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DETERMINANTS OF FINANCIAL WELL-BEING

EVIDENCE FROM LATIN AMERICA

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Determinants of Financial Well-being

Evidence from Latin America

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PROLOGUE

In recent years, the countries in Latin America and the Caribbean have registered notable achievements in macroeconomic stability and many have succeeded in capitalizing on the expansionary export cycles in pursuit of their own social development. Nevertheless, the region still faces significant challenges to achieve sustainable economic growth and to become comparable to the more developed nations. One challenge that stands out in particular is the persistence of low productivity.

In the last few decades, those of us in Latin America have witnessed movements, which are more or less explicit, in different countries that converge on common goals and that we could call "covenants" in that they are understood as broad political consensuses. In the 1980's, there was a valuable shift on the continent that, hereafter, we will call the "covenant" for democracy; in the 1990's, we witnessed the benefits that resulted from the "covenant" in macroeconomic stability and trade integration; and during the first few years of the new century, in taking advantage of the surpluses of the worldwide expansionary cycle in raw materials, we followed a "covenant" of inclusion.

However, the return to low prices for raw materials on the international market made it evident that it would be necessary to redouble efforts to foster a sustained increase in the indices of productivity of factors through the adoption of public policies and good practices that would favor a better allocation of resources and give productive innovation a real boost. Thus and with the common goal of laying the groundwork for a more endogenous growth that is of higher quality and more sustained, CAF –Development Bank of Latin America– is pushing for the consolidation of a "covenant" for productivity.

That is why CAF has identified this issue as a matter of priority within their strategy in support of the shareholder countries that is reflected in loan operations in favor of their governments, private companies, and financial institutions as well as in technical assistance and development of knowledge. Specifically, we seek to disseminate good practices and successful policies in Latin America through the "Public Policies and Productive Transformation" series in order to make the best and most efficient strategies in development and growth in productivity available to these countries.

Jorge Arbache
Vice President Private Sector

EXECUTIVE SUMMARY

This paper provides a baseline measurement of financial well-being in Latin America and studies the factors associated with this indicator. The highest scores were found in Chile (66 points on a scale of 0 to 100) and Colombia (63) followed by Bolivia (58), Peru (58), Ecuador (57), Paraguay (56), and Argentina (55). The results show that, first of all, the financial well-being index provides information not offered by traditional financial measurements. Second, differences in financial well-being are greater for holders of formal savings products than for credit card owners. Third, better financial education is associated with better rates of

financial well-being. Fourth, some variables related to financial behavior such as previous experience with the financial sector, comparison of different financial institutions' products, and personal participation in household financial decisions are significantly related to financial well-being. The findings suggest that there are opportunities to improve financial well-being through financial inclusion and education programs.

Key words: *financial well-being, Latin America, financial capabilities, financial knowledge.*

CHAPTER 1

INTRODUCTION

It was not until the early 2000s that access to financial services began to gain importance as a common goal on the agendas of G20 countries, governments, ministries of finance, international organizations, and central banks, etc. When summarized, there are three reasons for this interest: a) the appearance of a set of studies that show the correlation between exclusion from the formal financial system and poverty (Burgess & Pande, 2005; Zhan & Sherraden, 2011; Bruhn & Love, 2012); b) governments' concern about achieving financial stability for their countries given that some types of financial exclusion could become a source of financial instability (Mehrotra & Yetman, 2015); and c) the traditional financial sector's view of access to financial services as a niche for expanding its activities. Thus, the problem of access to financial services is beginning to be understood as a broader concept called *financial inclusion*.

Financial inclusion is a multidimensional concept that includes aspects of the supply of and demand for financial products, their accessibility, usefulness, and quality as well as their impact on the financial well-being of families and businesses (Alliance for Financial Inclusion, 2011). There is a widespread consensus regarding the idea that the ultimate yardstick of successful efforts to build financial inclusion should be individual financial well-being (Yakoboski et al., 2019). However, in spite of the fact that the majority of countries use indicators of access to, use of, and

quality of financial products and services, there are not many measurements of the impact of these products and services on people's well-being (World Economic Forum, 2018). Ongoing and significant efforts have been made to understand and measure financial inclusion, but no particular attention has been paid to understanding the effect of greater financial inclusion on individuals (World Economic Forum, 2018; Consumer Financial Protection Bureau, 2017; Fernandes et al., 2014; Kaiser & Menkhoff, 2016).

One of the main difficulties with this line of research is that since the concepts of financial well-being and financial health have only been explicitly defined recently, there are very few instruments to measure them with (Consumer Financial Protection Bureau, 2015 and Center for Financial Services Innovation, 2017). In addition, there is little evidence of measurements for Latin America (Gallup, 2018).

In this respect, one of the objectives of this study was to measure the financial well-being in some Latin American countries. The measurement is based on research done by the Consumer Financial Protection Bureau (CFPB)¹ and the results from surveys of financial capability carried out by CAF – Development Bank of Latin America in seven countries: Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, and Peru. In addition to this measurement, the determinants of financial well-being in each one of these countries were estimated. The paper is organized as follows: a definition of financial well-being is presented in the first section and its determinants are explained. The construction of the financial well-being index for Latin America is explained in the second section. The results of the different analyses are shown and the determinants of financial well-being in each of the seven countries are studied in depth in the third section. Last of all, conclusions and policy recommendations are presented.

1. CFPB is a U.S. consumer protection agency. One of its main responsibilities is to define and measure the impact of the financial education strategies geared toward helping consumers achieve their financial goals.

CHAPTER 2

FINANCIAL WELL-BEING AND ITS DETERMINANTS

The CFPB defines financial well-being as the state in which individuals are able to meet their financial obligations successfully, can feel secure about their financial future, and are able to make decisions that allow them to enjoy life. Given that not all individuals have the same definition of financial well-being (for some people it means freedom, for others security, and for others stability), the traditional tools for measuring it such as net income, although important, do not fully reflect people's well-being.

According to the CFPB, financial well-being can be categorized under four headings: (i) control over daily finances, (ii) ability to absorb financial shocks, (iii) financial freedom to make decisions that allow one to enjoy life, and (iv) meeting financial goals. A short description of each of these components is presented below:

- i. Control over daily finances* refers to people having the skills to control their finances. In other words, they are able to cover their expenses and debts on time without worrying about not having enough money to survive.
- ii. Having the ability to absorb financial shocks* shows whether or not the person is able to cope with unexpected financial challenges (for example, a household emergency). The people with this capability commonly have a support system based on family and friends, personal savings, or insurance.

- iii. *The financial freedom to make decisions that allow one to enjoy life* measures an individual's freedom to splurge on things other than regular obligations: go out to eat, go on vacation, be generous to family, friends, or their community, for example.
- iv. *Meeting financial goals* indicates whether or not people perceive that they are on the right track to reaching their financial goals such as buying a car or a house, or paying their loans. In this respect, the people have a formal (or informal) financial plan and actively work to fulfill it.

The CFPB created a conceptual framework that showed different factors that could influence people's financial well-being (Consumer Financial Protection Bureau, 2015). This framework is based on the existing literature, expert opinion, and the experiences and opinions of consumers drawn from personal and in-depth interviews. Some of these factors are fixed (e.g., the economic and social environment) while others are changeable (e.g., behavior). Furthermore, there are some factors that people can control (knowledge and skills) and others they cannot (available opportunities). Figure 1 provides a visual roadmap of the factors that could affect an individual's financial well-being.

According to this theoretical framework, financial well-being is the result of a combination of the opportunities available to and the actions and behavior of the individuals. The economic and social environment could expand or limit people's opportunities. In addition,

Figure 1. What has an influence on financial well-being?



Source: Consumer Financial Protection Bureau, 2015

the opportunities available, which include access to employment, sufficient benefits and income, and family resources, probably play an important role in people's financial well-being. Consumers with low or unstable income are less likely to be able to get access to the financial products and services that meet their needs, so their financial instability will be greater. Behavior, in turn, may also be influenced by personality, attitudes, knowledge, and skills as well as by the context in which a decision is made.

When the CFPB theoretical framework is applied to Latin America, it is clear that the majority of the countries show significant progress in terms of creating opportunities for the people living there. This is reflected in the steady increase in certain indicators of financial access such as bank branches and correspondents, number of accounts in formal financial institutions, and number of ATMs, etc. (Demirguc-Kunt, 2018). Unfortunately, less progress has been made in developing financial abilities including people's knowledge, skills, attitudes, and behavior with respect to financial issues (CAF, 2014; Rhyne & Kelly, 2018). In general, understanding of financial well-being is very limited, and the relationship among knowledge, skills, attitudes, behavior, and well-being has not been widely studied (Consumer Financial Protection Bureau, 2015, 2017). Therefore, one of the objectives of this document is to provide an analysis of the personal, attitudinal, and behavioral factors related to the financial well-being of those being surveyed.

The factors that were studied were inspired by the theoretical proposal provided by CFPB (see Figure 1). After measuring individual financial well-being, the association with other variables such as (i) individual characteristics, (ii) household and family characteristics, (iii) income, (iv) saving and borrowing behavior, and (v) good financial practices is studied. The measurements selected from the surveys are summarized in Table 1.

Table 1. Measurements Selected from Surveys

CATEGORY	MEASUREMENTS
• Individual characteristics	• Education, age, and sex
• Household and family characteristics	• Marital status and area of residence (urban or rural)
• Income	• Household income
• Saving and borrowing behavior	• Having formal savings or credit card
• Good Financial Practices	• Comparing financial products offered by different institutions and looking for information before acquiring a new product.

Source: authors' calculations based on CAF surveys.

CHAPTER 3

CONSTRUCTION OF THE LATIN AMERICAN FINANCIAL WELL-BEING INDEX

The Financial Capability Survey conducted by CAF explores people's financial capabilities including knowledge, skills, attitudes, and behavior related to financial issues. However, these questions are not exactly the same as those proposed by the CFPB (see the CFPB scale in Appendix 1). Therefore, the questions from the Financial Capability Survey that best fit the financial well-being components proposed by the CFPB and presented in the previous section were identified. In this respect, an effort was made to design, for the first time, a measurement of the financial well-being of the adult population in Latin America. The components of financial well-being proposed by the CFPB and the CAF survey questions that match the definition of financial well-being are shown in Table 2.

The index was developed using a graded response model (GRM, Samejima, 1996) which allows the financial well-being of respondents to be estimated as a continuous latent variable. This model is an extension of the models based on item response theory (IRT) with two parameters that allows questions with ordered categorical answers to be incorporated. In the GRM model, each item in the index is described with two properties: difficulty and discrimination. The difficulty of the parameter corresponds to the value of the latent variable due to which the probability of

Table 2. Components of the CFPB Financial Well-being Index and Questions Suggested by the CAF Survey

INDEX COMPONENT	QUESTIONS FROM CAF SURVEY
Control over daily finances	<ul style="list-style-type: none"> • Before buying something, I carefully weigh whether I can afford it. • Pay my debts on time.
Ability to absorb financial shocks	<ul style="list-style-type: none"> • Sometimes people discover that their income is not enough to cover their expenses. Has this happened to you in the last 12 months? • In the event that you lose your main source of income, how long would you be able to continue covering your expenses without borrowing money?
Financial freedom to make decisions that allow one to enjoy life	<ul style="list-style-type: none"> • I would rather spend money than save for the future. • Considering all the sources of income coming into your household each month, would you say your household income is regular and stable or not?
Meeting financial goals	<ul style="list-style-type: none"> • Does your family always follow a plan for how to use money? • I set long-term savings goals and make an effort to meet them.

Source: authors' work based on information from the CFPB Financial Well-being Index and CAF surveys.

responding correctly to that item is equal to 50%. The discrimination parameter indicates the ability of each item to discriminate between participants with high financial well-being and participants with low financial well-being. The GRM model was calculated with Stata 14. To improve the intuitive interpretation, a linear transformation was used to scale the index from a minimum of 0 to a maximum of 100. Additional information on the development of the index and the discrimination and difficulty parameters as well as the robustness test of the estimate which consisted of a second estimate of the index by means of a multiple correspondence analysis (MCA) can be found in Appendix B. The results of the different analyses and the in-depth studies of the determinants of financial well-being in each of the seven countries are presented below.

CHAPTER 4

RESULTS

4.1 DESCRIPTION OF SAMPLES BY COUNTRY

The total population of the seven Latin American countries that were the subjects of the study presented in this document is 175,190,626 people. Colombia is the most populous country in this sample with a population of 47,698,524 followed by Argentina (44,293,292), Peru (31,036,656), Chile (17,789,268), Ecuador (16,290,913), Bolivia 11,138,234), and Paraguay (6,943,739) (Index Mundi, 2017).

According to the most recent measurements of financial access (Demirguc-Kunt et al, 2018), 54.4% of the adults in Latin America and the Caribbean have a savings account. The countries analyzed in this study have rates that are equal to or below this average: Argentina (48.7%), Bolivia (54.4%), Colombia (45.8%), Ecuador (51.2%), Paraguay (48.6%), and Peru (42.6%) with the exception of Chile (74.3%).

The data used in this document were extracted from a series of surveys done by CAF together with the survey company, Ipsos, in the seven countries. These surveys have representative samples on the national level composed of men and women over the age of 18, from all socio-economic levels, and belonging both to the urban and rural context. The size of the national samples was approximately 1,200 people in each country with a margin of error of +/- 2.8%. The surveys were done in person and were designed to be representative of the countries based on OECD recommendations and measurements (2011; 2015). The field work was done between November 8 and

Table 3. Table Summarizing the Samples by Country

COUNTRY	Total	Urban	Rural	Men	Women	Age 18 to 24	Age 25 to 39	Over 40 years of age
Argentina	1,224	1,113	111	623	601	368	477	379
Bolivia	1,200	780	420	600	600	240	481	479
Chile	1,224	1,063	161	626	598	192	360	672
Colombia	1,261	1,001	260	586	675	206	410	645
Ecuador	1,200	810	390	599	601	249	474	477
Paraguay	1,203	963	240	572	631	473	483	247
Peru	1,210	937	273	603	607	245	483	482
SUB-REGION	8,522	6,667	1,855	4,209	4,313	1,973	3,168	3,381

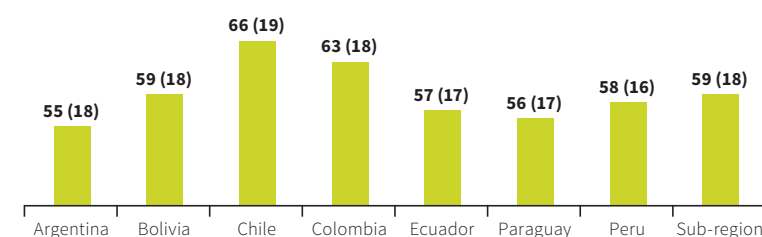
Source: authors' calculations based on CAF surveys.

December 5, 2013 (in Bolivia, Colombia, Ecuador, and Peru); between July 4 and August 9, 2016 (Chile); between March 14 and April 19, 2017 (Argentina); and between July 4 and August 25, 2017 (Paraguay). The descriptive statistics of the samples for each country are presented in Table 3.

4.2 FINANCIAL WELL-BEING BY COUNTRY

The average financial well-being score for the seven countries is 59 on a scale from 0 to 100. The highest scores were found in Chile (66) and Colombia (63) followed by Bolivia (59), Peru (58), Ecuador (57), Paraguay (56), and Argentina (55). When each country is compared to the sample average, all the averages

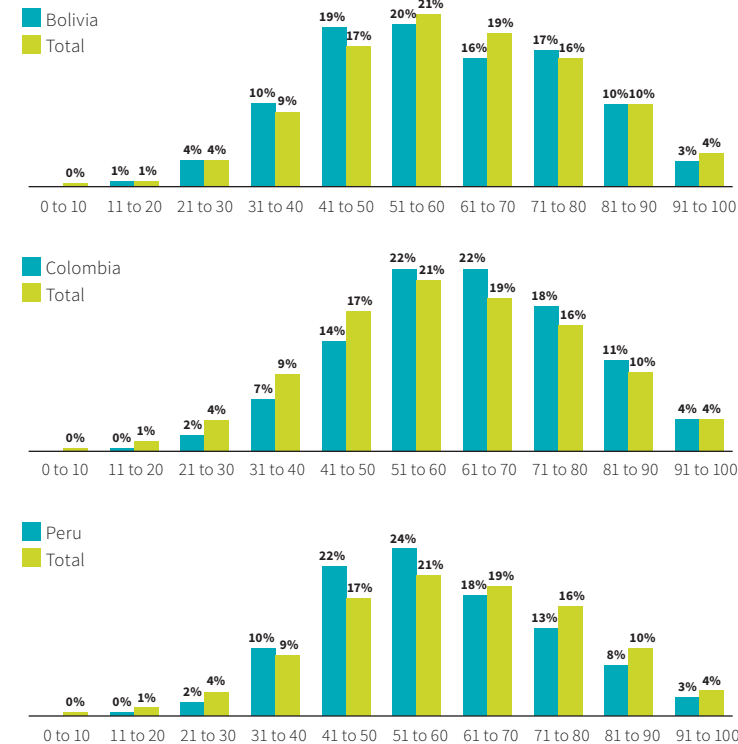
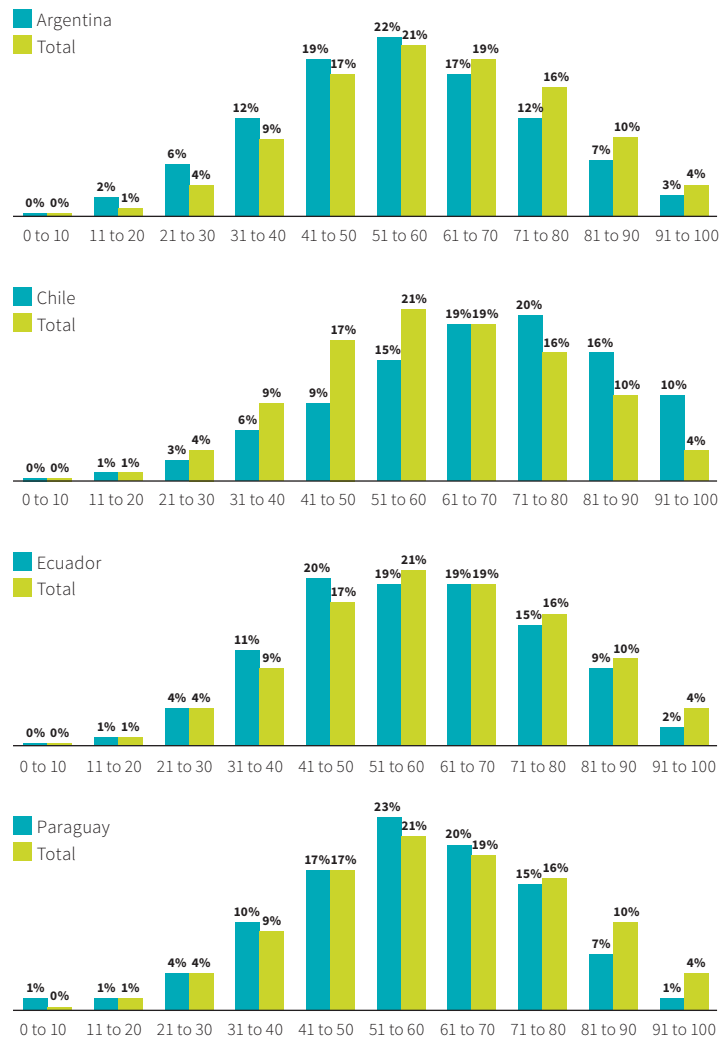
Figure 2. Financial Well-being Scores by Country



Note: data in the graph represent the financial well-being average and its standard deviation (in parentheses). The scale is from 0 to 100.

per country are different from the sample with the exception of Bolivia's. The results suggest that Chile's and Colombia's performance is good in comparison

Figure 3. Distribution of Financial well-being scores



to the seven countries. In contrast, Paraguay, Ecuador, and Argentina have major challenges in terms of financial well-being.

The distribution of the financial well-being score is presented in Figure 3 by country. The actual distributions suggest two important results: first, financial well-being is widely distributed within each country with scores spread across the entire scale. In Paraguay, for example,

scores from 0 to 100 are found. Second, countries with similar averages differ in the distribution of their scores. This is the case with Bolivia and Peru where, in spite of the fact that they are separated by only one point in their respective averages (59 and 58), the scores are substantially more dispersed in Bolivia than in Peru. In Bolivia, the scores are concentrated between 45 and 73 while in Peru, they are between 46 and 69. The Kolmogorov-Smirnov test validates these findings and reveals statistically significant differences in the distribution of financial well-being scores from one country to another (see Appendix C for statistics).

4.3 FINANCIAL WELL-BEING SCORES BY SELECTED GROUPS

With a view to identifying and researching differences in financial well-being, scores were extracted for selected groups that had resulted from measurements related to (i) individual characteristics, (ii) household and family characteristics, (iii) income, (iv) saving and borrowing behavior, and (v) good financial practices. The findings presented are mostly descriptive and based on simple comparisons of financial education scores between selected groups. It is worth noting that in comparing the financial well-being of two subgroups there is no attempt to establish the causes or drivers of financial well-being.

2. High school education refers to post-elementary education which is known as preparatory school in some countries. Technical and vocational training are pursued after high school as additional or higher education. Undergraduate refers to a university degree.

4.3.1 Individual Characteristics: education, age, and sex

EDUCATION²

In the seven countries analyzed, a higher level of education is associated with better financial well-being. People with a high school education have better financial well-being (58 points) than those that do not have that level of education (55). Furthermore, those who have technical or college education have, on average, higher financial well-being scores (63) than those who only have a high school education (58). When the data for the seven countries are added together, the last two subgroups (technical education and university education) do not differ in their average score. However, differences between countries were found.

Bolivia, Ecuador and Peru follow the same pattern. Nevertheless, no statistically significant differences were found between individuals with high school and technical education in Colombia. Argentina and Chile follow slightly different patterns. There, no significant differences were found between individuals with a lower than high school level of education and individuals who had high school education. The difference between participants with a technical degree and those with college education was not statistically significant. However, these latter categories do report a higher

Table 4. Financial Well-being Scores by Educational Level

	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
Less than high school education (a)	55.2 (17.0) <i>bcd</i>	52.4 (17.8) <i>cd</i>	53.7 (17.2) <i>bcd</i>	63.7 (18.8) <i>cd</i>	58.0 (15.3) <i>bcd</i>	51.7 (15.1) <i>bcd</i>	51.9 (15.0) <i>bcd</i>	55.8 (17.3)
High school education (b)	58.1 (17.2) <i>acd</i>	54.3 (17.8)	57.9 (17.2) <i>acd</i>	63.5 (19.2) <i>cd</i>	62.4 (15.4) <i>ad</i>	56.5 (16.9) <i>acd</i>	56.2 (15.1) <i>acd</i>	56.7 (17.0)
Technical education (c)	63.5 (17.1) <i>ab</i>	58.1 (18.3) <i>A</i>	63.6 (15.9) <i>ab</i>	69.1 (17.1) <i>ab</i>	64.6 (15.9) <i>ad</i>	66.3 (15.4) <i>ab</i>	60.6 (16.6) <i>ab</i>	Not available
College education (d)	64.2 (18.0) <i>ab</i>	57.5 (18.4) <i>A</i>	65.7 (17.3) <i>ab</i>	70.7 (19.0) <i>ab</i>	69.6 (15.9) <i>abc</i>	63.5 (16.3) <i>ab</i>	63.2 (17.5) <i>ab</i>	57.1 (16.5)

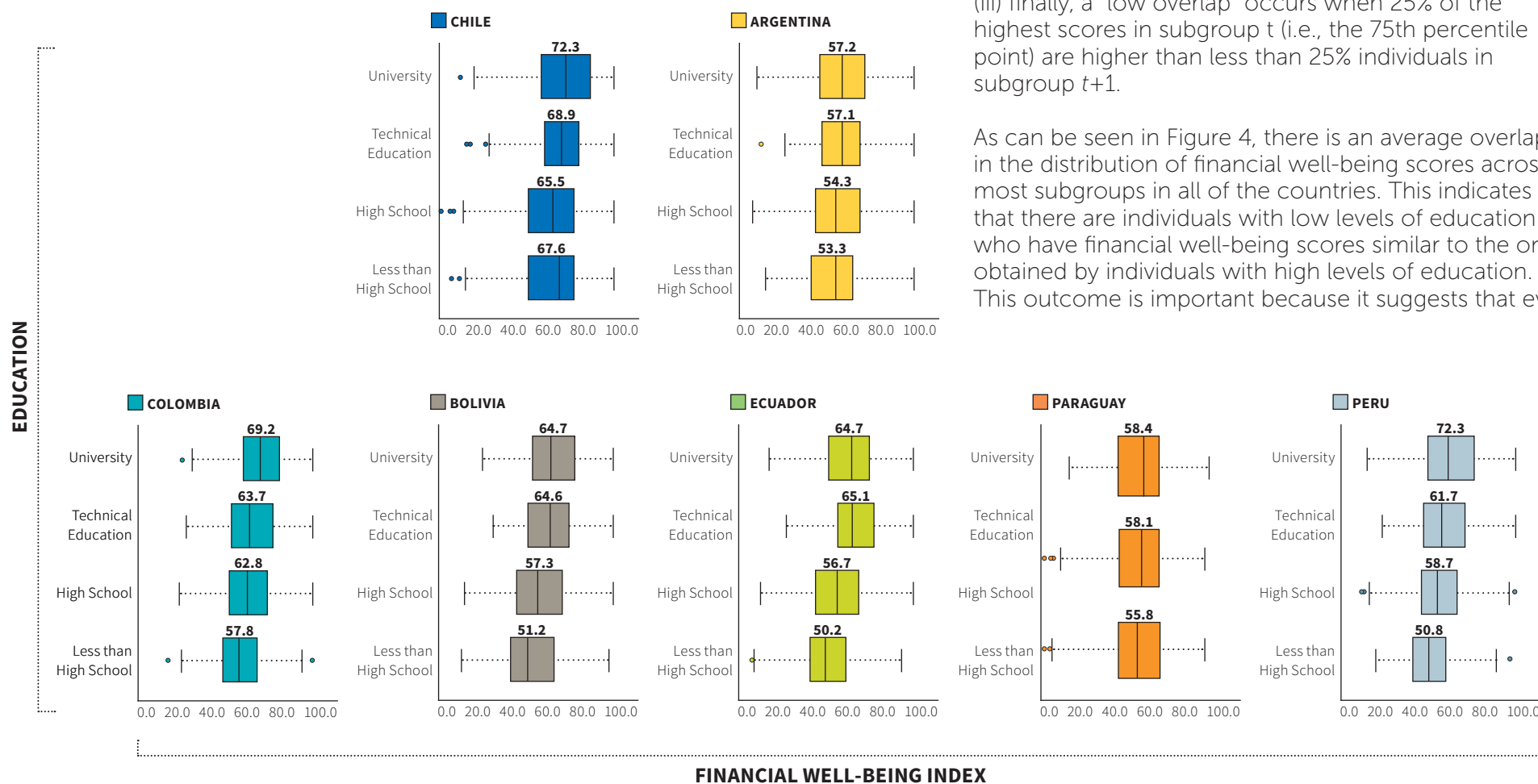
Note: the data in the table correspond to the average of the financial well-being scores and their standard deviations (in parentheses). The letters indicate subgroups within the same category where there are statistically significant average differences (at $p < .05$).

financial well-being score than do individuals with a lower level of education. Paraguay is an atypical case since no statistically significant differences were found between the subgroups.

An additional analysis was done to complement the results above: the degree to which the individuals in consecutive educational subgroups (subgroup t and subgroup $t+1$) were found within the same range of financial well-being was compared. For example,

the distribution of the financial well-being scores of individuals in the “less than high school education” subgroup was compared to the distribution of the scores for individuals in the next subgroup – “high school education.” To do this, the degree of overlap was defined as follows: (i) a “high overlap” is seen when 25% of the highest scores in subgroup t (i.e., the 75th percentile point) are higher than at least half of the scores in subgroup $t+1$ (i.e., the midpoint); (ii) an “average overlap” is seen when 25% of the highest scores in subgroup t

Figure 4. Distribution of Financial Well-being Scores by Educational Level



(i.e., the 75th percentile point) are higher than the scores of only 25% to 50% of the individuals in subgroup $t+1$; (iii) finally, a “low overlap” occurs when 25% of the highest scores in subgroup t (i.e., the 75th percentile point) are higher than less than 25% individuals in subgroup $t+1$.

As can be seen in Figure 4, there is an average overlap in the distribution of financial well-being scores across most subgroups in all of the countries. This indicates that there are individuals with low levels of education who have financial well-being scores similar to the ones obtained by individuals with high levels of education. This outcome is important because it suggests that even

though education plays an important role in financial well-being, the association is not always clear. One could speculate that these individuals may be using resource management strategies that contribute positively to their financial well-being.

AGE AND SEX

With the exception of Chile, no statistically significant differences were found between the age subgroups (see Table 5). In Chile, individuals who were 30 years of age or under reported a financial well-being score of 63

Table 5. Financial Well-being Scores by Age Group and Sex

	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
GRUPOS ETARIOS								
From 18 to 30 years of age (a)	58.5 (17.4) <i>b</i>	53.1 (17.8)	59.0 (17.3)	63.4 (18.0) <i>bc</i>	62.8 (16.5)	58.1 (17.1)	57.5 (15.7)	56.9 (17.5)
From 30 to 45 years of age (b)	59.9 (17.9) <i>a</i>	55.9 (18.1)	59.8 (17.7)	67.3 (20.9) <i>a</i>	63.1 (15.9)	58.3 (17.4)	59.1 (16.7)	56.7 (16.5)
From 45 to 65 years of age (c)	59.7 (18.1)	56.0 (19.3)	58.6 (18.3)	68.5 (18.5) <i>a</i>	61.9 (15.9)	55.4 (15.9)	57.0 (17.0)	55.4 (16.8)
Over 65 years of age (d)	59.1 (15.9)	56.0 (15.4)	59.6 (17.3)	65.8 (15.9)	61.6 (14.5)	54.2 (14.5)	55.2 (14.1)	55.2 (17.1)
SEXO								
Women (a)	59.2 (17.4)	55.0 (17.7)	58.8 (17.6)	66.0 (18.9)	62.2 (15.7)	56.9 (16.5)	57.4 (16.3)	57.5 (16.7) <i>b</i>
Men (b)	59.4 (17.9)	55.0 (18.4)	59.6 (17.6)	66.9 (19.1)	62.9 (16.2)	57.8 (17.3)	58.2 (16.3)	55.4 (17.3) <i>a</i>

Note: the data in the table correspond to the average of the financial well-being scores and their standard deviations (in parentheses). The letters indicate subgroups within the same category with a significantly different average (at $p < .05$).

on average which is significantly lower than the score that individuals from other age groups have. Likewise, with respect to sex, there are no statistically significant differences between men and women with the exception of Paraguay. Table 5 shows that when all seven countries are considered as a group, the average financial well-being score is 59 for both men and women. In addition, the age and sex distributions have a very high overlap. Interestingly, women have better financial well-being on average than men in Paraguay. However, this effect is not robust after controlling for other factors (see section 4.4 *Determinants of Financial Well-being by Country*).

4.3.2 Household and Family Characteristics: marital status and area of residence

The financial well-being scores are described and compared based on the household and family characteristics in this section. These characteristics are marital status (single or married) and geographic location (urban or rural). Table 6 shows the averages and standard deviations for the two factors considered.

When the figures from the group of countries are consolidated, there are no statistically significant differences in the financial well-being of single or

Table 6. Financial Well-being Scores Based on Marital Status and Area of Residence

	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
ESTADO MARITAL								
Single (a)	59.6 (17.6)	54.0 (20.3)	57.9 (17.1)	64.7 (18.2) <i>B</i>	60.6 (16.2) <i>b</i>	56.9 (17.1)	57.3 (16.7)	58.8 (16.9)
Married (b)	59.9 (17.7)	55.9 (18.0)	60.0 (17.5)	68.7 (19.1) <i>A</i>	63.6 (15.7) <i>a</i>	57.7 (16.9)	57.9 (16.4)	56.4 (17.2)
ZONA GEOGRÁFICA								
Urban (a)	59.2 (17.4)	55.3 (18.0)	60.4 (17.6) <i>b</i>	66.4 (19.2)	62.4 (16.3)	58.7 (16.5) <i>b</i>	58.1 (16.3)	56.5 (16.9)
Rural (b)	59.4 (17.9)	52.5 (18.8)	57.1 (17.4) <i>a</i>	66.8 (17.4)	63.0 (14.6)	54.6 (17.3) <i>a</i>	56.8 (16.4)	56.2 (17.6)

Note: the data in the table correspond to the average of the financial well-being scores and their standard deviations (in parentheses). The letters indicate subgroups within the same category with a significantly different average (at $p < .05$).

married people. The same situation is seen in each country. However, there are some aspects that can be highlighted. In Chile and Colombia, married people report greater financial well-being than single women. In Bolivia and Ecuador the individuals living in rural areas have, on average, lower financial well-being than those who live in urban areas. These differences may be due to the fact that, in these countries, individuals who live in rural areas have a lower education or less financial knowledge.

4.3.3 Income

In this section, the differences in financial well-being based on different income subgroups (high, middle, and low income) are examined. To do a comparable

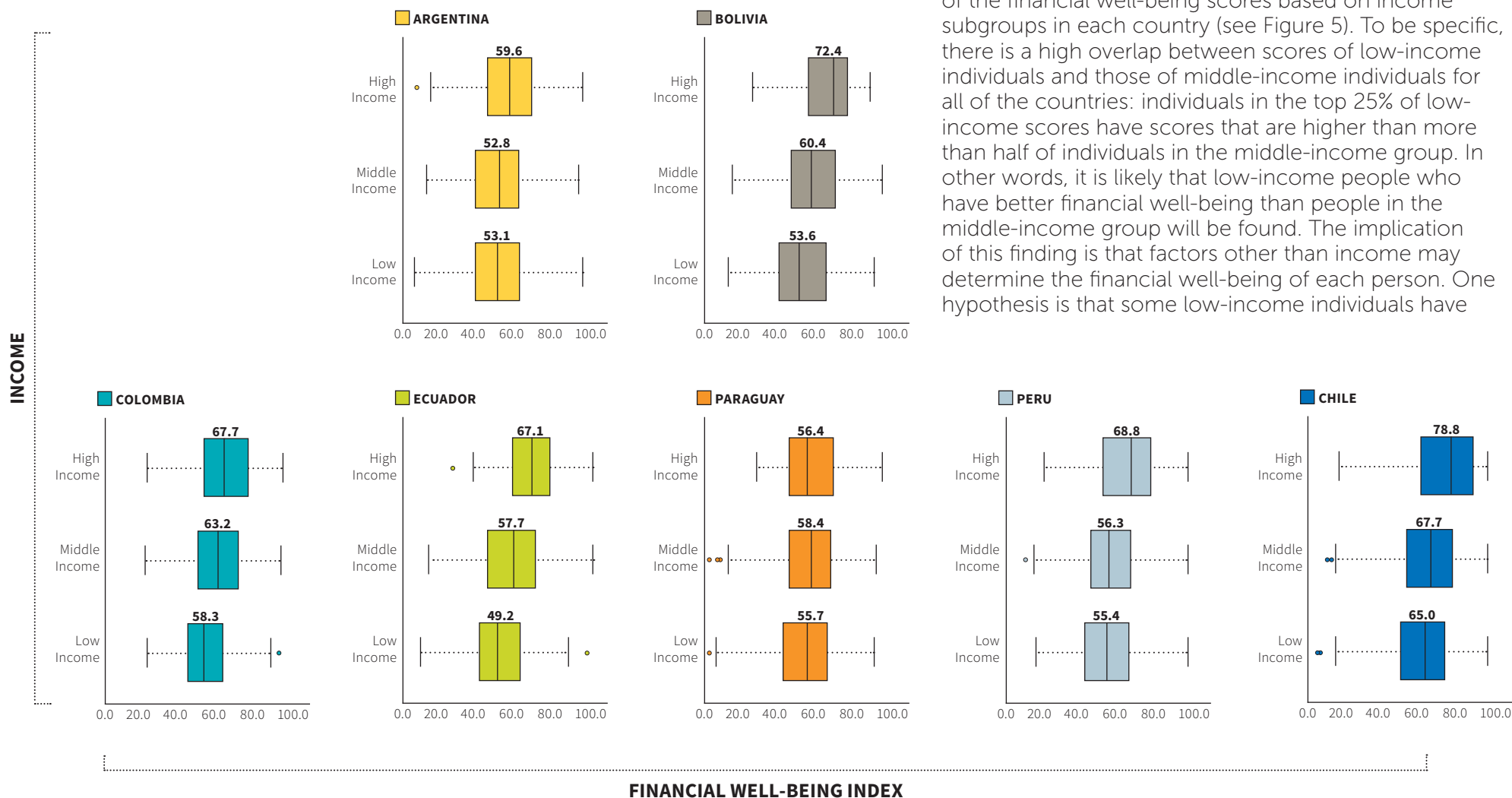
exercise, these subgroups were drawn from the classification developed by the polling company, Ipsos, based on the socioeconomic levels in each country. The results show that high-income respondents to the survey have better financial well-being on average. The consolidated figures for the seven countries indicate that low-income people had an average financial well-being score of 53 and that this rises to 59 for middle-income people, and to 65 for high-income respondents. The same positive relationship was found in Bolivia, Chile, Colombia, and Ecuador. In Argentina and Peru, no significant differences between low-income and middle-income individuals were found. At the same time, the financial well-being of these two subgroups is significantly lower than it is for the high-income subgroup.

Table 7. Financial Well-being Scores by Income Subgroup

	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
Low income (a)	53.3 (17.3) <i>bc</i>	51.4 (18.4) <i>c</i>	55.1 (17.4) <i>bc</i>	62.9 (18.1) <i>ab</i>	56.6 (14.5) <i>bc</i>	51.0 (16.0) <i>bc</i>	55.9 (16.5) <i>c</i>	55.0 (16.7)
Middle income (b)	59.7 (17.2) <i>ac</i>	52.9 (17.5) <i>c</i>	61.3 (17.2) <i>ac</i>	66.3 (18.9) <i>ac</i>	63.4 (15.6) <i>ac</i>	57.3 (16.8) <i>ac</i>	57.9 (15.9) <i>c</i>	57.0 (17.1)
High income (c)	65.9 (18.7) <i>ab</i>	58.9 (17.9) <i>ab</i>	69.1 (14.9) <i>ab</i>	74.6 (19.3) <i>ab</i>	68.1 (16.6) <i>ab</i>	66.5 (14.4) <i>ab</i>	66.9 (18.4) <i>ab</i>	58.8 (16.3)

Note: the data in the table correspond to the average of the financial well-being scores and their standard deviations (in parentheses). The letters indicate subgroups within the same category with a significantly different average (at $p < .05$).

Figure 5. Distribution of the Financial Well-being Scores by Income Subgroup



In spite of the differences between the average scores, there are average or high overlaps in the distribution of the financial well-being scores based on income subgroups in each country (see Figure 5). To be specific, there is a high overlap between scores of low-income individuals and those of middle-income individuals for all of the countries: individuals in the top 25% of low-income scores have scores that are higher than more than half of individuals in the middle-income group. In other words, it is likely that low-income people who have better financial well-being than people in the middle-income group will be found. The implication of this finding is that factors other than income may determine the financial well-being of each person. One hypothesis is that some low-income individuals have

financial strategies that give them a greater sense of financial security in spite of their low income. It is noteworthy that there is a medium to low overlap between high- and low-income individuals. This could be because money management strategies that can enhance financial well-being are not enough to help very low-income people achieve better financial well-being.

4.3.4 Saving and borrowing behavior

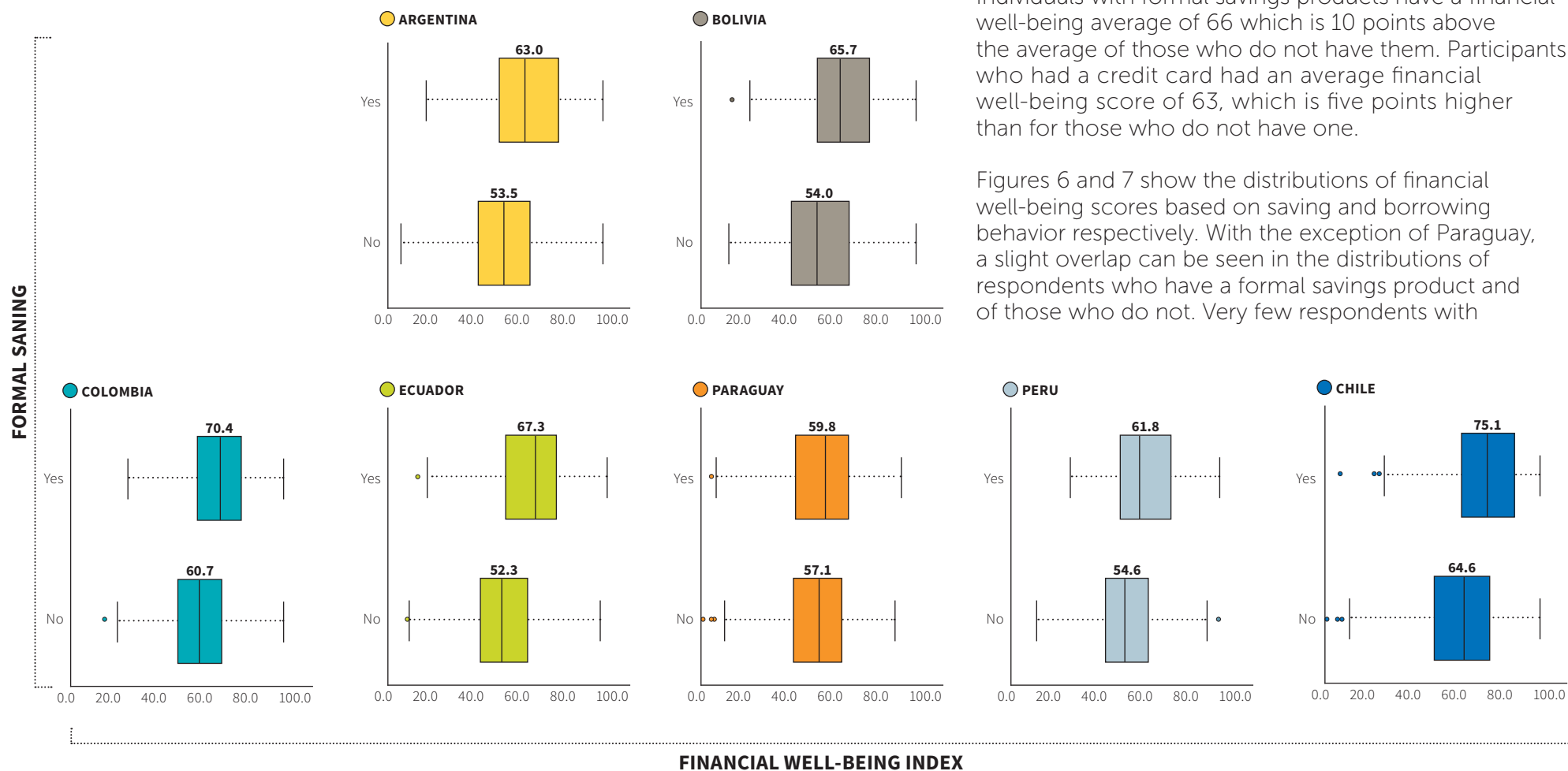
In the following section, financial well-being based on the respondents' saving and borrowing behavior is compared. The focus will be on whether or not the people use formal savings products (e.g., savings accounts) or have formal credit products (for example, credit cards). The differences in average financial

Table 8. Financial Well-being Scores Based on Saving and Borrowing Behavior

	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
EL ENCUESTADO TIENE AHORRO FORMAL								
YES (a)	66.9 (17.5) <i>b</i>	64.4 (18.3) <i>b</i>	64.4 (18.3) <i>b</i>	73.2 (17.2) <i>b</i>	70.1 (15.8) <i>b</i>	65.3 (16.7) <i>b</i>	64.1 (17.0) <i>b</i>	57.8 (17.9)
NO (b)	56.7 (17.0) <i>a</i>	53.6 (17.6) <i>a</i>	53.6 (17.6) <i>a</i>	62.2 (18.8) <i>a</i>	60.7 (15.4) <i>a</i>	53.4 (15.5) <i>a</i>	55.8 (15.5) <i>a</i>	56.3 (16.9)
EL ENCUESTADO TIENE UNA TARJETA DE CRÉDITO								
YES (a)	63.9 (18.0) <i>b</i>	58.5 (17.5) <i>b</i>	65.5 (17.4) <i>b</i>	70.2 (18.5) <i>b</i>	66.6 (16.4) <i>b</i>	65.5 (17.8) <i>b</i>	64.7 (15.9) <i>b</i>	56.9 (17.7)
NO (b)	58.3 (17.4) <i>a</i>	53.0 (18.1) <i>a</i>	58.3 (17.5) <i>a</i>	65.0 (19.0) <i>a</i>	61.8 (15.8) <i>a</i>	56.4 (16.5) <i>a</i>	56.6 (16.0) <i>a</i>	56.4 (16.9)

Note: the data in the table correspond to the average of the financial well-being scores and their standard deviations (in parentheses). The letters indicate subgroups within the same category with a significantly different average (at $p < .05$).

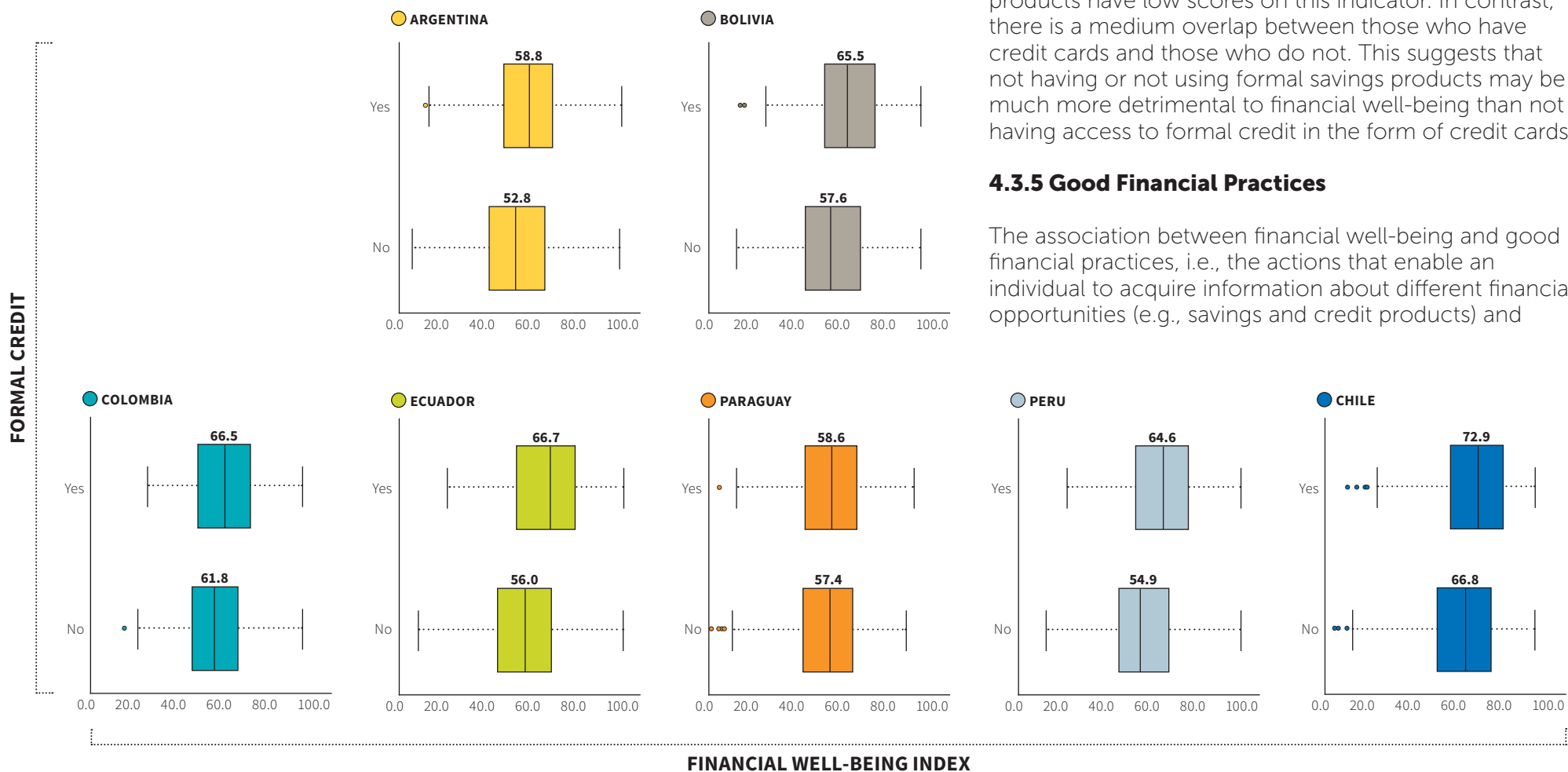
Figure 6. Distribution of the Financial Well-being Score Based on Holding Formal Savings Products



well-being were greater when looking at savings behavior than when looking at borrowing behavior. Individuals with formal savings products have a financial well-being average of 66 which is 10 points above the average of those who do not have them. Participants who had a credit card had an average financial well-being score of 63, which is five points higher than for those who do not have one.

Figures 6 and 7 show the distributions of financial well-being scores based on saving and borrowing behavior respectively. With the exception of Paraguay, a slight overlap can be seen in the distributions of respondents who have a formal savings product and of those who do not. Very few respondents with

Figure 7. Distribution of the Financial Well-being Score Based on Having Credit Cards



informal savings products have a high financial well-being score and very few individuals with formal savings products have low scores on this indicator. In contrast, there is a medium overlap between those who have credit cards and those who do not. This suggests that not having or not using formal savings products may be much more detrimental to financial well-being than not having access to formal credit in the form of credit cards.

4.3.5 Good Financial Practices

The association between financial well-being and good financial practices, i.e., the actions that enable an individual to acquire information about different financial opportunities (e.g., savings and credit products) and

process that information is described below. Specifically, whether or not the respondent i) compares products from different financial institutions before acquiring a product, ii) seeks advice through the media, and iii) from expert consultants, or iv) non-experts when acquiring a new financial product is noted.

Table 9 shows that, based on the consolidated data from the seven countries, the individuals who compare different financial institutions before acquiring a new financial product have, on average, an additional 7 points of financial well-being over those who do not have this habit (65 in comparison to 58). The largest gaps can be seen in Chile (an 8-point difference), Ecuador (10), and Peru (9). Furthermore, the individuals who seek

advice using mass media or get advice from experts or non-experts have better financial well-being compared to those who do not have this habit. In Chile and Argentina, in turn, there are no significant differences between those who look for information or get advice and those who do not. The lack of trust in financial institutions and advisors may explain this finding.

Of the four best practices presented above, the one that appears to be the most closely related to financial well-being was “compare different financial institutions.” The difference between the financial well-being scores of those who compared and those who did not is about 7 points; meanwhile, the difference between those who took advice and those who did not is close to 5 points.

Table 9. Financial Well-being Scores Based on Good Financial Practices

	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
COMPARA ENTRE ENTIDADES FINANCIERAS								
YES (a)	65.6 (17.5) <i>b</i>	58.9 (18.7) <i>b</i>	64.5 (16.9) <i>b</i>	72.7 (18.5) <i>b</i>	68.2 (17.1) <i>b</i>	65.7 (15.9) <i>B</i>	65.1 (15.5) <i>b</i>	58.0 (16.5)
NO (b)	58.1 (17.4) <i>a</i>	54.6 (18.0) <i>a</i>	57.5 (17.6) <i>a</i>	64.9 (18.8) <i>a</i>	61.8 (15.6) <i>a</i>	55.8 (16.6) <i>A</i>	56.2 (16.0) <i>a</i>	56.3 (17.1)
BUSCA INFORMACIÓN EN ANUNCIOS IMPRESOS, EN EL CELULAR O EN LÍNEA								
YES (a)	61.7 (17.8) <i>b</i>	57.0 (18.7)	62.2 (16.7) <i>b</i>	66.3 (19.4)	64.6 (17.2) <i>b</i>	59.3 (17.3) <i>B</i>	61.7 (17.4) <i>b</i>	57.2 (17.4)
NO (b)	58.6 (17.5) <i>a</i>	54.7 (18.0)	57.6 (17.9) <i>a</i>	66.5 (18.8)	62.0 (15.5) <i>a</i>	56.4 (16.6) <i>A</i>	56.5 (15.7) <i>a</i>	56.4 (16.9)

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	Sub-region	Argentina	Bolivia	Chile	Colombia	Ecuador	Peru	Paraguay
BUSCA CONSEJOS DE NO EXPERTOS (AMIGOS, COLEGAS, EXPERIENCIAS PREVIAS)								
YES (a)	62.6 (17.4) <i>b</i>	57.7 (17.2) <i>b</i>	64.1 (17.1) <i>b</i>	68.4 (18.5) <i>b</i>	66.5 (15.5) <i>b</i>	59.3 (17.1) <i>B</i>	63.8 (16.1) <i>b</i>	57.3 (16.7)
NO (b)	58.0 (17.6) <i>a</i>	54.1 (18.3) <i>a</i>	56.9 (17.4) <i>a</i>	65.7 (19.1) <i>a</i>	61.0 (15.8) <i>a</i>	56.4 (16.7) <i>A</i>	55.9 (15.9) <i>a</i>	56.2 (17.1)
BUSCA CONSEJOS DE EXPERTOS (ASESORES FINANCIEROS)								
YES (a)	63.0 (18.1) <i>b</i>	57.1 (19.2)	64.1 (16.7) <i>b</i>	67.8 (19.8)	65.1 (15.5) <i>b</i>	59.9 (18.7) <i>B</i>	62.7 (17.0) <i>b</i>	56.9 (17.9)
NO (b)	58.5 (17.4) <i>a</i>	54.8 (17.9)	57.8 (17.7) <i>a</i>	66.0 (18.7)	62.0 (16.0) <i>a</i>	56.7 (16.3) <i>A</i>	56.4 (15.8) <i>a</i>	56.4 (16.9)

Note: the data in the table correspond to the average of the financial well-being scores and their standard deviations (in parentheses). The letters indicate subgroups within the same category with a significantly different average ($\alpha < .05$).

4.4 DETERMINANTS OF FINANCIAL WELL-BEING BY COUNTRY

Multivariate analysis is used in this section to explore the combined effects of different factors on financial well-being. Table 10 presents a multivariate linear regression analysis in which financial well-being is the dependent variable. Different aspects of individuals' financial capabilities were included as independent factors. These capabilities included a combination of knowledge, skills, attitudes, and behaviors that a person needs to make sound financial decisions that will support his or her well-being (Center for Financial

Inclusion, 2016; Taylor, 2011; Shim et al., 2013; Xiao et al., 2014). To be specific, financial knowledge and skills refer to people's ability to understand financial concepts and do basic arithmetic calculations. In this study, the Financial Knowledge Index with the answers to the questions about division, value of money over time, inflation, calculation of simple and compound interest, risk, and diversification is created. The scores vary between 0 and 100.

Attitudes, in turn, refer to people's general willingness to make financial decisions. This variable was defined as the degree of participation in financial decisions. That is, did the respondent usually make financial decisions alone or

Table 10. Determinants of Financial Well-being: multivariate linear regression analysis

	Argentina	Bolivia	Chile	Colombia	Ecuador	Paraguay	Peru
SOCIO-DEMOGRAPHIC CHARACTERISTICS							
Woman	-0.646 (1.093)	-0.996 (1.004)	-1.316 (1.079)	-0.747 (0.924)	-1.539 (0.958)	-2.732*** (1.047)	-0.855 (0.984)
Age 30 to 45	2.437* (1.436)	-1.140 (1.301)	2.838* (1.503)	-0.400 (1.177)	-0.710 (1.154)	0.112 (1.293)	1.261 (1.199)
Age 45 to 65	3.114** (1.519)	-0.181 (1.466)	4.674*** (1.627)	0.532 (1.274)	-2.272 (1.387)	-1.146 (1.461)	1.421 (1.427)
Age 66+	5.213** (2.144)	2.111 (2.398)	5.997** (2.382)	3.977** (1.939)	-1.930 (2.219)	-1.117 (3.437)	2.484 (2.343)
High school education	1.755 (1.431)	2.736** (1.268)	-1.456 (1.593)	3.929*** (1.159)	1.266 (1.218)	-0.102 (1.281)	3.991*** (1.399)
Vocational education	3.325* (1.898)	5.312*** (1.666)	1.141 (1.944)	5.645*** (1.566)	7.549*** (2.576)	-	6.159*** (1.707)
College education or above	3.169* (1.914)	6.655*** (1.583)	2.442 (1.925)	7.930*** (1.718)	4.454*** (1.498)	-0.848 (1.697)	7.805*** (1.773)
Rural	-1.407 (1.772)	-0.472 (1.039)	3.643** (1.564)	2.220** (1.087)	-1.748* (0.987)	0.136 (1.294)	0.887 (1.163)
Average income	-0.977 (1.419)	3.168*** (1.047)	0.306 (1.200)	2.076** (0.975)	2.396** (1.179)	1.384 (1.119)	-0.834 (0.972)
High income	2.414* (1.244)	7.953*** (2.046)	4.670*** (1.657)	3.642** (1.566)	6.394*** (1.758)	3.050 (2.590)	3.825* (2.098)
Living with a minor	-0.0638 (1.244)	-1.866 (1.246)	-1.847* (1.098)	0.954 (1.016)	-2.606** (1.111)	-0.323 (1.214)	0.715 (1.122)
Single	-1.977 (2.064)	-1.898 (2.180)	3.175 (1.979)	-2.893* (1.637)	0.539 (1.712)	4.304 (2.664)	-2.532 (1.994)
Married	0.248 (1.295)	-1.035 (1.995)	5.013*** (1.889)	0.0836 (1.585)	2.292 (1.620)	0.501 (1.206)	-2.184 (1.804)
Formally employed	0.797 (1.150)	1.951* (1.088)	1.882* (1.134)	1.315 (0.960)	3.217*** (1.019)	-0.302 (1.067)	0.779 (1.004)

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	Argentina	Bolivia	Chile	Colombia	Ecuador	Paraguay	Peru
SOURCES OF INFORMATION CONSULTED BEFORE ACQUIRING A FINANCIAL PRODUCT							
Previous experience	2.915* (1.661)	6.030*** (1.726)	-0.105 (1.616)	-1.321 (1.723)	-2.083 (1.335)	2.301 (1.831)	3.480* (1.821)
Financial System Info.	-0.704 (1.434)	1.333 (1.014)	-1.412 (0.893)	1.236 (0.886)	-0.694 (0.992)	1.541 (1.838)	1.171 (0.917)
Mass Media Info.	0.997 (1.464)	-0.628 (0.622)	-1.281 (0.938)	-1.069 (0.767)	-1.975*** (0.573)	-0.0652 (1.281)	-0.884 (0.711)
Information from non-experts	-2.639* (1.481)	1.002 (1.156)	0.0399 (1.204)	3.113*** (1.000)	-0.0785 (1.078)	-0.678 (1.594)	2.106* (1.149)
Information from experts	-3.271 (2.290)	0.376 (1.247)	-2.892** (1.437)	-1.708 (1.392)	-0.901 (1.344)	-0.159 (2.200)	1.411 (1.470)
BEHAVIOR BEFORE ACQUIRING A FINANCIAL PRODUCT							
Compare institutions	0.427 (1.854)	1.106 (1.276)	5.749*** (1.473)	0.155 (1.463)	6.325*** (1.332)	0.653 (1.856)	3.544*** (1.365)
Compare products from the same institution	-1.162 (2.578)	-0.686 (2.069)	2.248 (2.171)	-6.832*** (1.784)	4.688*** (1.659)	-0.148 (3.199)	1.873 (2.297)
PARTICIPATION IN FINANCIAL DECISIONS (FD)							
Make FD alone	0.612 (1.500)	2.177 (1.374)	3.086** (1.263)	1.981* (1.088)	-0.323 (1.258)	-1.641 (1.354)	-0.171 (1.182)
Make financial decisions with another person	0.0886 (1.578)	4.107*** (1.554)	-0.445 (1.696)	0.712 (1.260)	0.145 (1.396)	-1.350 (1.445)	2.310* (1.390)
INCOME, SAVINGS, AND CREDIT							
Government transfer payments	-0.363 (1.276)	0.385 (1.082)	-2.233* (1.317)	-1.005 (0.977)	0.253 (1.166)	-0.138 (1.710)	0.409 (1.235)
Formal credit	3.294*** (1.175)	1.055 (1.505)	1.197 (1.193)	0.574 (1.298)	1.413 (1.517)	-0.570 (1.789)	3.036** (1.305)
Formal savings	6.797*** (1.617)	5.645*** (1.189)	8.631*** (1.123)	6.890*** (1.211)	8.100*** (1.075)	0.547 (1.686)	4.816*** (1.143)
Informal savings	8.497*** (1.323)	2.752*** (1.002)	4.677*** (1.070)	3.742*** (0.885)	1.980* (1.041)	1.060 (1.282)	3.205*** (0.950)

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	Argentina	Bolivia	Chile	Colombia	Ecuador	Paraguay	Peru
FINANCIAL KNOWLEDGE INDEX							
Index	0.004 (0.022)	0.081*** (0.022)	0.077*** (0.025)	0.021 (0.023)	0.073*** (0.021)	0.022 (0.024)	0.044** (0.019)
Constant	46.90*** (2.050)	44.20*** (2.937)	48.22*** (3.008)	51.29*** (2.483)	45.94*** (2.647)	56.47*** (1.844)	46.37*** (2.733)
Observations	1.224	1.200	1.224	1.261	1.200	1.202	1.210
R-squared	0.106	0.181	0.179	0.144	0.215	0.016	0.148

Note: Standard errors in parentheses, ***p<0.01, **p<0.05, *p<0.1. Categories omitted: Men, age 18 to 30, less than high school education, urban, low-income, and other marital status.

with another person. Finally, the dimension of financial behavior was built based on a combination of questions that refer to how financial products are chosen (for example, search for information or compare products) and the behavior related to saving and borrowing. The narrative describes the effect of different factors and considers the others as constants.

Argentina

Argentina has the lowest financial well-being score of the seven countries. The regression results show that people 30 years of age and older reported higher scores than young people. The high-income Argentines also have high financial well-being scores in contrast to the scores of people with low incomes. In terms of education, people with technical or higher education got significantly higher financial well-being scores. No statistically significant differences based on the place of residence (urban or rural) have been found.

In terms of behavior, having previous experience with financial products has also been found to be positively associated with financial well-being while following recommendations from non-experts is negatively associated with it. The effects, in turn, of comparing financial products from different institutions or from the same one and participating in financial decisions were not statistically significant. In terms of saving and borrowing behavior, holding formal or informal savings was found to be positively associated with financial well-being.

The value of the coefficients, in turn, shows that the effect of having informal savings was 25% higher than that of having formal savings. Argentina was the only country where this phenomenon was found. One possible explanation may be that Argentina has recently experienced a financial crisis that could have undermined people's confidence in financial institutions.

Having formal credit also has a positive association with financial well-being. Nevertheless, this effect was significantly lower than having formal or informal savings. Last of all, knowledge, associated with the financial knowledge index, is not statistically significant for this country.

Bolivia

Bolivians have an average financial well-being score of 59 which is not significantly different from the average for the seven countries studied. The regression shows that individuals who completed high school or college education have a higher financial well-being score than those who have completed only primary school.

No statistically significant differences were found between age groups or between geographical areas. Income shows a positive trend: the individuals with middle or high incomes report better financial well-being than those with low incomes. When one looks at financial behavior, regression reveals that having previous experience in making financial decisions and participating directly or with another person in these decisions is positively correlated with financial well-being. Having both formal and informal savings is also found to be positively associated with financial well-being. It is noteworthy that the effect on well-being of having formal savings is 105% higher than having informal savings is. Last of all, a positive association was found between financial knowledge and financial well-being.

Chile

Chile has the highest score of all the countries. A closer look at the determinants reveals that people who are 30 or above have a significantly higher score than young people do. In terms of income, people with high incomes achieve significantly higher scores than those with medium or low incomes.

Having a regular full-time job, being married, and living in rural areas are positively associated with financial well-being. In contrast, living with a dependent child is negatively associated with this indicator. No significant effects, in turn, were found for education. When behavior is examined, comparing options between different institutions and making financial decisions for oneself was found to be positively associated with financial well-being.

Finally, having formal or informal savings, but particularly savings in formal products, is positively correlated with financial well-being. Being financially literate is also positively related to high financial well-being.

Colombia

Colombia had the second highest score of the seven countries. People with high school or university education reported higher financial well-being scores than individuals with just a primary school education. It is worth noting that people living in rural areas reported higher financial well-being scores than those living in urban areas.

In Colombia, single people reported lower financial well-being scores compared to married people. Middle- and high-income earners have higher scores than low-income earners.

When one looks at financial behavior, receiving advice from non-financial experts and making financial decisions for oneself is found to be associated with greater financial well-being. In contrast, comparing different financial products from the same financial institution has a negative correlation with the financial well-being indicator. In addition, having formal and informal savings products is positively correlated with well-being. In the case of formal products, the effect is 84% greater. No significant association between knowledge and financial well-being could be found.

Ecuador

The findings on Ecuador revealed that having technical or college education is associated with high financial well-being scores. People with high incomes reported higher scores than people with middle and low incomes. Having a formal job has a positive effect. In contrast to the results for Colombia and Chile, living in rural areas in Ecuador is correlated with a lower financial well-being as is caring for a minor child.

Moreover, comparing products from different financial institutions and from the same institution is positively correlated with financial well-being. Likewise, having formal savings products has a positive effect just like

having informal savings products does. Note that the impact of having formal savings products is three times greater than having informal products. As with the results reported above, financial knowledge is associated with financial well-being.

Peru

In the case of Peru, having a high school or higher education is associated with high financial well-being. Individuals with low incomes as well as those with middle incomes do not differ in their scores while high-income individuals report higher scores.

In terms of financial behavior, having previous experience with the financial sector, taking the advice of non-financial experts into account, comparing products from different institutions, and making decisions personally or with someone have a positive and significant correlation with financial well-being. Having formal savings and credit products is positively associated with financial well-being scores. However, having informal products is correlated negatively although the magnitude of the association is lower. Finally, a high level of financial literacy is associated with higher financial well-being.

Paraguay

Paraguay was the only country in which a significant gender gap was found; i.e., being a woman is associated with a lower financial well-being. The other determinants were not statistically significant.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

This document offers a first attempt to measure financial well-being in Latin America based on CFPB research and the results of the financial capability survey done by CAF - Development Bank of Latin America in seven countries: Argentina, Bolivia, Chile, Colombia, Ecuador, Paraguay, and Peru. In addition, the determinants of financial well-being in each of these countries were estimated. These results only show relationships between different variables, but do not suggest causality.

The financial well-being score proposed in this study measures people's ability to cover their daily financial responsibilities, feel secure about their financial future, and be able to make decisions that allow them to enjoy life in line with the definition of financial well-being proposed by CFPB. The analysis by country shows that the highest scores are found in Chile (66) and Colombia (63) followed by Bolivia (59) and Peru (58), and finally, by Ecuador (57), Paraguay (56), and Argentina (55). These results suggest that Chile and Colombia are doing relatively better than the other countries in the sample. In contrast, Ecuador, Paraguay and Argentina show great challenges in this area.

This article breaks new ground in the understanding of financial well-being. First of all, it reveals that some demographic characteristics are associated with financial well-being, but others are not. For example, financial well-being was found to be superior among adults, especially those over 45 years of age. Additionally, being single is associated with low financial

well-being. However, other demographic characteristics do not appear to have a strong relationship with financial well-being. This is the case of geographic location (urban or rural environment).

Second, the differences in average financial well-being were greater when comparing savings-related behavior than when comparing credit behavior. These facts underline the importance of saving (one of the components of financial well-being) as a method of helping people feel more secure financially.

Third, in terms of good financial practices, individuals who compare different financial institutions before they acquire a product reported higher financial well-being scores on average than those who do not have this habit. Furthermore, having had previous experience with the financial sector has a positive impact on the indicator.

Fourth, having good financial knowledge and skills is associated with better financial well-being scores. This finding is consistent with the literature where a positive relationship has been found between these two variables. Actually, individuals without basic financial literacy do not have the tools they need to make decisions that would improve their financial well-being.

Last of all, the financial well-being index clearly provides information not offered by traditional measurements. For example, at all income levels, financial well-being scores

vary widely, and people with low incomes may even have better scores than high-income people. The same results can be seen with a better educational level: people with limited education may have better scores than those with a better level of education. These results suggest that even if a person is a member of a group that is relatively disadvantaged, this can be offset by factors or strategies that offer opportunities for them that would increase their financial well-being.

5.1 POLICY RECOMMENDATIONS

The findings suggest some opportunities to improve financial well-being with education and inclusion programs. First of all, the results presented here show that there are key variables that explain financial well-being; for example, savings, comparing different financial institutions, and participating in household financial decisions. These are malleable attitudes and behavior, and if they are included in inclusion and education programs, they could have a significant impact on people's financial well-being. Second, the results show that financial literacy is important for financial well-being. Thus it is imperative for public and private entities to implement programs that effectively foster financial capabilities through strategies such as identifying teachable moments, learning by doing methods, positive reinforcement, nudges, heuristics, personalization, and socialization (Drexler, Fischer, & Schoar, 2014; Kaiser & Menkhoff, 2016).

Finally, as was mentioned above, the individuals who compare different financial institutions before acquiring a new product have, on average, better financial well-being. Likewise, previous experiences with the financial sector have a positive and significant impact on well-being. These results have important implications for regulators and financial institutions which need to provide information on financial products and services transparently, clearly, and opportunely. The goal is to enable consumers to choose the products that meet their needs. In this respect, Gine et al. (2017) show that the presentation of standardized information significantly improves the ability of consumers to make financial

decisions. They also suggest that regulators should not only require certain key terms in financial product offerings but also set up the format in which these terms are presented in order to encourage product comparability and improve the financial well-being of individuals.

The findings presented in this paper are descriptive. An additional analysis is necessary to better understand the relationships highlighted here. In particular, more research is needed to understand what leads to financial well-being and thus design better financial inclusion and education programs in Latin America.

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CHAPTER 6

APPENDICES

APPENDIX A

Financial well-being scores developed in by CFPB

The CFPB Financial Well-being Scale is designed to quantify people's financial well-being. An individual's score is a standardized number between 0 and 100.

The questions that the scale is made up of are presented below in Table A.1.

Table A.1. CFPB Financial Well-Being Scale

QUESTIONS	RESPONSE OPTIONS
<p><i>How well does the following describe you or your situation?</i></p> <ol style="list-style-type: none"> 1 Could face a major unforeseen expense. 2 I am securing my financial future. 3 Because of my financial situation, I don't think I will ever have the things I want in life. 4 I can enjoy life because of the way I manage my money. 5 I am barely surviving financially. 6 I worry that the money I have or save won't last. 	<ul style="list-style-type: none"> • Fully describes me • Describes me very well • Describes me to some extent • Describes me very slightly • Does not describe me at all
<p><i>How often does the following happen to you?</i></p> <ol style="list-style-type: none"> 7 Giving a gift for a wedding, birthday, or other occasion would put a huge strain on my finances for the month. 8 I have money left over at the end of the month. 9 I am behind in my finances. 10 My finances control my life. 	<ul style="list-style-type: none"> • Always • Often • Sometimes • Seldom • Never

APPENDIX B

Gradual Response Model - Financial Well-being Index

The discrimination and difficulty parameters are shown in Tables B.1 and B.2. The discrimination parameter indicates the slope of the component's characteristic curve: the more pronounced the curve (i.e., high numbers), the greater the ability of the component to distinguish between participants with different levels of the latent variable. The difficulty parameter corresponds to the value of the latent variable for which the probability of responding to that item correctly is equal to 50%. For example, if a component has a difficulty value of 1.00, then an individual with a trait level of 1.00 has a 50% chance of responding correctly to the component. Items with higher difficulty values (i.e., "If you should lose your main source of income, how long could you continue to cover your expenses without borrowing money?") tend to be endorsed only by people who are at a higher level on the trait continuum. In contrast, items with lower difficulty values (i.e., "I would rather spend money than save for the future") tend to be supported by people with moderate to high trait levels.

Table B.1. Discrimination Parameters-Financial Well-being Index

ELEMENT	DISCRIMINATION
I pay my bills on time.	1.399
I set long-term goals and strive to achieve them.	1.057
Before buying something, I carefully weigh whether I can afford it.	1.052
How often do you stay within your budget? – Always.	0.829
Considering all the sources of income coming into your household each month, would you say that your household income is stable, or not?	0.566
In the event that you lose your main source of income, how long would you be able to continue covering your expenses without asking for a loan?	0.551
Sometimes people discover that their income is not enough to cover their expenses. Has this happened to you in the last 12 months?	0.514
I would rather spend money than save for the future.	0.42

The following graph indicates the contribution of each question to the financial well-being index. Note that the question regarding payment is given the most importance while the question about preferring to spend money is given the least. As a result, this index gives more relevance to financial habits than to economic aspects. The greater the discrimination, the greater the contribution to the index.

Figure B.1. Functions of information elements

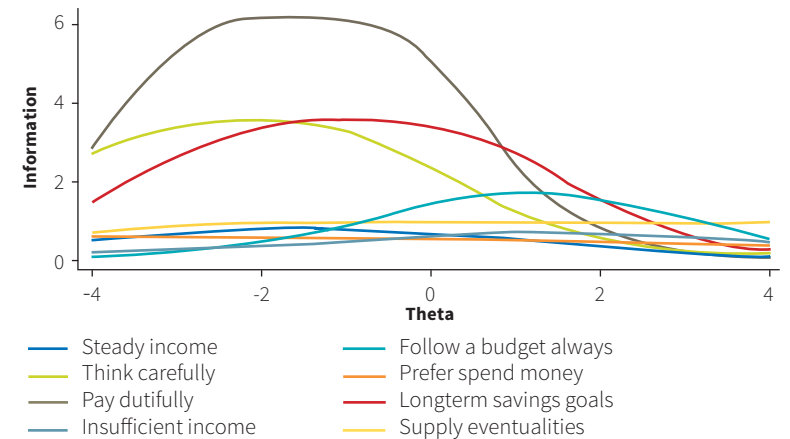


Table B.2. Difficulty Parameters-Financial Well-Being Index

ITEM	DIFFICULTY
I pay my bills on time. <i>Cut 2</i>	-2.881
I pay my bills on time. <i>Cut 3</i>	-2.237
I pay my bills on time. <i>Cut 4</i>	-1.178
I pay my bills on time. <i>Cut 5</i>	-0.252
I set long-term goals and make an effort to meet them. <i>Cut 2</i>	-2.365
I set long-term goals and make an effort to meet them. <i>Cut 3</i>	-1.687
I set long-term goals and make an effort to meet them. <i>Cut 4</i>	-0.621
I set long-term goals and make an effort to meet them. <i>Cut 4</i>	0.439
Before buying something, I carefully weigh whether I can afford it. <i>Cut 2</i>	-3.45
Before buying something, I carefully weigh whether I can afford it. <i>Cut 3</i>	-2.834
Before buying something, I carefully weigh whether I can afford it. <i>Cut 4</i>	-1.912
Before buying something, I carefully weigh whether I can afford it. <i>Cut 5</i>	-0.839
How often do you stay within your budget? – Always. <i>Cut 1</i>	1.138
Considering all the sources of income coming into your household each month, would you say that your household income is stable, or not? <i>Cut 1</i>	-1.532
In the event that you lose your main source of income, how long would you be able to continue covering your expenses without asking for a loan? <i>Cut 2</i>	-2.771

siguiente

ITEM	DIFFICULTY
In the event that you lose your main source of income, how long would you be able to continue covering your expenses without asking for a loan? Cut 3	-0.135
In the event that you lose your main source of income, how long would you be able to continue covering your expenses without asking for a loan? Cut 4	2.585
In the event that you lose your main source of income, how long would you be able to continue covering your expenses without asking for a loan? Cut 5	4.578
Sometimes people discover that their income is not enough to cover their expenses. Has this happened to you in the last 12 months? Cut 1	1.464
I would rather spend money than save for the future. Cut 2	-4.174
I would rather spend money than save for the future. Cut 3	-2.539
I would rather spend money than save for the future. Cut 4	-0.39
I would rather spend money than save for the future. Cut 5	1.302

Multiple Correspondence Analysis - Financial Well-being Index

To validate the results obtained in the Financial Well-Being Index, a second mechanism for estimating was used to produce a new index to verify the first method. Thus, multiple correspondence analysis (MCA) was used and the same variables used in the first case were taken

as variables. This method can be interpreted as main components; the variables analyzed are categorical. More information on this method can be found in Greenacre (2008). First, the number of components or dimensions to be used must be determined. As can be seen in Table B.3, given that the first three components explain 95% of the total original information, three dimensions were chosen.

Table B.3. Number of Components

DIMENSION	Main inertia	Percentage	Cumulative percentage
Dim 1	0.026	66.00	66.00
Dim 2	0.008	21.02	87.02
Dim 3	0.003	7.88	94.9
Total	0.036	100	
Number of obs.	7.535		
Total inertia	0.041		
Number of axes	3		

The results of the multiple correspondence analysis are presented in Table B.4, which consists of four main columns. The first column, called "Global," has three secondary columns that represent i) the mass of the category, which is the ratio in the marginal distribution, ii) the quality of an approximation for a category expressed as a number between 0 (very bad) and 1 (perfect), and iii) the percentage of inertia contained in the category. The other three main columns, one for each component, contain three variables: i) the category coordinate, ii) the residuals squared between the profile and the categories (the sum of the residuals squared over the dimensions adds up to the quality of the

approximation for the category) and iii) the contribution made by the categories to the dimensions.

Note that for each of the eight variables, a high level of information is explained. On average, 94% of the variables are explained by the three dimensions considered. The first component primarily explains each of the eight variables included in the index. When the column of residuals squared (sqcorr) in this category is analyzed, one can see that the higher the score for the question, the higher the result of this column is even though its coordinate is lower. For example, in the variable "Think carefully", the first option, i.e., to completely disagree with the statement "Before buying something, I carefully weigh whether I can afford it," has a quality score of 0.901 of which only 0.001 is due to this first category, whereas in the case of the fifth possibility, to be fully in agreement, the quality score is 0.993 of which 0.881 is due to this first component.

The second component, in turn, mainly explains the lower values of each question, since its main contributions are presented in the following options: "Before buying something, I carefully weigh whether I can afford it," (completely disagree); "I would rather spend money than save for the future" (completely agree); "I pay my bills on time" (strongly disagree); "I set long-term savings goals and make an effort to meet them." (completely disagree); "In the event that you lose your main source of income, how long would you be

able to continue covering your expenses without asking for a loan?" (less than a week). Likewise, the value of the residuals squared of this dimension declines considerably as the category of each question improves. In the third component, the questions for which more information is provided correspond to "constant income" and "insufficient income."

The questions that are most relevant in the first two components are "Paying properly," "Saving for the long term," and "Thinking carefully." In general, there was no evidence that a particular component grouped a

particular set of questions. On the contrary, the division depended on the question options.

With the index calculated using this method, a correlation of -0.87 was found with the index using the TIR method. This indicates a high degree of association between the two indicators. The negative sign explains why the higher values for each question, which were expected to be associated with better financial well-being, are associated with negative coordinate values, especially in the first dimension. Considering the above, there is evidence to conclude that the calculated indicator is robust.

Table B.4. Results of the Multiple Correspondence Analysis

CATEGORIES		Total			Dimension_1			Dimension_2			Dimension_3		
		Masa	Calidad	%Inerci	Coord	sqcorr	contrib	Coord	sqcorr	contrib	Coord	sqcorr	contrib
Seasonal income	0	0,037	0,971	0,038	0,919	0,548	0,031	-0,904	0,169	0,030	-1,813	0,255	0,122
	1	0,088	0,971	0,016	-0,388	0,548	0,013	0,382	0,169	0,013	0,767	0,255	0,052
Follow a budget - Always	0	0,086	0,968	0,017	0,466	0,737	0,019	-0,449	0,218	0,017	-0,188	0,014	0,003
	1	0,039	0,968	0,036	-1,016	0,737	0,041	0,978	0,218	0,038	0,411	0,014	0,007
Think carefully	1	0,005	0,901	0,036	0,081	0,001	0,000	-4,719	0,641	0,111	4,902	0,259	0,120
	2	0,004	0,907	0,020	1,570	0,309	0,009	-2,181	0,190	0,018	5,228	0,409	0,103
	3	0,010	0,869	0,024	1,599	0,708	0,026	-0,150	0,002	0,000	2,194	0,159	0,049
	4	0,022	0,975	0,080	2,118	0,799	0,097	1,759	0,175	0,067	0,163	0,001	0,001
	5	0,085	0,993	0,041	-0,806	0,881	0,055	-0,053	0,001	0,000	-0,828	0,111	0,058
Prefer spending money	0	0,020	0,950	0,023	-0,806	0,364	0,013	-1,805	0,582	0,064	0,227	0,003	0,001
	1	0,014	0,940	0,015	1,181	0,866	0,020	0,520	0,054	0,004	0,528	0,021	0,004
	3	0,025	0,819	0,018	0,938	0,807	0,022	-0,009	0,000	0,000	0,326	0,012	0,003
	4	0,021	0,948	0,020	1,014	0,703	0,021	1,043	0,237	0,022	0,319	0,008	0,002
	5	0,046	0,969	0,031	-0,966	0,922	0,043	0,156	0,008	0,001	-0,574	0,039	0,015

siguiente

CATEGORIES		Total			Dimension_1			Dimension_2			Dimension_3		
		Masa	Calidad	%Inerci	Coord	sqcorr	contrib	Coord	sqcorr	contrib	Coord	sqcorr	contrib
Pay as due	1	0,005	0,908	0,039	0,146	0,002	0,000	-5,422	0,762	0,140	3,852	0,144	0,071
	2	0,005	0,863	0,022	2,053	0,673	0,022	-1,344	0,092	0,010	2,258	0,097	0,027
	3	0,018	0,933	0,039	1,749	0,917	0,055	-0,371	0,013	0,002	0,291	0,003	0,002
	4	0,026	0,968	0,073	1,782	0,760	0,084	1,637	0,204	0,071	-0,373	0,004	0,004
	5	0,071	0,996	0,077	-1,278	0,986	0,115	-0,053	0,001	0,000	-0,364	0,010	0,009
Long-term savings	1	0,013	0,922	0,035	-0,039	0,000	0,000	-3,393	0,911	0,153	0,594	0,010	0,005
	2	0,010	0,890	0,021	1,542	0,762	0,024	-0,821	0,069	0,007	1,252	0,060	0,016
	3	0,023	0,918	0,031	1,381	0,916	0,044	0,117	0,002	0,000	-0,061	0,000	0,000
	4	0,028	0,934	0,044	1,154	0,554	0,037	1,692	0,380	0,080	0,065	0,000	0,000
	5	0,051	0,989	0,082	-1,542	0,980	0,121	0,071	0,001	0,000	-0,409	0,008	0,009
Insufficient income	0	0,084	0,968	0,016	0,361	0,466	0,011	-0,485	0,267	0,020	-0,743	0,235	0,046
	1	0,041	0,968	0,032	-0,744	0,466	0,023	0,997	0,267	0,041	1,528	0,235	0,095
Providing for contingencies	1	0,024	0,934	0,021	0,693	0,349	0,011	-1,371	0,435	0,044	-1,316	0,150	0,041
	2	0,037	0,954	0,010	0,157	0,637	0,010	-0,322	0,078	0,004	-0,916	0,239	0,031
	3	0,039	0,724	0,003	-0,189	0,268	0,001	0,369	0,325	0,005	0,383	0,131	0,006
	4	0,016	0,939	0,013	-0,792	0,511	0,010	0,882	0,202	0,012	1,526	0,226	0,037
	5	0,010	0,957	0,027	-1,491	0,573	0,023	1,538	0,194	0,025	2,478	0,189	0,064

APPENDIX C

Kolmogorov-Smirnov Test

The following symmetric matrix shows the two-sample result of the Kolmogorov-Smirnov test for equality of distributions. The objective is to determine whether there are differences in the distribution of financial well-being scores by country. Significant differences are found there between all of the countries with the exception of Peru and Ecuador, and Peru and Paraguay.

Table C.1. Two-sample results of the Kolmogorov-Smirnov test

Combined K-S	Argentina	Bolivia	Chile	Colombia	Ecuador	Paraguay
Bolivia	0.000					
Chile	0.000	0.000				
Colombia	0.000	0.000	0.000			
Ecuador	0.008	0.034	0.000	0.000		
Paraguay	0.003	0.001	0.000	0.000	0.365	
Peru	0.000	0.002	0.000	0.000	0.259	0.100

Note: Data in the Table are p-values.