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Financial literacy among Mexican high school teenagers

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ABSTRACT

Financial literacy has become an increasingly important ability in today's complex world. Young people are among the least financially literate demographic groups. In this paper we present the results of a financial literacy survey conducted among high school students in Mexico City, the first effort to measure financial literacy among teenagers in Mexico. The survey is based upon the instruments developed by OECD and Lusardi and Mitchell's approach. Our results show low levels of financial literacy: 60% of the students surveyed understood the concept of inflation, 34.1% correctly answered the question about risk diversification, and only 31.7% correctly answered the question about compound interest. The OECD questions showed that less than 1 in 5 students understands basic financial concepts, around 57% get high scores on financial behavior, and about 70% have positive financial attitudes. We did not find generalized gender differences, though women score a bit higher on the OECD measure mostly due to a better financial behavior. We also did not find differences between private and public schools, or by household income.

1. Introduction

In recent years, many countries have become increasingly concerned about the low levels of financial literacy among their inhabitants. The central idea is that the financial world has become more complex, and the average citizen is less able to face these changes and make optimal decisions due to the lack of tools and knowledge of basic financial concepts. This can lead to errors when making key economic and financial decisions that they must face over the course of their lives. For example, reforms to pensions systems that replace pay-as-you-go systems with defined-contribution systems and individual accounts require workers to make more decisions demanding a more thorough knowledge of concepts like compound interest rates, inflation or risk. However, this affects not only affiliates of these programs, but any other individual that must save for retirement. Meanwhile, the increasing development of financial systems and financial inclusion policies have made a wide range of financial instruments available to more members of the population – payroll cards, credit cards, savings accounts and other more sophisticated products. Those concerns grew during the recent global financial crisis, and some studies suggest that low financial literacy was one of the factors that caused many individuals to make wrong decisions.

The standard economic model assumes that all individuals have this information and will make the right decisions. Nonetheless, recent literature shows the opposite (Lusardi and Mitchell, 2007a,b, 2011a,b; Behrman et al., 2010). Lusardi and

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Mitchell (2011b) also stress that financial illiteracy is greater among young people and the elderly. In general, these individuals are financially less sophisticated. Although there is a positive correlation between financial education and education in general, even among highly educated individuals we can find low levels of financial knowledge. Particularly in recent years, policymakers have identified a need to financially educate young people starting in high school. This is the age at which they begin interacting with the financial world, which in the Mexican case may mean joining the labor force and the financial decisions that entails. In a number of countries this topic is included in the basic core curriculum. More importantly, starting in 2012 the Organization for Economic Cooperation and Development (OECD) decided to include a fourth module testing financial literacy in its Program for International Student Assessment (PISA) standardized test.[1]

In this context, and following the OECD's methodological and conceptual approach, as part of a larger project on "Financial Literacy and Savings" we decided to study levels of financial literacy among Mexican high school students between the ages of 15 and 18. For this purpose, we designed a survey using the OECD methodology and Lusardi and Mitchell's questions, which we applied to high school students in Mexico City and the State of Mexico. Our aim in this paper is to explain the survey's design, and present and discuss the main findings from this survey.

The remainder of the paper is organized as follows. Section 2 further motivates the importance of financial literacy among young people. Section 3 explains how the literature has measured financial literacy. Section 4 explains our survey's design. Section 5 presents the survey results in a descriptive manner, whereas Section 6 provides a simple econometric analysis. Finally Section 7 concludes and discusses some recommendations for future research.

2. The importance of financial literacy among young people

As mentioned previously, there is a substantial amount of recent literature discussing and documenting the low level of financial literacy prevailing in some countries. However, most of these studies have been conducted in the United States (Lusardi and Mitchell, 2007a, 2007b, 2011a, 2011b; Berhman, Mitchell, Soo and Bravo, 2010). With regards to financial literacy among young people, Bernheim et al. (1997) have shown that American students who graduate in states that mandate personal finance courses to high school students are more financially educated and make better decisions than graduates in states that do not have such requirements. Similarly, Lusardi et al. (2009) conducted a survey of financial literacy among 23–28 year olds in the United States and found that 80% of respondents were able to calculate compound interest rates, 54% understood the concept of inflation, and 47% were familiar with the concept of risk diversification. These authors argue that financial education courses should be given to young people before they enter university, since it is during their college years that they make their first transcendent financial decisions, such as taking student loans, apartment rentals, or cell phone contracts.

Chen and Volpe (1998) conducted a survey of 924 American college students relating a point score obtained in financial education with socioeconomic characteristics of the students, such as gender, race, major, and school year. These authors conclude that black women in non-business majors and in their first year of college are the sub-group most likely to have a low level of financial literacy. Jorgensen and Savla (2010) conducted a College Student Financial Literacy Survey of 420 respondents and found that financial literacy or aptitude for young people is affected significantly not only by socioeconomic factors, but also by financial situations. The study incorporated questions about the perceived influence of their parents on their financial education, attitude and behavior, an element that is considered to influence 17% of their financial knowledge. A similar result was found in Hong (2004). Manski (1993) and Carrell et al. (2008) studied financial literacy contagion among young people within a common peer group or classroom and found significant effects.

In this context, the OECD agenda places significant weight on the study and promotion of financial literacy among high school students. This organization argues that financial literacy will be increasingly considered an essential life skill in the future, and that it is best to educate young people as early as possible. Youth will face not only increasingly complex financial products, services and markets, but are more likely to face higher risks than their parents (FEG, 2012). The need to measure financial literacy levels led the OECD to conduct a pilot study for the adult population (Atkinson and Messy, 2012; OECD INFE, 2011). However, in order to focus on young people under the age of 18, the OECD decided to include a module in the PISA international exam regarding financial literacy to better capture teenagers' knowledge and skills in this area. This module was included in 2012, although each country voluntarily decided whether to adopt it. Mexico, nevertheless, was not one of the countries that decided to apply this module. This being the case, our study aims to fill this gap in our knowledge and, thus, measure the level of financial literacy in Mexican teenagers using a survey that replicates some of the concepts included in the OECD and PISA methodology.

3. Definition and measurement of financial literacy

One of the first attempts to define financial literacy can be found in the Jump$tart Coalition for Personal Financial Literacy in 1997, which asserts that financial literacy is the ability to use knowledge and skills to administer financial resources securely and effectively throughout one's lifetime (Hastings et al., 2012). In this paper, however, we want to highlight two alternative yet not necessarily exclusive definitions, which are relevant to measure the effort made in various countries in

[1] Mexico has not yet decided to adopt this new module.

recent years. Annamaria Lusardi and Olivia Mitchell, who have studied this issue extensively, state that financial literacy is the ability to process financial/economic information and make informed decisions about financial planning, wealth accumulation, pensions and debt (Lusardi and Mitchell, 2013). To measure this concept, they use questions 6–8 in the survey (see Appendix A). The idea is that the first two questions, which are called "compound interest" and "inflation," help to evaluate whether the respondent shows a knowledge of fundamental economic concepts to make saving decisions, and at the same time whether he or she is competent in basic numeric-financial skills. The third question, called "risk diversification", evaluates the individual's knowledge of risk diversification, a crucial element for informed decision making.

The importance of using these questions is that they have been used extensively in various surveys in a number of countries in recent years, allowing the comparison of results. Lusardi and Mitchell (2006) were able to include these questions for the first time in the Health and Retirement Survey (HRS) in the US in 2004. Later they were incorporated into other surveys, such as the National Longitudinal Survey of Youth (NLSY) and the Rand American Life Panel (ALP). Other countries have done the same, such as the Dutch DNB Household Survey (Van Rooij et al., 2007).

The second definition we would like to highlight comes from the Organization for Economic Cooperation and Development (OECD), and was used in PISA 2012. "Financial literacy is knowledge and understanding of financial concepts, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life" (FEG, 2012). This definition refers to a combination of knowledge, skills, attitudes and conduct that are necessary to make solid financial decisions with the ultimate purpose of achieving individual economic welfare (Atkinson and Messy, 2012). Financial knowledge captures whether an individual understands basic concepts like inflation, risk diversification, interest-rate calculation and the risk-return ratio on investment, as well as whether they have numeric abilities to apply them in financial situations. Financial behavior is a central element, because the benefits of financial literacy are the result of various behaviors like expense planning or protecting oneself financially. This also includes behaviors like the use of loans and credit, and investment behavior. Finally, financial attitudes capture preferences about an individual's future, for example in terms of financial planning, such as savings. In our research, we used both approaches for defining and measuring financial literacy, and we have labeled them as "L&M" and "OECD".

4. Questionnaire design and application

The questionnaire was prepared with the following purposes in mind:

a) To obtain information about financial literacy levels among young people between 15 and 18 years of age enrolled in high school. This measurement includes the "L&M" as well as the "OECD";
b) To obtain information about the mathematical skills of our target population we used the framework used by PISA;
c) To obtain information from our target population about peer effects that influences their level of financial literacy

Our survey includes the three "L&M" questions (Lusardi and Mitchell, 2013), as well as questions proposed by the OECD and discussed in OECD INFE (2011), FEG (2012), and Atkinson and Messy (2012). This enables our results to be comparable with those obtained in other studies that use these measures. The survey consists of 45 questions divided into 6 sections. The first section (21 questions) is intended to capture basic socioeconomic information on the individual, such as family income, gender, age and information about their academic background – grade-point average, type of school and peer group. The second section (7 questions) is intended to determine the level of financial knowledge the individual possesses. In this part, survey participants are asked to answer questions having to do with calculating simple and compound interest rates, knowledge about inflation, risk diversification and the relationship between the return on an asset and the associated risk.[2] The third section (8 questions) seeks information about the individual's financial behavior. Specifically, we look for details about their level of savings, their propensity to save and their knowledge of their own economic situation.[3] The fourth section (3 questions) seeks to determine the individuals' attitude toward the financial decisions they face in order to understand, among other aspects, the importance they place on savings and the future, in general. The fifth section is made up of 7 mathematical questions to measure the individuals' skills in this field. Specifically, the questions determine whether they know how to express mathematical problems (linear equation systems) and solve mathematical problems that involve calculations like addition, subtraction, multiplication and division. Finally, the sixth section consists of questions that measure how much of an influence parents or peers have on the surveyed individual. To measure this, questions cover aspects ranging from the parents' financial experience to the number of classes the respondent takes with the same peer group. Selected questions of the survey are shown in the Appendix A of this paper.

Note that the questionnaire includes both questions on objective information, such as the mathematics section, and subjective information, like individual perceptions of financial knowledge and mathematical ability. In all the questions that are graded in a binary manner (1 for correct and 0 for incorrect), respondents were given the option to answer "I don't know",

[2] It is worth mentioning that the battery of questions on financial knowledge in the OECD questionnaire includes a question that measures the ability to make divisions. This question is also included in our questionnaire in the mathematics section.

[3] Given that our target group is younger than the target group in previous studies, we had to adapt the questions to the context of high school students.

Table 1
Descriptive statistics of demographic variables.

Characteristics:	Frequency	Percentage
Gender[a]		
Male	436	50.4
Female	429	49.6
Type of school		
Public	362	40.72
Private	527	59.28
Academic year		
Third year of middle school	34	3.82
First year of high school	540	60.74
Second year of high school	75	8.44
Third year of high school	240	27
Age[b]		
Mean[c]	16.205	1.846
14 years	10	1.16
15 years	297	34.34
16 years	243	28.09
17 years	219	25.32
18 years	69	7.98
19 years	17	1.97
20 years	5	0.58
Monthly household income[d]		
Less than $5000	46	5.31
$5001 to $15,000	144	16.63
$15,001 to $30,000	110	12.7
$30,001 to $45,000	77	8.89
$45,001 to $60,000	85	9.82
More than $60,000	124	14.32
Doesn't know	280	32.33
Number of observations	889	

[a] 2.7% of the sample did not report gender.
[b] 5 individuals (0.58% of sample) reported an age above 20.
[c] The number in frequency is the mean and the number in percentage is the standard deviation.
[d] 2.59% of the sample did not answer the income question.
Source: Authors' calculations based on the survey.

with the specific clarification that there was no penalty for this response, in order to reduce the likelihood that a correct response was chosen at random.

During the survey preparation process, various pilot tests were conducted to obtain information about the quality of the answers and analyze the frequency of incorrect responses. The survey was applied between November and December 2013 in 16 schools of Mexico City and the State of Mexico, among a total of 941 high school students. Out of the total number of surveys, some were eliminated due to the low number of responses, so the final sample consists of 889 students. The surveys were taken in a classroom to simulate the environment present when the PISA test is taken.[4]

The selected schools were chosen at random using a population database of all high schools in the Metropolitan Area of Mexico City. The database was constructed using information from the Ministry of Public Education and the National University (UNAM). The schools were divided into public and private institutions. The breakdown of the total sampling of schools was as follows: 40.7% public high schools and 59.3% private high schools.[5]

During the application process, three schools did not allow the survey to be applied. Based on their withdrawal, we decided to select some additional schools while maintaining the diversification obtained from the original sample, even for institutions in the minority. We should note that we do not believe the decision of some schools against participating in the survey implies any positive bias in the estimator associated with school type, because the reasons for their rejection were not academic.[6] We also specified in written form that the results would be confidential and would not be used to evaluate the school in any way.

[4] Although our sample represents 3% of total schools and 1% of total students, we consider that the size of our sample is still good. For example, Chen and Volpe (1998) included 924 college students while Jorgensen and Savla (2010) included 420 respondents.
[5] The Metropolitan Area of Mexico City is the largest metro area in the country, as such our population sample can be compared to other large metropolitan areas in the country, such as Guadalajara and Monterrey.
[6] The schools that rejected the survey required a special permission from high authorities in order to conduct the survey during class time. The schools that replaced these high schools are comparable on income levels.

Table 2
OECD focus: Correct responses to financial knowledge questions.

	Compound interest (#6)	Inflation (#7)	Risk diversification (#8)	Definition of inflation (#9)	Risk & returns (#10)	Interest paid on a loan (#11)	Principal + compound interest (#12)	Division (#19)	Points scored
All sample	0.317	0.601	0.341	0.695	0.336	0.846	0.222	0.947	4.305
Gender									
Male	0.346	0.649	0.323	0.695	0.335	0.860	0.213	0.950	4.372
Female	0.294	0.566	0.359	0.697	0.338	0.837	0.226	0.953	4.270
Age									
14	0.200	0.400	0.300	0.700	0.400	0.700	0.400	0.900	4.000
15	0.296	0.596	0.377	0.673	0.323	0.825	0.185	0.949	4.226
16	0.296	0.597	0.292	0.704	0.321	0.835	0.202	0.930	4.177
17	0.338	0.626	0.347	0.699	0.374	0.886	0.269	0.963	4.502
18	0.420	0.681	0.304	0.754	0.333	0.870	0.232	0.986	4.580
19	0.412	0.647	0.412	0.588	0.235	0.941	0.176	0.941	4.353
20	0.600	0.600	0.400	1.000	0.400	1.000	0.200	1.000	5.200
Type of school									
Public	0.331	0.577	0.387	0.666	0.340	0.851	0.185	0.967	4.304
Private	0.307	0.617	0.309	0.715	0.334	0.843	0.247	0.934	4.306
Household income									
Less than $5000	0.326	0.587	0.457	0.717	0.348	0.783	0.174	0.978	4.370
$5001 to $15,000	0.292	0.569	0.368	0.667	0.361	0.813	0.188	0.972	4.229
$15,001 to $30,000	0.318	0.655	0.464	0.673	0.373	0.900	0.209	0.964	4.555
$30,001 to $45,000	0.338	0.649	0.273	0.701	0.351	0.805	0.260	0.974	4.351
$45,001 to $60,000	0.329	0.600	0.306	0.741	0.188	0.859	0.235	0.953	4.212
More than $60,000	0.306	0.637	0.258	0.750	0.347	0.895	0.258	0.919	4.371
Doesn't know	0.325	0.582	0.329	0.675	0.350	0.846	0.214	0.943	4.264

Notes: Each number represents a proportion except in the column entitled "Points scored", which represents the mean total points scored in the questionaire's financial knowledge section. The number in parethesis is the question's number in the survey.
Source: Authors' calculations.

5. Survey results: descriptive analysis

Table 1 shows some of the descriptive characteristics of the sample composition by gender, school type, academic year, age and family income. 96.2% of the students surveyed were in high school and the rest were in the last year of middle school; 93.1% were between 15 and 18 years of age. The breakdown by gender was balanced, 49% men and 48.3% women; while the remaining observations did not answer. In terms of the heterogeneity of schools, 59% of the students were in private school while 41% were in public schools. As for family income levels, as guessed by the students, approximately a third of those surveyed did not respond, many of them because they did not know. What is interesting is that among those that did answer, only 5% mentioned a family income of less than 3 times the monthly minimum wage, while two thirds reported family income of more than 8 times the monthly minimum wage, and almost 14% came in higher than 23 times the monthly minimum wage. As a point of reference, is interesting to note that the average worker in the formal private sector, affiliated with the Mexican Social Security Institute, earns the equivalent of 3.4 times the monthly minimum wage.[7]

As we mentioned before, the questionnaire was designed to include both Lusardi and Mitchell's questions and the OECD INFE questions. We thus divide the presentation of our descriptive results using these two approaches.

[7] It is important to mention that while the survey is not representative at the student level, it is representative at the school level. As we explained before, our sample of schools is such that the amount of private and public schools is representative of Mexico City's Metropolitan Area.

Table 3
OECD focus: Positive financial behaviors.

	Agreed with the following statements:								
	Carefully considers purchases (#13a)	Long term financial goals (#13b)	Pays bills on time (#13c)	Close watch on personal finances (#13d)	Saved in last 6 months (#14)	Active ways of saving (#15)[a]	Has not borrowed to make ends meet (#16)	Can get by for 3 months or more without allowance (#17)	Points scored[a]
All sample	0.820	0.731	0.750	0.762	0.814	0.786	0.683	0.279	5.346
Gender									
Male	0.782	0.700	0.727	0.739	0.828	0.787	0.693	0.314	5.255
Female	0.865	0.772	0.776	0.793	0.802	0.788	0.683	0.242	5.478
Age									
14	0.800	0.700	0.900	0.700	1.000	1.000	0.800	0.400	5.900
15	0.848	0.734	0.747	0.768	0.822	0.788	0.653	0.276	5.360
16	0.844	0.753	0.774	0.786	0.877	0.840	0.609	0.300	5.481
17	0.795	0.731	0.744	0.772	0.763	0.740	0.781	0.265	5.324
18	0.725	0.681	0.710	0.667	0.783	0.783	0.754	0.261	5.101
19	0.882	0.706	0.706	0.765	0.529	0.529	0.765	0.353	4.882
20	1.000	1.000	1.000	1.000	1.000	0.800	0.800	0.200	6.600
Type of school									
Public	0.820	0.749	0.749	0.751	0.807	0.768	0.787	0.260	5.431
Private	0.820	0.719	0.751	0.769	0.820	0.799	0.611	0.292	5.288
Household income									
Less than $5000	0.804	0.761	0.739	0.717	0.739	0.717	0.761	0.239	5.239
$5001 to $15,000	0.840	0.743	0.750	0.750	0.771	0.743	0.729	0.222	5.326
$15,001 to $30,000	0.791	0.727	0.736	0.745	0.855	0.845	0.809	0.264	5.509
$30,001 to $45,000	0.805	0.740	0.675	0.740	0.857	0.844	0.779	0.364	5.442
$45,001 to $60,000	0.824	0.800	0.812	0.847	0.765	0.753	0.659	0.271	5.459
More than $60,000	0.806	0.702	0.734	0.750	0.831	0.782	0.653	0.250	5.258
Doesn't know	0.846	0.729	0.779	0.789	0.829	0.793	0.589	0.311	5.354

Notes: Each number represents a proportion except in the column entitled points scored, which represents the mean total "Points scored" in the questionaire's behavior section. The number in parethesis is the question's number in the survey.

[a] "Active ways of saving" means that the respondent saved money on purpose and not just by letting money accumulate in a current account.Source: Authors' calculations.

5.1. OECD's approach

According to the OECD approach, the measurement of financial literacy includes three components: financial knowledge, financial behavior and financial attitudes (Atkinson and Messy, 2012). Financial knowledge is measured using questions 6 to 12 of the questionnaire and question 19 (Division). Table 2 summarizes the results to each of these questions (the question numbers are in parentheses) and the overall score on financial knowledge for the whole sample and by demographic groups. Overall (first row in Table 2), we find that only 31.7% of respondents were able to answer the first compound interest question (#6) correctly, and only 22.2% are able to compute the principal plus compound interest of an investment (#12). Notwithstanding, our subjects understand the concept of the interest paid on a loan (#11). Young Mexicans are, however, knowledgeable about inflation: 60% understand real returns to an investment (#7) and almost 70% know the definition of inflation (#9). When it comes to issues about the risk of an investment, our respondents showed a generalized lack of understanding of risk diversification (#8) and the relationship between risks and returns (#10). Finally, 5.3 of our respondents could not answer a simple division question correctly. On average, our respondents answered 4.3 questions correctly (out of 8).[8]

[8] Only 0.34 of our subjects answered the seven questions directly linked to financial knowledge correctly (this is excluding the division question, not shown in Table 2).

Table 4
OECD focus: Positive financial attitudes.

	Disagreed with the following statements:			
	Living for today, tomorrow will take care of itself (#18a)	Money is there to be spent (#18b)	More satisfaction from spending than saving (#18c)	Points scored
All sample	0.766	0.479	0.466	1.711
Gender				
Male	0.755	0.456	0.461	1.672
Female	0.781	0.497	0.469	1.746
Age				
14	0.700	0.400	0.400	1.500
15	0.774	0.502	0.451	1.727
16	0.749	0.506	0.531	1.786
17	0.785	0.420	0.420	1.626
18	0.710	0.449	0.435	1.594
19	0.882	0.471	0.412	1.765
20	1.000	0.600	0.600	2.200
Type of school				
Public	0.776	0.497	0.472	1.746
Private	0.759	0.467	0.461	1.687
Household income				
Less than $5000	0.783	0.674	0.609	2.065
$5001 to $15,000	0.757	0.528	0.472	1.757
$15,001 to $30,000	0.773	0.418	0.364	1.555
$30,001 to $45,000	0.766	0.494	0.455	1.714
$45,001 to $60,000	0.812	0.424	0.471	1.706
More than $60,000	0.774	0.444	0.435	1.653
Doesn't know	0.754	0.475	0.486	1.714

Notes: Each number represents a proportion except in the column entitled "Points scored", which represents the mean total points scored in the questionaire's attitudes section. The number in parethesis is the question's number in the survey.
Source: Authors' calculations.

In addition to the overall results, there are some interesting relationships between financial knowledge and the demographic characteristics of the students. Men have more correct answers on average than women, but, as we will see in the econometric analysis, the difference is not statistically significant. This result contrasts with previous finding in the literature using the OECD approach. For instance, in 13 out 14 countries analyzed in Atkinson and Messy (2012), men scored significantly higher than women on financial knowledge, the only exception being Hungary. When looking at the percentage answering correctly to each question, we find that sometimes men surpass women (compound interest, inflation, interest paid on loan), but others women answer correctly more often than men (risk diversification, definition of inflation, risk and returns, principal + compound interest and division). We also find that correct answers are positively correlated with age, and that students from private schools have on average a greater score (though the difference is, again, insignificant). Finally, we did not find a clear relationship between answering correctly and household income.

The next two tables show the results for the part dealing with financial behavior and attitudes. The purpose of this section was to capture the individual's preferences regarding the future, for example, in terms of financial planning, such as savings or their level of impatience. To obtain information about financial behavior and attitudes we asked respondents to consider certain statements about their handling of money. These questions were the same as those used by Atkinson and Messy (2012) and the OECD (2013) to measure these two components of financial literacy. We used a Likert scale, also known as the summative assessment method. This methodology consists in asking the respondent to specify the extent of their agreement or disagreement with the statement. In this case, we used a numeric scale from 1 to 5, in which 1 indicates the person completely disagreed with the statement and 5 indicates that they completely agreed with it. These were then ranked as positive or negative attitudes or behaviors. In the behavior part, it was considered positive to be in agreement with the sentences, because they explain situations regarding the organization of their money, expense planning and repaying their debt on a timely basis. Therefore, individuals who selected numbers 4 or 5 were considered to have positive behaviors. In the attitudes part, the students had to be in disagreement with the statements in order to have positive attitudes toward the longer term. Thus, an individual who selected responses 1 or 2 would be considered to have positive attitudes.

Table 5
OECD focus: Overall results.

	High on financial knowledge	High on financial behavior	High on financial attitudes	Mean points	No points	1 point	2 points	3 points
All sample	0.183	0.573	0.694	1.450	0.148	0.344	0.416	0.091
Gender								
Male	0.179	0.541	0.679	1.399	0.161	0.362	0.394	0.083
Female	0.191	0.604	0.706	1.501	0.135	0.329	0.436	0.100
Age								
14	0.000	0.700	0.600	1.300	0.100	0.500	0.400	0.000
15	0.168	0.566	0.704	1.438	0.168	0.313	0.431	0.088
16	0.152	0.642	0.704	1.498	0.123	0.333	0.465	0.078
17	0.224	0.534	0.694	1.452	0.146	0.352	0.406	0.096
18	0.261	0.478	0.609	1.348	0.174	0.435	0.261	0.130
19	0.176	0.471	0.647	1.294	0.118	0.588	0.176	0.118
20	0.400	1.000	1.000	2.400	0.000	0.000	0.600	0.400
Type of school								
Public	0.191	0.547	0.696	1.434	0.152	0.356	0.398	0.094
Private	0.178	0.590	0.693	1.461	0.146	0.336	0.429	0.089
Household income								
Less than $5000	0.174	0.478	0.804	1.457	0.130	0.348	0.457	0.065
$5001 to $15,000	0.194	0.556	0.694	1.444	0.139	0.382	0.375	0.104
$15,001 to $30,000	0.218	0.573	0.664	1.455	0.182	0.300	0.400	0.118
$30,001 to $45,000	0.208	0.584	0.675	1.468	0.143	0.364	0.377	0.117
$45,001 to $60,000	0.153	0.659	0.682	1.494	0.165	0.282	0.447	0.106
More than $60,000	0.185	0.548	0.653	1.387	0.153	0.387	0.379	0.081
Doesn't know	0.171	0.589	0.718	1.479	0.125	0.343	0.461	0.071

Notes: Each number represents a proportion except in the column entitled “Mean points”, which represents the mean total high score points in the three sections.
Source: Authors' calculations.

Table 3 summarizes the results of the financial behavior questions (questions 13–17 of the questionnaire).[9] The first row presents the overall results. Young Mexicans in our sample report having behavior more or less conducive to achieving certain financial health: in all but two questions more than 70% of respondents have positive behaviors. There were, however, two questions in which our respondents did not do very well. First, only 68.3% of them are able to make ends meet without borrowing, and only 27.9% of them would be able to live for three months or more without their monthly allowance. Question 17 in the questionnaire was thought of as a substitute to a negative income shock question. We think the students overstated their ability to survive without their allowance and thus did not consider this question to compute the total points scored in the financial behavior component. Having cleared that point, on average the students had 5.346 positive behaviors.

The rest of Table 3 repeats the same exercise we did for financial knowledge. We find that women score on average better than men. A higher percentage of women than men exhibited positive behaviors in 5 out of 7 questions, the exceptions being on having saved in the last 6 months and having not borrowed to make ends meet. Regarding age, on average we found that as students grow older they less positive behaviors, though the relationship is not monotonic. We also found that on average students in public schools scored better than students in private schools. The latter results is mostly due to a very large difference in the percentages who have long term financial goals and those who did not borrow to make ends meet. Finally, we did not find a clear relationship of financial behavior and household income.

The last component of the OECD approach is financial attitudes. The survey intends to measure these attitudes using the three statements in question #18. Table 4 presents the proportion of individuals who answered the financial attitudes questions in a positive fashion and the mean score in this component. Overall, 76.6% of the students disagree with being present-biased. However, only 48% of the students disagree with the statements “Money is there to be spent”, and only 46.6% of the students derive more satisfaction with saving rather than spending. On average, the students in our sample answered

[9] Question #13 is composed of four different statements which were scored as explained in the paragraph above. In question 14, the correct answer is having saved in the last 6 months. In question 15 only the refusal to answer is consider an incorrect answer. In question 16, the first four options are consider correct answers since the student need not to borrow to keep up with his financial obligations. In question 17, the correct answer was being able to survive for three or more months with only their accumulated assets.

Table 6
Lusardi and Mitchell's questions.

	Compound interest (#6)	Inflation (#7)	Risk diversifi-cation (#8)	Points scored	No points	1 point	2 points	3 points
All sample	0.317	0.601	0.341	1.259	0.193	0.421	0.319	0.066
Gender								
Male	0.346	0.649	0.323	1.319	0.156	0.433	0.346	0.064
Female	0.294	0.566	0.359	1.219	0.217	0.420	0.291	0.072
Age								
14	0.200	0.400	0.300	0.900	0.300	0.500	0.200	0.000
15	0.296	0.596	0.377	1.269	0.192	0.418	0.320	0.071
16	0.296	0.597	0.292	1.185	0.222	0.428	0.292	0.058
17	0.338	0.626	0.347	1.311	0.164	0.425	0.347	0.064
18	0.420	0.681	0.304	1.406	0.145	0.391	0.377	0.087
19	0.412	0.647	0.412	1.471	0.118	0.471	0.235	0.176
20	0.600	0.600	0.400	1.600	0.000	0.600	0.200	0.200
Type of school								
Public	0.331	0.577	0.387	1.296	0.188	0.401	0.340	0.072
Private	0.307	0.617	0.309	1.233	0.197	0.435	0.306	0.063
Household income								
Less than $5000	0.326	0.587	0.457	1.370	0.196	0.326	0.391	0.087
$5001 to $15,000	0.292	0.569	0.368	1.229	0.215	0.410	0.306	0.069
$15,001 to $30,000	0.318	0.655	0.464	1.436	0.127	0.382	0.418	0.073
$30,001 to $45,000	0.338	0.649	0.273	1.260	0.182	0.416	0.364	0.039
$45,001 to $60,000	0.329	0.600	0.306	1.235	0.212	0.424	0.282	0.082
More than $60,000	0.306	0.637	0.258	1.202	0.177	0.500	0.266	0.056
Doesn't know	0.325	0.582	0.329	1.236	0.200	0.436	0.293	0.071

Notes: Each number represents a proportion except in the column entitled "Points scored", which represents the mean total points scored in the three Lusardi & Mitchell's questions. The number in parethesis is the question's number in the survey.
Source: Authors' calculations.

1.76 of these questions positively. When we look at the differences across demographic categories, we found that women score better than men in all three statements, and thus on the total score. We did not find any clear relationship of positive attitudes with either age or household income, and students in public schools tend to have a better financial attitude than students in private schools.

Using those three components, we can build a financial literacy measure. The measure is calculated following Atkinson and Messy (2012). Each of the three components can add a point to the total score if the respondent gained high scores in each of the three sections. A high score in financial knowledge means that the student answered correctly at least 6 out 8 questions. In the case of financial behavior, a high score needed at least 6 positive behaviors out of 7. Finally, a high score in financial attitudes is attained if the average in all three statements is less than 3; that is, the student tends to disagree with the statements on average. If the student has high scores in all three sections, his financial literacy score is equal to 3. Hence the financial literacy measure ranges from 0 to 3 depending on the number of components in which the student obtained high scores.

Table 5 summarizes the results of the OECD approach. The first three columns present the percent of students with high scores in each of the three components. We find that only 18.3% of the respondents scored highly on financial knowledge; 57.3% scored highly on financial behavior; and almost 70% got high scores on financial attitudes. The mean financial literacy score is 1.45 out of 3 points. The last four columns in Table 5 present the distribution of the students across the range of the score. Approximately 15% of the students did not obtain any points, reflecting a complete lack of financial literacy. More than a third earned only one point, while only one in ten students got high scores in all three components, obtaining the three possible points. The next few rows in Table 5 show the same information broken down by gender, age, type of school – public or private, and household income. In terms of gender, the number of positive responses was slightly higher for women than for men, and there were also more women than men who had positive results in all 3 components. By type of school, a higher average of positive responses were found among private school students. However, public school students have a higher percentage obtaining 3 points; and private school students are more concentrated on the 2 points mark. We did not find any clear relationship between financial literacy and age or household income.

The OECD approach gives equal weight to the three components in its financial literacy measure. However, what public policy may ultimately want to influence is the financial behavior of people. Behavior is the component that leads to outcomes. The data shows that there is a positive correlation between financial behavior and financial knowledge (the correlation is equal to 0.1387). We do not claim that this relationship is causal, since having a better financial behavior may lead individuals to learn about finance, so there may also be reverse causality in this relationship. We also find a negative correlation between financial behavior and our measure of financial attitudes (here the correlation is equal to −0.2206).

Recall that the lower the mean score in those statements, the better the financial attitude. Hence, our data also points to a positive relationship between good attitudes and financial behavior. This relationship makes sense since having individuals who ponder the future in their choices may lead them to better financial decisions. We will come back to these relationships in the econometric analysis of Section 6.

5.2. Lusardi and Mitchell's approach

As we mentioned before, we show the "L&M" results separately. This exercise has the advantage of being able to be used directly for international comparisons, because the same questions have been used extensively in other countries. We used the three "L&M" questions with slight modifications to adapt them to conditions in Mexico (see questions 6–8 in the survey).

Table 7
Regression analysis of financial literacy.

	OECD				L&M
	Knowledge (1)	Behavior (2)	Attitudes (3)	Total Score (4)	Total Score (5)
Female	0.067	0.410***	0.111	0.184***	−0.007
	[0.100]	[0.137]	[0.078]	[0.064]	[0.064]
Age	0.150***	−0.044	−0.005	0.014	0.059**
	[0.041]	[0.055]	[0.030]	[0.027]	[0.026]
Private school	0.169	−0.110	0.033	0.058	−0.002
	[0.118]	[0.147]	[0.088]	[0.074]	[0.076]
GPA: 7.1 − 8.0	−0.029	0.277	0.043	−0.041	−0.196
	[0.193]	[0.334]	[0.153]	[0.121]	[0.131]
GPA: 8.1 − 9.0	0.086	0.394	0.181	0.155	−0.114
	[0.191]	[0.336]	[0.155]	[0.122]	[0.131]
GPA: > 9.0	0.086	0.183	−0.022	0.028	−0.214
	[0.214]	[0.359]	[0.172]	[0.136]	[0.143]
Self-assessment of math ability	0.086**	0.031	0.050**	0.024	0.029
	[0.037]	[0.052]	[0.024]	[0.020]	[0.021]
Self-assessment of financial ability	0.096***	0.148***	0.032	0.078***	0.057***
	[0.030]	[0.044]	[0.023]	[0.018]	[0.019]
Mother's schooling: Secondary	0.251	0.144	−0.007	0.301	0.067
	[0.277]	[0.457]	[0.283]	[0.190]	[0.198]
Mother's schooling: High school	−0.104	0.401	0.067	0.287*	−0.082
	[0.248]	[0.438]	[0.270]	[0.174]	[0.194]
Mother's schooling: College or more	−0.131	0.214	0.113	0.240	−0.095
	[0.244]	[0.430]	[0.265]	[0.176]	[0.190]
Father's schooling: Secondary	−0.912***	−0.428	−0.565**	−0.788***	−0.490**
	[0.301]	[0.578]	[0.263]	[0.222]	[0.199]
Father's schooling: High school	−0.655**	−0.483	−0.675***	−0.666***	−0.358*
	[0.293]	[0.590]	[0.256]	[0.214]	[0.205]
Father's schooling: College or more	−0.726**	−0.448	−0.857***	−0.742***	−0.343*
	[0.289]	[0.583]	[0.250]	[0.220]	[0.204]
Observations	773	773	773	773	773
R-squared	0.065	0.042	0.034	0.065	0.041

Notes: The table shows the OLS estimation where the dependent variables are the total points scored in each of the components of the OECD approach, the total score in the OECD approach and the total score in the Lussardi & Mitchell approach. All explanatory variables, except for age and the self-assessments, are dummy variables equal to one if the condition described is satisfied. The omitted categories are as follows: male, public school, GPA < = 7.0, parents' schooling of primary or less. Robust standard errors are presented in brackets.

* $p < 0.1$.

** $p < 0.05$.

*** $p < 0.01$.

Source: Authors' estimations.

Table 8
Financial behavior and the other components of the OECD approach.

	(1)	(2)	(3)
Financial knowledge: total points	0.116**		0.111**
	[0.054]		[0.053]
Financial attitudes: total points		0.289***	0.286***
		[0.065]	[0.065]
Observations	773	773	773
R-squared	0.049	0.068	0.075

Notes: The dependent variable this table the total points scored in financial behavior component of the OECD approach. All columns are estimated using OLS. The regression also controls for gender, age, GPA, type of school, self-assessment of math and financial ability, and parents' educational background.
** $p < 0.05$.
*** $p < 0.01$.
Source: Authors' estimations.

Table 6 summarizes the results on these questions. A total of 60% of the students surveyed understood the concept of inflation; 34.1% correctly answered the question about risk diversification, and only 31.7% correctly answered the question about compound interest rates. If we compare these results to those obtained in the United States (Lusardi et al., 2009), we find that there is a broader knowledge of inflation in Mexico, which may be because in countries where the problem of inflation is more frequent, like in Mexico, people are more exposed to the issue. As for the concept of risk diversification, the results were similar in both countries. This is not true, however, for compound interest rates. In the United States, almost 80% of respondents answered correctly while in Mexico only 32% demonstrated an understanding of the concept. This may be because in the United States people are more exposed to the use of credit, either via credit cards in some other form, than in Mexico. Even students are more likely to take out a loan in order to go to college.[10]

The results also show that around one-fifth of the students do not have a good grasp of these concepts, 42% could only answer one of the three questions correctly, and only 6.6% answered all three correctly. The results by gender show a slight difference—male students gave more correct answers than female students. However, a higher percentage of women scored all three points. The results by type of school once again show a difference: public school respondents gave more correct answers, and they were more likely to have given two correct answers or more than their private school counterparts. We did not find any significant pattern by age or household income, except for the percentage of students who understand compound interest rates, which tends to grow with age.

So far we have only reported the frequency of correct answers without referring to the specific question or relevant concept. Table 6 shows the results for the L&M focus regarding the three relevant concepts for each question, and for the total responses.

6. Survey results: econometric analysis

In this section we present a regression analysis of financial literacy. The purpose of the analysis is twofold. First, we want to determine whether the slight differences across socio-demographic subcategories are statistically significant after controlling for various socio-demographics. And second, we would like to shed light on what are some of the determinants of financial literacy among Mexican high school students.

Table 7 presents the OLS estimates of a regression of various measures of financial literacy on gender, age, type of school, GPA, self-assessment of math and financial ability, and parents' education.[11] In the first 3 columns, the dependent variables correspond to the total points score in each of the three sections of the OECD approach, the fourth column is the total score of the OECD approach and the last column is the total score in Lusardi and Mitchel's approach. We will first discuss the results of the OECD components, and then the results of the overall scores.

We find that the gender differences are not statistically significant in either knowledge or attitudes, but women do exhibit a higher score on financial behavior even after controlling for all the variables in the regression. Women score 0.41 additional points on behavior than men on average. Regarding age, it is only statistically significant in the knowledge component: an additional year of age adds 0.15 points to the knowledge score on average. Private schools do not exhibit any statistically meaningful difference in performance on either of the three components. Interestingly, student's GPA is unrelated to financial literacy.[12] The self-assessments of mathematical and financial abilities seem to be good predictors of the three components. Mathematical and financial ability are positively and significantly correlated with financial knowledge: an additional point in each of these self-assessments leads to 0.085 and 0.096 additional points in the financial knowledge

[10] It is important to note that this comparison is not a strict one since in Lusardi et al, respondents are youths between 23 and 28 years old.
[11] In our descriptive analysis we found that income was unrelated to financial literacy. We confirmed this in our regression analysis. A first set of regressions (not shown) included the income categories as explanatory variables, but they were not jointly significant, possibly because we are already controlling for parents' education. We thus do not include income in the regressions presented in Table 7.
[12] The GPA dummies are not jointly significant in any of the columns of Table 7, except for the total OECD score, where they are significant at the 5.3% level (tests not shown).

score. Financial ability is also positively related to financial behavior, but not to financial attitudes. Finally, mathematical ability is positively correlated with financial attitudes, but not with financial behavior. Of course, it may well be the case that the self-assessments are the result of the financial literacy components, so we do not claim that these are causal effects.

The remaining explanatory variables in Table 7 are parents' educational background. The omitted category in parents' education is primary education or less. Mother's schooling does not seem to have any explanatory power once father's schooling is controlled for: mother's schooling level is not jointly significant in any of the three components (tests not shown). Finally, the education of the father has surprising effects. Students whose fathers have primary or less schooling score higher than the other students on knowledge and attitudes. It is possible that these students are relatively poorer and thus more aware of financial constraints. This may lead them to be more knowledgeable on financial matters and possibly future oriented, but it does not necessary lead to better financial behaviors (father's schooling is not jointly significant in the behavior component – test not shown).[13,14]

Column (4) in Table 7 presents the overall results on the OECD's financial literacy measure. In this regressions we only found statistically significant differences for females, in self-assessment of financial ability, and some of the educational categories of the parents. Overall, females score 0.184 more points in the OECD measure. We also find that having an additional point on the self-assessment of financial ability increases financial literacy by 0.078 points. Having a mother with high school is correlated with a higher score, and students whose fathers studied only primary or less score the highest.

Finally, Column (5) in Table 7 analyzes Lusardi and Mitchell's overall score. In the case of L&M's measure we do not find any statistically significant difference across gender. We find however a positive, small and statistically significant coefficient on age. Going from 15–20 years old would increase the score by around 0.25 points (out of 3). Self-assessed financial ability is also positively correlated to L&M's financial literacy measure, and higher assessments increase the probability of scoring all three points. The coefficients on father's education are only marginally significant (test not shown), and we find again that students with the most uneducated fathers score higher in L&M's measure of financial literacy.

As we explained at the end of Section 5.1, ultimately the important matter is what the financial behavior of individuals is, and from that section we know that financial behavior is positively correlated to financial knowledge and to positive financial attitudes. Our purpose here is to know if these correlations survive after controlling for sociodemographic variables. Table 8 presents the regressions of financial behavior on the other two components controlling for the same socio-demographics and self-assessments as in Table 7. We will thus only discuss the coefficients on each of the components.[15] The first two columns in Table 8 introduce financial knowledge and financial attitudes into the regression separately and the third column controls for both components at the same time. As we can see, financial behavior is positively correlated with both financial knowledge and financial attitudes holding all other covariates constant. Both correlations are robust to the inclusion of both components in the regression. According to our results, scoring an additional point in knowledge or in attitudes leads to an increase of 0.111 or 0.286 points on the score of behavior, respectively. Interestingly, including both knowledge and attitudes in the regression does not significantly change the magnitude of the coefficients, which means that these two components are more or less uncorrelated with each other, they measure different individual attributes and, thus, provide additional information about the students.

7. Conclusions

Financial illiteracy can be a serious problem in an increasingly complex and sophisticated economic and financial world. People are facing a bewildering array of financial decisions and a growing number of sophisticated financial products with varying degrees of risk. The recent financial crisis serves as an example of what happens when individuals make the wrong decision—the results, in the aggregate, can be catastrophic. However, probably one of the greatest challenges individuals face is guaranteeing an appropriate income for their retirement years, which requires a lengthy process of accumulating funds and making the right financial decisions, particularly in the case of defined-contribution pension systems.

The existing literature suggests that the best time to invest in endowing people with the necessary financial literacy is when they are young, as they are about to venture into the world of financial decisions. For this reason, financial courses should be included in high school curricula. To this end, we would have to first measure the level of financial literacy among pre-college students, which is why the OECD decided to include a fourth module in its PISA international exam.

We measure the level of financial literacy of Mexican high school students between 15 and 18 years old. We followed the methodology proposed by the OECD in its PISA exam, as well as the approach suggested by Lusardi and Mitchell, through a survey conducted with high schools in Mexico City and the State of Mexico. In this paper we have explained the design and results of our survey.

[13] Positive assortative matching would make the *ceteris paribus* interpretation of these results difficult and may be behind these seemingly contradictory results.

[14] All these estimates are robust to the estimation methodology. We also allowed for the standard errors to be correlated across components for each student using a SUR estimation. SUR standard errors are only slightly different, and hence the statistical significance remains the same. We present OLS results, though we reject the null of independence of the error terms in all three equations with the Breusch-Pagan test.

[15] The regression also controls for gender, age, GPA, type of school, self-assessment of math and financial ability, and parents' educational background. The coefficients of these control variables are not shown in the table. They are however very similar to those presented in Table 7 in the behavior regressions of Column (2).

Our results show low levels of financial literacy among Mexican youth. Under the L&M focus, we found that almost one-fifth of those surveyed did not have any idea of concepts like inflation, compound interest or risk diversification. Another 42% could only correctly answer one in three questions, and only 6.6% could answer all three correctly. More precisely, 60% of the students surveyed understood the concept of inflation, 34.1% correctly answered the question about risk diversification, and only 31.7% correctly answered the question about compound interest. In contrast to other studies (in different age groups), we do not find statistically significant differences between men and women. Surprisingly, we do not find any differences according to the type of school (public vs. private), which means that students in private schools are as illiterate on financial matters as students in public schools (with and without controls for household income).

Using the OECD focus followed in the PISA exam, we considered the three components – knowledge, attitude and behavior – and found similar results. With a maximum possible score of three, a little more than one-third scored only one point, and less one in ten students were able to achieve a high score in the three components and, thus, come up with the highest score of three. In this case, women get higher scores than men: women score 0.167 additional points than men on this measure and the difference is statistically significant after controlling for several covariates. We did not find any significant differences by type of school, household income or even the student's GPA.

Regarding the three components of the OECD financial literacy measure, we found that only around 19% of students get high scores on financial knowledge; 57.3% get high scores on financial behavior; and almost 70% get high scores on financial attitudes. We found that women score higher than men on financial behavior, but have no statistically significant differences in the other two components. Although the overall score on financial attitudes seems high, on average students do not disagree with statements such as "Money is there to be spent" or "I get more satisfaction from spending than from saving", only 48% disagree with the former, and 46% with the latter.

The central point is that financial literacy among Mexican high school students is low, as has been recorded in other countries. Consequently, it is important to take these results into account in designing future public policies to improve the financial decisions. Our exercise can be considered a preliminary one, but we believe it offers an interesting and useful first approach. We believe it is necessary to begin measuring financial literacy among young people, and the population at large. We would recommend including these type of questions in some sort of systematic national survey, like the National Financial Inclusiveness Survey. Another key recommendation would be to consider including financial education topics in the curricula for Mexican high schools.

Appendix A.

CIDE: Financial education survey
(Selected questions)

Part II. Management of financial topics.

4) On a scale of 1 to 10, where 10 is the highest, how good do you consider yourself at math? (Mark an "x" on the number you choose)

1 2 3 4 5 6 7 8 9 10

5) On a scale of 1 to 10, where 10 is the highest, how good do you consider yourself at handling financial issues/personal finances? (Mark an "x" on the number you choose)

1 2 3 4 5 6 7 8 9 10

Next, you will be asked some questions related to financial education. If you don't know the answer, you should select the "I don't know" response instead of guessing. There is no score penalty for answering wrong or answering "I don't know." In the case of open questions, use the line to write your answer and the blank space for the necessary calculations.

6) *Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow*?

- More than 102
- Exactly 102
- Less than 102
- I don't know

7) Imagine you have a savings account that offers you an annual interest rate of one percent. At the same time, you know that INEGI has reported that annual inflation will be two percent. At the end of the year you will be able to:

- Buy more than today
- Buy less than today
- Buy exactly the same as today
- I don't know

8) Consider the following statement: "Investing a certain amount of money in a single stock gives you a safer return than investing the same amount of money in various different stocks." To you consider the statement to be:

- True
- False
- I don't know

9) Analyze the following statement: "High inflation means that the cost of living is increasing rapidly." You consider this statement to be:
- True
- False
- I don't know

10) Consider the following statement: “An investment with a high return is likely to be high risk”. Is the statement:
- True
- False
- I don’t know

11) You lend 25 pesos to a friend one evening and he gives you 25 pesos back the next day. How much interest has he paid on this loan?

_____

12) Suppose you put $100 into a savings account with a guaranteed interest rate of 2% per year. You don’t make any further payments into this account and you don’t withdraw any money. How much would be in the account at the end of five years?
- More than $110 pesos
- Exactly $110 pesos
- Less than $110 pesos
- It’s impossible to say based on the information given
- I don’t know

13) On a scale of 1 to 5, how much do you agree with the following statements. Choose 1 if you disagree completely and 5 if you agree completely.

Before I buy something I carefully consider whether I can afford it.	*1 2 3 4 5*
I set long term financial goals and strive to achieve them.	*1 2 3 4 5*
I always pay my debts on time.[1]	*1 2 3 4 5*
I keep a close personal watch on my financial affairs.	*1 2 3 4 5*

[1] The specific word used in the Spanish translation for debts was “deudas”, which in our context include small loans from family and friends. So “deudas” not only refers to bank loans, credit card debt, or other more formal financial instruments to acquire debt. In general, a “deuda” is what you owe, be it bills, small loans, bank loans or credit cards.

14) In the past six months, did you save any money?
□ Yes
□ No
If you answered "no," skip to question 16.

15) If you answered "yes," how did you decide to do it? (for this question you can choose more than one answer)
□ In a safe place at home/piggy bank
□ In a bank account
□ Giving it to a family member to hold for you
□ Savings funds
□ Investment accounts (promissory notes, mutual funds, etc.)
□ *Tandas* (private group savings schemes)
□ I prefer not to answer

16) In the past month, how did you keep up with your monthly obligations/expenses? (for this question you can choose more than one answer)
□ I covered my obligations with my monthly income
□ I had to cut back on spending
□ I sold some personal property to round out the month
□ I worked overtime to make more money
□ I asked a family member for money to round out the month
□ I used a credit card to pay my debts
□ I took out a loan from a financial institution
□ I prefer not to answer

17) Suppose you have a fight with your parents and they decide to take away your allowance. How much time could you maintain the same standard of living without borrowing a single peso?
□ Less than a week
□ At least a week, but not an entire month
□ At least a month, but no more than three
□ At least three months, but no more than six months
□ More than six months
□ I don't know
□ I prefer not to answer

18) On a scale of 1 to 5, how much do you agree with the following statements. Choose 1 if you disagree completely and 5 if you agree completely.

I tend to live for today and let tomorrow take care of itself.	*1 2 3 4 5*
Money is there to be spent.	*1 2 3 4 5*
I find it more satisfying to spend money than to save it for the long term.	*1 2 3 4 5*

19) Imagine that five brothers are given a gift of $1000. If the brothers have to share the money equally how much does each one get?

References

Atkinson, A., Messy, F., 2012. Measuring Financial Literacy: Results of the OECD/International Network on Financial Education (INFE) Pilot Study. OECD Working Papers on Finance, Insurance and Private Pensions, No.15, .

Behrman, Jere R., Mitchell, Olivia S., Soo, Cindy, Bravo, David, 2010. Financial Literacy, Schooling, and Wealth Accumulation. NBER Working Paper 16452, .

Bernheim, D., Garrett, D., Maki, D., 1997. Education and Saving: The Long-Term Effects of High School Financial Curriculum Mandates, NBER WP 6085. .

Carrell, S., Fullerton, R., West, J., 2008. Does your cohort matter? Measuring Peer Effects in College Achievement NBER Working Paper 14032, .

Chen, H., Volpe, R., 1998. An analysis of Personal Financial Literacy Among College Students. Financial Services Review, .

FEG, 2012. PISA 2012 Financial Literacy Assessment Framework, Doc:FinLit_Frmwrk_PISA12. .

Hastings, J., Madrian, B., Skimmyhorn, W., 2012. Financial Literacy, Financial Education and Economis Outcomes. NBER Working Paper 18412, .

Hong, H., Kubi, J., Stein, J., 2004. Social interaction and stock-market participation. J. Financ..

Jorgensen, B., Savla, J., 2010. Financial literacy of young adults: the importance of parental socialization. Interdiscip. J. Appl. Fam. Stud..

Lusardi, Annamaria, Mitchell, Olivia S., 2006. Financial Literacy and Planning: Implications for Retirement Wellbeing. Darmouth College, mimeo.

Lusardi, Annamaria, Mitchell, Olivia S., 2007a. Baby boomers' retirement security: the role of planning, financial literacy and housing wealth. J. Monet. Econ. 54, 205–224.

Lusardi, Annamaria, Mitchell, Oliver S., 2007b. Financial literacy and retirement preparedness: evidence and implications for financial education. Bus. Econ. 35–44.

Lusardi, Annamaria, Mitchell, Oliver S., 2011a. Financial literacy and planning implications for retirement wellbeing. In: Mitchell, O.S., Lusardi, A. (Eds.), Financial Literacy: Implications for Retirement Security and the Financial Marketplace. Oxford University Press, Oxford, pp. 17–39.

Lusardi, Annamaria, Mitchell, Oliver S., 2011b. Financial literacy around the world: an overview. J. Pension Econ. Financ. 10 (4), 497–508.

Lusardi, Annamaria, Mitchell, Oliver S., 2013. The economic importance of financial literacy: theory and evidence. NBER Working Paper 18952, .

Lusardi, A., Mitchell, O.S., Curto, V., 2009. Financial literacy among the young. J. Consum. Aff. 44 (2), 358–380.

Manski, C., 1993. Identification of endogenous social effects: the reflection problem. Rev. Econ. Stud. 60 (3), 531–542.

OECD INFE, 2011. Measuring Financial Literacy: Core Questionnaire in Measuring Financial Literacy: Questionnaire and Guidance Notes for Conducting an Internationally Comparable Survey of Financial Literacy. OECD, Paris.

OECD, 2013. Pisa Assessment and Analytical Framework. OECD, Paris.

Van Rooij, M., Lusardi, A., Alessie, R., 2007. Financial literacy and stock market participation. NBER Working Paper 13565, .