br>(0.039)  | 0.239***<br>(0.042)          |
| Employment Sit.<br>(inactive)    | -0.352<br>(0.340)    | -0.202<br>(0.334)    | 0.304<br>(0.347)     | 0.005<br>(0.364)             |
| Employment Sit.<br>(independent) | 0.061<br>(0.346)     | 0.349<br>(0.344)     | 0.206<br>(0.354)     | 0.086<br>(0.373)             |
| Employment Sit.<br>(dependent)   | -0.260<br>(0.331)    | 0.422<br>(0.327)     | 0.440<br>(0.339)     | 0.356<br>(0.358)             |
| Monthly household<br>Income      | 0.144***<br>(0.049)  | 0.160***<br>(0.052)  | 0.101*<br>(0.053)    | 0.249***<br>(0.061)          |
| Sporadic/unstable<br>Income      | -0.206<br>(0.197)    | -0.041<br>(0.187)    | 0.159<br>(0.193)     | -0.157<br>(0.196)            |
| Constant                         | -1.843***<br>(0.436) | -1.199***<br>(0.434) | -1.220***<br>(0.446) | -1.497***<br>(0.476)         |
| Pseudo-R2                        | 0.190                | 0.199                | 0.203                | 0.236                        |
| VIF                              | 2.576                | 2.576                | 2.576                | 2.576                        |
| N                                | 1053                 | 1053                 | 1053                 | 1053                         |
| Log Likelihood                   | -668.618             | -660.660             | -637.102             | -570.216                     |

\*\*\*p < .01; \*\*p < .05; \*p < .1

Source: Prepared by the authors with data from SBIF-CAF (2016) Survey.

## 5. Conclusions

The results described in this article unveil novel and interesting findings that enable better comprehension of the phenomenon of financial literacy in Chile. The descriptive statistical analysis reveals the existence of a gender gap related to monthly

income, employment status, and education level achieved. Women tend to earn lower monthly incomes and have less years of education. They also tend to have greater representation in the inactive employment category.

The logistic regression analysis evaluated a set of models designed based on the hypotheses developed in order to probe the impact of theoretical and empirical factors on the phenomenon of financial literacy. The findings from this analysis enabled responses to the six hypotheses posited. First, they refute *H<sub>1.a</sub> Men over 50 who live in urban zones have a greater probability of having an adequate level of financial knowledge (Y<sub>1</sub>)*. The results show that the fact alone of being a man increased the probability of achieving a high level of financial knowledge. Age turned out not to be significant for any bracket and the urban zone alone, with 90% reliability. Upon testing this model with the global financial literacy index, the findings refute *H<sub>1.b</sub> Men over 50 who live in urban zones have a greater probability of having an adequate level of financial literacy (Y<sub>4</sub>)*. The zone where a person lives increases the probability of a high level of financial education, whereas the higher age spans diminish this probability. For this model (M2), age proves not to be significant.

Regarding the theorisation on the impact of educational and socioeconomic level on a person's financial conduct, this study partially accepts hypothesis *H<sub>2.a</sub> Men with complete higher education and highest monthly income (over \$1,800,000) have greatest probability of having an adequate financial behaviour level (Y<sub>2</sub>)*. The model (M3) shows that the education level variable and the monthly household income variable raise the probability of attaining a high level of financial behaviour. Subsequently, upon testing these variables on the global index (M4), the results also partially accept *H<sub>2.b</sub> Men with complete higher education and highest monthly (over \$1,800,000) have a greater probability of having an adequate level of financial literacy (Y<sub>4</sub>)*. In testing this hypothesis, the same behaviour as the previous model was noted. Consequently, it confirms that, regardless of sex, the education and socioeconomic levels are determinants of a better financial behaviour. In theoretical terms, education and income can be seen to lead to better behaviour in financial resource management, using a budget, saving, and choice of financial products.

Finally, the last hypotheses assess the idea that independent workers who earn unstable or sporadic incomes tend to be more responsible, and therefore will have a less risky attitude. The study results refute *H<sub>3.a</sub> Men who are independent workers and earn unstable or sporadic incomes have higher probability of having an adequate financial attitude level (Y<sub>3</sub>)*, as none of the independent variables proved significant (M5). Upon testing these variables on the global index, the findings partially agree that *H<sub>3.b</sub> Men who are independent workers and have unstable or sporadic income have higher probability of having an adequate financial literacy level (Y<sub>4</sub>)*, as only the sporadic and unstable income factors prove significant, increasing the probability of attaining an adequate level of financial literacy. None of the employment categories nor sex proved significant for this model (M6).

To expand upon the latter, at a second stage, the logistic models were assessed by employing the universe of independent variables. Regarding these variables, this study sought to discover whether other sociodemographic factors not



considered by the hypotheses were determinants of the dimensions or the global financial literacy index. Finally, this study notes that possessing a high financial literacy level (M10) is related to the determinants of age between 30-45 and 46-60 years, education level, and the monthly household income. Consequently, the maturity of individuals who participate in the labour market provides them a greater level of financial literacy, as does formal education and monthly income.

In short, this research offers challenging and original findings that speak about the phenomenon of financial literacy and its different dimensions. Concerning the Chilean case in particular, the results of this work provide significant empirical input for addressing the problem of financial literacy in Chile, which primarily is associated with household indebtedness and the use of financial instruments by social strata.

For future research it would be pertinent to analyse in depth individual bancarisation and the use of intermediary non-banking financial entities for saving or starting a business. Moreover, it would be important to advance towards research that complements the financial literacy studies from a focus that considers the labor market structure and the robustness of the country's financial institutions. For example, it would be opportune to evaluate the role of the informal labour market, savings inequality, and loan informality, to name a few pertinent factors.

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